OPERATIONS UNDER THE INDEMNITY PROVISIONS OF THE ATOMIC ENERGY ACT OF 1954

HEARINGS

BEFORE THE

SUBCOMMITTEE ON RESEARCH, DEVELOPMENT, AND RADIATION

OF THE

JOINT COMMITTEE ON ATOMIC ENERGY

CONGRESS OF THE UNITED STATES

EIGHTY-SEVENTH CONGRESS

FIRST SESSION

ON

OPERATIONS UNDER THE INDEMNITY PROVISIONS OF THE ATOMIC ENERGY ACT OF 1954

JULY 18, 19, AND 20, 1961

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TUESDAY, JULY 18, 1961

CONGRESS OF THE UNITED STATES,
SUBCOMMITTEE ON RESEARCH,
DEVELOPMENT, AND RADIATION,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to notice, in room P–63, the Capitol, Hon. Melvin Price (chairman of the subcommittee) presiding.

Present: Representatives Price, Morris, and Westland; and Senator Anderson.

Also present: James T. Ramey, executive director; and Jack R. Newman, professional staff member, Joint Committee on Atomic Energy.

Representative PRICE. The subcommittee will be in order.

The Subcommittee on Research, Development, and Radiation of the Joint Committee on Atomic Energy opens hearings today on operations under the indemnity provisions of the Atomic Energy Act of 1954.

In the course of these hearings, we shall receive testimony on the AEC's annual report to the Joint Committee on Atomic Energy on operations under section 170 of the Atomic Energy Act.

We also plan to give further consideration to proposed legislation affecting the Commission's liability for underground nuclear detonations. We also expect to discuss recent proposals to amend the Price-Anderson Act so as to extend coverage to incidents occurring outside the United States.[1]

This morning we well hear from witnesses from the Atomic Energy Commission.

Before our first Commission witness takes the stand, I would like to place in the record at this point the press release announcing our schedule of witnesses.

(The material referred to follows:)

[No. 326. From the Offices of the Joint Committee on Atomic Energy. For release Monday a.m., July 17, 1961]

JOINT COMMITTEE ON ATOMIC ENERGY ANNOUNCES WITNESSES FOR HEARINGS ON INDEMNITY ON JULY 18, 19, AND 20, 1961

A tentative schedule of witnesses to testify at the hearings on indemnity before the Subcommittee on Research, Development, and Radiation of the Joint Committee on Atomic Energy was announced today by Congressman Melvin Price, chairman of the subcommittee.

[1] On Sept. 15, 1961, Congressman Price introduced a bill (H.R. 9244) to expand the coverage of the Atomic Energy Act of 1954 so as to cover nuclear incidents occurring outside the United States. Mr. Price's statement on the floor, the bill, and an analysis thereof appear as appendix 6, p. 177.

The hearings will begin on Tuesday, July 18, at 10 a.m., in room P–63, the Old Supreme Court Chamber in the Capitol. They will continue through Thursday, July 20.

In accordance with the requirements of section 170 of the Atomic Energy Act, the Commission forwarded to the Joint Committee a report on operations under the indemnity provisions of the act for 1960. This report was released to the press by the Atomic Energy Commission on April 13, 1961. The Commission will testify on this report on Tuesday, July 18.

In the course of the hearings, the subcommittee plans to give further consideration to two bills, S. 1144 (introduced by Senator Anderson) and H.R. 5215 (introduced by Congressman Morris) concerning the Commission's liability for underground nuclear detonations. This legislation establishes rules of liability for damages resulting from such activities as the plowshare program of peaceful nuclear explosions.

In addition, the subcommittee will discuss recent proposals to amend the Price-Anderson Act so as to extend its coverage to incidents occurring outside the United States. This proposal was set out in detail on pages 137–139 of the published 1961 hearings on the "Development, Growth, and State of Atomic Energy Industry." The subcommittee also expects to receive testimony on the regulatory and insurance problems associated with the transportation of radioactive materials.

A complete list of witnesses, subject to change, is attached.

LIST OF WITNESSES ON INDEMNITY HEARINGS JULY 18, 19, AND 20, 1961

July 18, Tuesday, 10 a.m.: Atomic Energy Commission witnesses.
July 19, Wednesday, 10 a.m.:
Mr. DeRoy C. Thomas, Nuclear Energy Liability Insurance Association.
Mr. Roy Shoults, General Electric Co.
Mr. Hubert W. Yount, Liberty Mutual Insurance Co.
Mr. Ambrose B. Kelly, Associated Factory Mutual Fire Insurance Companies.
July 20, Thursday, 10 a.m.:
Mr. Arthur W. Murphy, law firm of Baer, Marks, Friedman & Berliner.
Mr. Clark C. Vogel, the Glenn L. Martin Co.
Mr. Oliver Townsend, New York State Office of Atomic Development.
Mr. Milton Stewart, American Bridge, Tunnel & Turnpike Association, New York Thruway Authority.

Representative PRICE. Mr. Olson, are you going to represent the Commission today?

Mr. OLSON. Yes, sir.

STATEMENT OF LOREN K. OLSON, COMMISSIONER, ACCOMPANIED BY FRANK N. PARKS AND JOSEPH HENNESSEY, OFFICE OF THE GENERAL COUNSEL; ROBERT LOWENSTEIN, ACTING DIRECTOR, DIVISION OF LICENSING AND REGULATION; NEIL D. NAIDEN, GENERAL COUNSEL; MYRON KRATZER, DEPUTY DIRECTOR, DIVISION OF INTERNATIONAL AFFAIRS; AND ROLAND F. BEERS, CONSULTANT, ATOMIC ENERGY COMMISSION

Mr. OLSON. I have a prepared statement. What is your pleasure? Would you like me to read it, or merely submit it for the record and submit to questioning? It is pretty lengthy.

Representative PRICE. I would suggest that you summarize it and submit the full statement for printing in the record.

Mr. OLSON. Because of the complexity of the subject matter, Mr. Price, it would be awfully difficult to summarize.

Representative PRICE. Well, if that is the case, you might select certain parts of it and touch on what you consider to be the most im-

portant parts. You will have to be the judge of what to submit and we will insert the full statement at the end of your oral testimony (p. 35).

Mr. OLSON. All right.

This statement summarizes the principal developments in the administration of the indemnity program since the committee's hearings held in April 1960. They are discussed in somewhat greater detail in the Commission's report of March 31, 1961, to the Joint Committee on operations under section 170 of the 1954 act. (See app. 4, p. 133.)

REEVALUATION OF FINANCIAL PROTECTION REQUIREMENTS

As the Joint Committee was informed at the indemnity hearings in April 1960, the Commission, in announcing a comprehensive revision of the financial protection requirements in part 140 in March 1960, also stated its intention to reevaluate those requirements by the end of 1960. The reevaluation study included consideration of the recommendations of the two nuclear liability insurance pools, comments received in connection with those recommendations, and suggestions and views expressed at an AEC industry advisory conference held on October 11, 1960, with representatives of the reactor and insurance industries.

As a result of its study, the Commission issued an amendment to part 140, which increased to 200 percent (from the former 150 percent) the maximum adjustment in the amount of financial protection because of population density in the area surrounding the reactor site. The insurance pools had recommended an increase to 400 percent. No other change was made concerning amounts of financial protection.

The Commission revised the location factor range because its study had indicated the desirability of giving greater effect in the formula to variations in population density.

ADOPTION OF FORMS OF INDEMNITY AGREEMENTS

With respect to indemnity agreements, the Commission, in March of this year, adopted amendments to part 140 which establish the forms of agreements which the Commission will execute with licensees furnishing financial protection. Before adopting these forms of indemnity agreements, the Commission considered numerous comments and suggestions received from interested members of the public and from participants in industry advisory conferences held to consider the agreements.

By letter dated June 5, 1961, the ad hoc committee on nuclear liability and insurance of the Atomic Industrial Forum made a number of suggestions concerning these definitive forms of indemnity agreement.

With the permission of the committee, I would like to offer a copy of the Forum's letter for incorporation in the record of this hearing. Is that acceptable?

Representative PRICE. Yes.

(The letter referred to follows:)

ATOMIC INDUSTRIAL FORUM, INC.,
New York, N.Y., June 5, 1961.

Mr. ROBERT LOWENSTEIN,
Acting Director, Division of Licensing and Regulation,
Atomic Energy Commission, Washington, D.C.

DEAR BOB: The definitive forms of indemnity agreement to be executed by the Commission with licensees furnishing insurance policies as proof of financial protection and with licensees furnishing proof of financial protection in the form of their own resources were reviewed by the Forum's ad hoc committee on nuclear liability and insurance on May 25. Those attending the meeting were Francis X. Boylan, H. E. Clark, Howard M. Cohen, Arthur C. Gehr, Kenneth C. Hall, Arthur Murphy, Claude Rice, Malcolm A. Tait, DeRoy C. Thomas, F. C. Voss, Arthur F. Williams, and myself.

The definitive forms of indemnity agreement represent a considerable improvement over the earlier proposed forms of agreement and with the exception of the items specifically noted below, the committee believes that the new forms will adequately provide the protection to the public and the industry contemplated by the Price-Anderson legislation. The committee also expressed its appreciation for the many opportunities afforded by you to present its views and comments with regard to the developing forms of indemnity agreement.

The comments set forth below are in two categories. In the first category there are a number of editorial suggestions. The second category includes a number of suggested substantive modifications. Although the committee recognizes that the forms of agreement published in the Federal Register on April 22, 1961, are definitive forms, their amendment to reflect the items below would contribute, we think, to their improvement.

EDITORIAL SUGGESTIONS

A. Paragraphs 1 and 8 of article 1 should be amended to read as follows:

"1. [‘Nuclear-reactor,’] ‘Byproduct material,’ ‘person,’ ‘source material,’ and ‘special nuclear material’ shall have the meanings given them in the Atomic Energy Act of 1954, as amended and the regulations issued by the Commission.

"8. ‘The radioactive material’ means source, special nuclear, and byproduct material which (1) is used or to be used, [in] or is irradiated or to be irradiated *at the location* [by, the nuclear reactor or reactors subject to the license or licenses designated in the Attachment hereto], or (2) which is produced as the result of operations *at the location* [of said reactor(s)]."

Comment: The definition of the term "nuclear reactor" in the Commission's regulation is not precise. Limiting the term "the radioactive material" to materials used or to be used in, or irradiated by the nuclear reactor, etc., preclude the licensee and his suppliers from knowing precisely the scope of activities covered by the indemnification agreement. Accordingly, it is suggested that the term "nuclear reactor" be deleted from the first definition and that definition No. 8 be modified as shown. The term "nuclear reactor" is not used elsewhere in the agreement. The term "nuclear reactor," of course, is designed to limit the activities covered to those authorized in the facility license. The AEC could properly define "the location" in the attachment to the indemnity agreement to exclude therefrom such activities on the site which are not to be covered by the indemnity agreement. This change might in some instances affect the scope of the agreement if "the location" is not carefully defined in keeping with the intent of the agreement. If adopted, it would eliminate an important ambiguity.

B. Subparagraph 4(a) should be amended to read as follows:

"(a) [With respect to] *The transportation of the radioactive material to the location shall be deemed to begin when the radioactive material is placed on the transporting conveyance for transportation to the location without any* [such transportation is not by] pre-determination *to remove* [to be interrupted by the removal of] the material from the transporting conveyance for any purpose other than the continuation of such transportation to the location or temporary storage incidental thereto;"

Comment: The suggested change will not alter the meaning of the definition, particularly in view of the statement of considerations which provides that—

"A principal purpose of provisions covering transportation 'to the location'

is to cover shipments of nuclear fuel directly from a fuel element fabricator's plant to the site of the reactor in which the elements will be used as fuel."

The suggested change would make subparagraph 4(a) conform to the style in subparagraph 4(b) and would eliminate any question as to the coverage intended. Although the suggested language would depart from that set forth in the NELIA-MAELU policies, it appears that the indemnity agreements and the policies would adequately mesh if the suggested language is adopted.

C. Substitute "ended as defined in subparagraph 4(b), Article I" in place of "been completed as provided in paragraph 4, Article I" in paragraph 1 of article II.

Comment: The above change would conform the language in paragraph 1, article II, more closely to the language of subparagraph 4(b) of article I.

D. Add the following proviso at the end of subparagraph 2(b) of article II: "*Provided, however,* That this subparagraph shall not be construed or operate to release or relieve any person from liability to the licensee assumed under contract by such person for the replacement, repair, or refund of the purchase price of, items or services furnished by such person to the licensee."

Comment: This suggested change would incorporate into the body of the agreement itself the concept set forth in the statement of considerations as follows:

"The form indemnity agreements do not affect contractual obligations of suppliers to reactor licensees to repair or replace components furnished by such suppliers."

The suggested language departs from the AEC statement only in that it would include within the proviso the obligation of suppliers to refund the purchase price of items or services furnished. This modification would conform closely to the common forms of express warranties employed in the reactor industry. The committee believes it is preferable to expressly provide this proviso in the agreement form than to include it only in the statement of consideration.

E. The term "other" in the phrase "bears to the sum of the limits of liability of all other nuclear energy liability insurance policies" in paragraph 6(a) and 6(b) of article II should be deleted.

Comment: The inclusion of the term "other" in the above-quoted phrase appears to be inadvertent.

F. The term "licensee" is used in the agreement to refer to the entity with whom the Commission executes the indemnification agreement. In paragraph 6(c) the term "licensee" appears in three places. In the first two cases the term "licensee" is intended to refer to a different person, i.e., one who provides financial protection in the form of his own resources. Accordingly, the first three lines of paragraph 6(c) should be amended to read as follows: "If any of the other applicable agreements is with a person who has furnished financial protection in a form * * *."

G. Paragraph 3 of article III should be amended to insert the term "public" before the term "liability."

Comment: The omission of the term "public" appears to be inadvertent. It is noted that in the form of agreement to be executed with licensees who self insure the term "public" appears in paragraph 3 of article III.

H. Substitute "ended as defined in subparagraph 4(b), Article I" in place of "been completed as provided in paragraph 4(b), Article I" in article VII.

Comment: See comment on item C above.

OTHER SUGGESTIONS

A. Although the proposed forms of indemnity agreement previously published by the AEC made no mention of it, the definitive forms exclude from "public liability" claims under State or Federal workmen's compensation acts of employees of persons indemnified who are employed on the "transporting vehicle" if the nuclear incident occurs in the course of transportation of the radioactive material. The definitive forms of agreement would also exclude coverage for property damage to transporting vehicles and containers of persons indemnified if the nuclear incidents occur in the course of transportation. These two exclusions are probably based upon section 11u of the Atomic Energy Act of 1954 which provides: "at the site of and in connection with the activity where the nuclear incident occurs." The interpretation of this provision in the indemnification agreements fails to recognize the legislative history.

As to the exclusion of workmen's compensation claims of employees employed on the transporting vehicle, we note that Committee Report H.R. No. 435 provides, on pages 17 and 18, that the exception for claims under workmen's compensation acts for employees employed in connection with the activity where the incident occurred is based upon "the thought that the insurance carriers who pay workmen's compensation for this group of personnel know and understand the risks they are taking and charge accordingly. * * * For those employees who are not employed in connection with the activity, the workmen's compensation premium does not include any charge for this protection. The premium for the workers not employed at the activity is not calculated on the possibility of any nuclear explosion. Therefore, there is a real and fair basis for permitting the carriers for these employees to have their claims included in the claims to be indemnified."

An incident in the course of transportation may result in claims by the employees of the carrier of or any person other than the licensee who may be liable for the incident. The insurance carriers who pay workmen's compensation for such personnel, however, would not have adjusted their rates to accommodate the risk of a nuclear incident. The exclusion of their claims from "public liability" would be contrary to the quoted expressions in the committee report.

The exclusion of property damage to the transporting vehicles and containers also does not conform with the intent of the Price-Anderson Act which was to exclude protection only for damage to property located at the reactor site and used in connection with the reactor activity.

The NELIA and MAELU policies provide protection for workmen's compensation claims and damage to the transporting vehicles and the containers so long as the incident occurs away from the location. Such coverage in the NELIA and MAELU policies might create a gap between the indemnity protection and the underlying insurance in that payments by the insurers for damage to the transporting vehicles and containers would reduce the available insurance. However, item 2(b) in the attachment could be construed to bring the indemnity protection down to meet the available insurance, even in the event of payments by the insurers for such claims.

B. Article IV may tend to impede prompt and expeditious settlement of claims with the inevitable result that final payments to claimants will be increased. This could result in higher insurance costs to the reactor licensees. The reactor licensee is also placed in a most difficult position by the provision in article IV. On the one hand, the insurance agreement approved by the Commission as an acceptable form of financial protection authorizes the insurer to settle claims. On the other hand, article IV places upon the licensee the obligation to provide to the Commission the right to require Commission approval of claims settlements. Thus, it is possible that the Commission could find that a particular settlement is excessive and to the extent of the excess settlement deny indemnity to the licensee. The committee noted with favor that the staement of considerations recognizes that "it may be desirable to reconsider the provisions of article IV in the light of arrangements which may be worked out between the AEC and the insurance syndicates." It would be desirable for such arrangements to be worked out expeditously.

C. The common occurrence provision, admittedly a farfetched problem, goes far toward eliminating the gap in protection "which might otherwise exist." However, a gap may remain in the instance of a common occurrence involving two facilities, one of which is indemnified and one of which is not indemnified under Price-Anderson. Under such circumstances the common occurrence provision in the indemnity agreement would not apply, although the common occurrence provision in the insurance agreement would apply. Without delaying issuance of the indemnity agreements, attention should be directed toward conforming the insurance policies and indemnity agreements on this point.

The changes in the definitive form of agreement with respect to the section 53(e)8 problem and the elimination of the $1 million floor in the event of payments by the insurers are significant contributions to the improved form of agreement.

Sincerely yours,

GERALD CHARNOFF.

Mr. OLSON. Most of the Forum's suggestions are editorial in nature; however, there are three suggestions of a substantive nature which are discussed beginning on page 5 of the letter. The Commission has these suggestions under consideration.

Article IV of the form of indemnity agreement provides that the Commission—

shall have the right * * * to require the prior approval of the Commission for the settlement or payment of any claim or action asserted against the licensee or other person indemnified * * *.

This provision applies in cases only where the Commission determines that the United States will probably be required to make indemnity payments under the provisions of the agreement. NELIA and MAELU have objected to the provision on the ground that they believe it exceeds the Commission's statutory authority; and might interfere with prompt handling of claims.

The provision in question does not require Commission approval, but only reserves to the Commission the right to require Commission approval. The Commission believes it has authority under sections 161 and 170 of the Atomic Energy Act of 1954, as amended, to adopt the provision. We expect that this authority would be exercised only in special circumstances and in such manner as to avoid undesirable delay in the settlement and defense of claims and actions. Discussions have been held with both pools looking toward the adoption of an agreement between them and the AEC concerning claims investigations and handling. Such arrangements for claims administration as finally agreed upon, may very likely provide a basis for composing our and the pools' views on the "right of approval" question.

By notices of proposed rulemaking, which were also published in April of this year, public comment has been invited on proposed forms of agreement which the Commission will execute with those Federal agencies and nonprofit educational institutions who are subject to part 140. Except for changes made because Federal agencies and nonprofit educational institutions are not required to furnish financial protection, the forms of these proposed indemnity agreements are substantially similar to those adopted by the Commission for execution with licensees who do furnish financial protection. Only one comment has thus far been received on the proposed forms of agreement.

INDEMNIFICATION OF LICENSEES USING UNIRRADIATED URANIUM

I should like, now, to mention two matters which the Commission has under consideration. One study relates to the question whether the Commission should exercise its authority to extend the provisions of the Price-Anderson Indemnity Act to licensees (such as reactor fuel processors and fabricators) who possess and use substantial quantities of unirradiated, enriched uranium.

It will be recalled that section 170 of the Atomic Energy Act gives the Commission discretionary authority to require financial protection with respect to licenses for source, special nuclear, and byproduct material. If the Commission should exercise this authority, the act requires that the Commission indemnify the licensee and other persons indemnified from public liability, arising from nuclear incidents, which is in excess of the required level of financial protection.

As an aid in considering the question relating to fuel processors and fabricators, the Commission, by Federal Register notice, published on March 29, 1961, invited public comments from the atomic energy industry, the nuclear energy insurance company, and other interested

persons and organizations. Approximately 26 responses are presently under review.

The second matter is concerned with whether indemnity should be extended to licensed users of plutonium, U^{233}, and magacurie quantities of byproduct material.

PROPOSED LEGISLATION

By letter dated April 8, 1959, and again in a letter dated April 15, 1960, the Commission recommended to the Congress the adoption of an amendment to the indemnity provisions of the 1954 act to eliminate coverage of liability for damage to property, which is at the site of, and used in connection with, the licensed activity. The proposed amendment was reintroduced as section 3 of the omnibus bills (H.R. 7798; S. 2147) at this session of the Congress. Commission representatives testified in support of this proposed amendment at hearings on the omnibus bill held on June 27 and 29, 1961.

ADMINISTRATION OF LICENSEE INDEMNITY

As of June 30, 1961, 51 reactor licensees were indemnified under the provisions of the Price-Anderson Act. These included 15 private organizations who carried insurance; 30 nonprofit educational institutions; and 6 Federal agencies.

The Commission, thus far, has received no claims under indemnity agreements with licensees. Our most recent information indicates that the insurance pools, also, have received no claims under their nuclear energy liability insurance policies.

It may also be of interest to note that the Commission, for the first time, has recently applied Price-Anderson indemnity to a licensed nuclear facility other than a reactor. This is the Martin Co. plant at Quehanna, Pa., in which the company will chemically process irradiated Americium containing plutonium.

Senator ANDERSON. I am a little bit lost at the reference to 51 reactor licensees being indemnified under the provisions of the Price-Anderson Act. How did you indemnify them?

Mr. OLSON. By giving them agreements under the Price-Anderson Act.

Senator ANDERSON. Well, "indemnify" has a specific meaning in insurance.

Mr. OLSON. It was an undertaking to indemnify.

Because the plant—this is the Quehanna plant—will separate small quantities of plutonium, it is a "production facility" as defined in part 50 of the Commission's regulations, and the Price-Anderson Act is, therefore, automatically applicable. Pending determination by the Commission of specific criteria for establishing amounts of financial protection to be required for chemical processing facilities, the amount of financial protection ($3.5 million) for the Martin facility was established, on an interim basis, by relating the facility to a theoretical, fictitious "reactor equivalent." Based on amounts of radioactive material to be present, the radioactive material in a single cell of the Martin plant was considered to be approximately equivalent to the inventory of strontium 90 and iodine in an 11-megawatt (thermal) reactor operated at power for approximately 180 days.

The other leg of the indemnification was Commission contractors. Under the authority contained in subsection 170 d. of the Atomic Energy Act, the Commission has entered into indemnity agreements with 46 of its contractors.

Senator ANDERSON. Could you give us the provision of the act you thought was applicable to take care of the Martin situation? That is not a fuel processing plant. It is not a reactor. How did it get in?

Mr. OLSON. Mr. Lowenstein?

Mr. LOWENSTEIN. Under our regulations, Senator Anderson.

Senator ANDERSON. No; I asked: Under the act.

Mr. LOWENSTEIN. Under the act it is section 170 a., sir, which requires that financial protection be furnished by facility licensees. And under our regulations this plant is a production facility.

Senator ANDERSON. Section what, again?

Mr. LOWENSTEIN. Section 170 a., sir.

Senator ANDERSON. I hope the law will not be extended to cover a rowboat on the lake. The only protection we have on this is to restrict it narrowly, I would think. I am just wondering how you got this in. That is all.

Mr. LOWENSTEIN. Under the regulations, again, there is a substantial inventory of the radiated material in this plant. That is section 170a, subsection a of section 170.

Mr. RAMEY. I have one question on covering this Martin facility: There have been requests by a number of large scale processing outfits that they be covered by the Price-Anderson Act for a number of years, have there not? Both licensees and contractors?

Mr. LOWENSTEIN. I do not think we have had any great number of requests from licensed processors of substantial quantities of radioactive material, Mr. Ramey. This part of the business is just beginning to develop now. But we do have that question under consideration now, as Mr. Olson stated in his testimony. There are only a very few licensed processors of substantial quantities of radioactive material at the present time.

In a sense, the coverage of the Quehanna facility was perhaps coincidental, because by reason of the particular work that they are doing, they happen to fall under the definition of a production facility as defined in our regulations.

Senator ANDERSON. I am just starting off, here: "Each license issued under section 103 or 104." Now, did they get a license under 103 or 104?

Mr. LOWENSTEIN. Yes, sir; under 104.

Senator ANDERSON. To do what?

Mr. LOWENSTEIN. Part of their process involves the separation of plutonium from americium and irradiated material which is produced out at the Idaho reactor.

Senator ANDERSON. We tried to say to the insurance industry when this was under consideration that this would not be used as a device to give free insurance to everybody under the sun. This is what we hoped, at least. It was not the real purpose to set up a free Government pool to take care of these things. It would normally be taken care of by ordinary industry.

Mr. OLSON. They were required to buy $3½ million of insurance, of course, before the indemnity was extended to them.

Senator ANDERSON. The next man can be required to buy $300,000, and the next one required to buy $3,000. It is classifying them that I am worrying about.

Mr. LOWENSTEIN. We have been very concerned about the question you raised, Senator Anderson, which is one reason we have been giving consideration to whether the act should be extended to fuel processing and processing of the quantities of isotopes.

Mr. RAMEY. Is there enough material here to cause a nuclear incident?

Mr. LOWENSTEIN. Well, as indicated in the statement, the quantity which would be in only a single hot cell of the Martin plant would be about the same as the inventory in an 11-megawatt thermal reactor, which had operated at power for approximately 180 days. There is a very substantial inventory of radioactive material here. I think it is in the upper hundreds of thousands of curies. I do not remember the exact figure.

Mr. RAMEY. Did you have a study by Convair of the consequences of criticality accidents?

Mr. LOWENSTEIN. That involved a different type of facility, Mr. Ramey. The Convair study was concerned with unirradiated material and particularly with unirradiated uranium. We are not dealing here with uranium.

Senator ANDERSON. Will you furnish us with a statement as to which section of 104 they came under? The first section has to do with licenses to persons applying in connection with medical therapy. Is this used in medical therapy?

Mr. LOWENSTEIN. No, sir.

Senator ANDERSON. Then it is not in 104a. So you go to b and c. Please specify which one it is under.

Mr. LOWENSTEIN. This was licensed under subsection 104c.

Senator ANDERSON. You see, the trouble is similar to what happened one day when I tried to write a book review of the dictionary. The first word had three other words in it that I had to go and look up.

Now, this says the Commission is authorized to issue licenses to persons applying therefor for utilization of facilities useful in the conduct of research and development activities of the types specified in section 31. So you have to go back to section 31. And 31 refers to 77, and 77 refers to somewhere else. So just state why it is under this particular section. Send us a memorandum on it, if you please.

Mr. LOWENSTEIN. Yes, sir. We will be glad to do that.

(The memorandum referred to follows:)

ATOMIC ENERGY COMMISSION,
Washington, D.C., August 14, 1961.

Hon. MELVIN PRICE,
Chairman, Subcommittee on Research, Development, and Radiation, Joint Committee on Atomic Energy, Congress of the United States.

DEAR MR. PRICE: This is in response to a request made by Senator Anderson to Mr. Robert Lowenstein, Acting Director, Division of Licensing and Regulation, on July 18, 1961, at a hearing before the Subcommittee on Research, Development, and Radiation of the Joint Committee on Atomic Energy, for a written statement explaining the basis for the AEC determination that the Martin Co. plant at Quehanna, Pa., is a production facility subject to licensing under section 104c of the Atomic Energy Act of 1954, as amended.

Section 11t of the Atomic Energy Act of 1954, as amended, defines the term "production facility" as "(1) any equipment or device determined by rule of the

Commission to be capable of the production of special nuclear material in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; or (2) any important component part especially designed for such equipment or device as determined by the Commission." Pursuant to subsection (1) of this provision, the Commission has by rule in section 50.2(a)(3) of the Atomic Energy Rules and Regulations defined a "production facility" as "any facility designed or used for the processing of irradiated materials containing special nuclear material * * *."

In connection with its proposed operation of the Quehanna, Pa., plant for the production of curium fuel for the SNAP program, the Martin Co. is required to obtain from AEC americium 241 capsules which contain curium, fission products, and also 0.6 to 0.8 grams of plutonium, which are then separated out at the Martin plant. This separation is a process within the meaning of our rule, and results in the production of special nuclear material "in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; * * *." The Martin Co. plant thus clearly falls within the intendment of section 11t and the Commission rule issued thereunder and is a "production facility."

Accordingly, the Commission licensed the plant as a production facility under section 104 of the act. As a consequence of this determination the provisions of section 170 of the act pertaining to financial protection and indemnification became applicable to the plant.

Sincerely yours,

NEIL D. NAIDEN, *General Counsel.*

Representative PRICE. You may proceed, Mr. Olson.

Mr. OLSON. Under the authority contained in subsection 170 d. of the Atomic Energy Act, the Commission has entered into indemnity agreements with 46 of its contractors.

Representative PRICE. In that connection, Mr. Olson: In the report to the Joint Committee on March 31, 1961, part 2, indemnification of activities under contract with the Commission, the following statement was made:

> The Commission adopted a policy of entering into agreements of indemnification extending the statutory indemnity. In carrying out this policy, the Commission has executed statutory indemnity agreements to 46 contracts. These agreements cover all of the major installations operated by AEC contractors who are eligible under Commission policy for indemnity agreements.

Those are quotations from the Commission report.

Now, does this mean that all AEC contractors who are eligible under Commission policy for Price-Anderson agreements are covered? Or are there AEC installations which are not covered?

Mr. OLSON. I will ask Mr. Hennessey to answer that, please.

Mr. HENNESSEY. It does mean, Mr. Price, that all AEC installations where there exists a risk of the occurrence of a substantial nuclear incident are covered by Price-Anderson indemnity agreements.

Representative PRICE. I see in your next sentence you probably hit that. "Where production and utilization facilities are operated." Is that correct?

Mr. HENNESSEY. Both statements are correct. There was no intentional distinction between the two.

Representative PRICE. And I assume that any AEC contractor who is eligible under Commission policy for a Price-Anderson agreement, but who has not executed it, is protected by some form of general indemnity agreement. Is this correct?

Mr. HENNESSEY. As far as I know, Mr. Price, every AEC contractor who is eligible does have the Price-Anderson indemnity agreement.

Representative PRICE. Did you want to make some comment on that, Mr. Olson?

Mr. OLSON. I was only going to say we have had the deliberate policy during the past 2 years of trying to eliminate the other indemnity agreements we had by contract and substituting Price-Anderson therefor. There are still some that we have not gotten out of all our contracts.

Senator ANDERSON. Did you read something about expanding the legal authority, Mr. Price?

Representative PRICE. Not expanding, but extending the statutory indemnity.

Mr. HENNESSEY. That is only in the sense of offering the indemnity to the extent it is authorized by the act.

Mr. OLSON. Extend, meaning to offer; not to amplify.

Representative PRICE. In the 1958 hearings before the Joint Committee on Atomic Energy, Mr. Diamond testified as follows:

> In order to make available to the public and other subcontractors, suppliers, engineers, and contractors, who contribute to the atomic energy program, the protection intended by the Congress under the Price-Anderson Act, AEC determined that it would be necessary to permit its contractors to retain any broader rights they may have under their previous indemnity, while extending to them the full benefis of the statutory indemnity.

Now, do some of the 46 contractors you report as having executed Price-Anderson agreements also still retain broad general indemnity provisions in their contracts? If so, how many?

Mr. HENNESSEY. There are some, Mr. Price, who do retain the broader indemnities that they had in their contracts prior to enactment of Price-Anderson. I do not know the exact number. We will have to furnish it for the record.

Representative PRICE. Would you?

(The information referred to follows:)

ATOMIC ENERGY COMMISSION,
Washington, D.C., August 8, 1961.

Mr. JAMES T. RAMEY,
Executive Director,
Joint Committee on Atomic Energy,
Congress of the United States.

DEAR MR. RAMEY: At the hearings before the Subcommittee on Research, Development, and Radiation on July 18, 1961, in connection with the Price-Anderson provisions of the Atomic Energy Act, we said we would furnish for the record the number of AEC contracts containing both an implementing agreement under section 170d of our act and general indemnity protection from AEC covering nuclear incidents.

These are the contracts:

1. Contract No. AT-30-2-Gen-16 with Associated Universities, Inc.
2. Contract No. AT(11-1)-292 with Duquesne Light Co.
3. Contract No. AT(10-1)-205 with Phillips Petroleum Co.
4. Contract No. AT(30-1)-217 with the Martin Co.
5. Contracts No. AT(33-2)-1 with Goodyear Atomic Corp.
6. Contract No. AT(40-1)-1833 with the University of Puerto Rico.
7. Contract No. AT-(40-1)-1325 with Management Services Inc. at Tennessee.
8. Contract No. AT(11-1)-171 with General Electric Co.
9. Contract No. AT(40-1)-1092 with the International Nickel Co., Inc.
10. Contract No. W-31-109-Eng-38 with the University of Chicago.
11. Contract No. AT(11-1)-513 with Consumers Power District.
12. Contract No. W-7405-Eng-48 with the regents of the University of California.

13. Contract No. W–7405–Eng–36 with the regents of the University of California.
14. Contract No. AT(29–1)–789 with Western Electric Co., Inc.
15. Contract No. AT(45–1)–1350 with General Electric Co.
16. Contract No. AT(07–2)–1 with E. I. du Pont de Nemours & Co.

The following are the contracts, also referred to at the hearings, from which the general indemnity provisions were removed and which contain a Price-Anderson agreement:

1. Contract No. AT(29–2)–656 with General Electric Co.
2. Contract No. AT–11–1–Gen–8 with North American Aviation, Inc.
3. Contract No. 7405–Eng–92 with Battelle Memorial Institute.
4. Contract No. W–31–109–Eng–52 with General Electric Co.
5. Contract No. W–7405–Eng–26 with Union Carbide Corp.
6. Contract No. AT(30–3)–198 with Combustion Engineering, Inc.
7. Contract No. AT–11–1–Gen–14 with Westinghouse Electric Corp.

Sincerely,

DWIGHT A. INK, *Assistant General Manager.*

Mr. OLSON. But as I have indicated, we have been trying to eliminate those broader indemnities, replacing them with Price-Anderson.

Representative PRICE. Mr. Diamond also stated that AEC contractors were generally desirous of retaining what they consider to be the broader rights afforded them under their previous contractual indemnities. With respect to nuclear coverage the major apparent advantage of the previous contractual indemnities was that they afforded protection against claims on account of nuclear incidents that might occur outside the United States, whereas the Price-Anderson coverage is limited to occurrences within the United States.

Now, has the AEC effected the removal of the broad general indemnity provisions from contracts, how many——

Mr. OLSON. Yes. Union Carbide was one. There are others. We would be glad to submit them for the record, Mr. Price.

There is the problem you speak of, about extracontinental liability, that is not covered. This is a problem.

Representative PRICE. Now, does the AEC today feel that the Price-Anderson coverage was intended to supplant contractors' previous contractual indemnities other than to the extent that it provides specific coverage?

Mr. OLSON. Well, certainly to the extent that it duplicated the coverage involved in the Price-Anderson Act, we felt that they should not have both. It seemed to me that the policy of Congress was set, there, and I think that there was justification for our policy of retrenching on the broader agreements.

Representative PRICE. Will you proceed?

Mr. OLSON. The protection afforded by the Price-Anderson Act and the indemnity agreements offered by the Commission under its authority have found general acceptance among the Commission's contractors. There have been three areas, however, where some contractors and subcontractors have expressed recurring concern as to the adequacy of coverage.

The first of these is the fear expressed by some subcontractors and suppliers that the Price-Anderson indemnity does not cover their liability for damage to property located at the site of indemnified activity. Their concern stems from the language of the definition of "public liability" contained in subsection 11 u. of the Atomic Energy Act. A proposed amendment of subsection 11 u. is included in the Commission's omnibus bill which was the subject of recent hearings

before this committee. While the primary purpose of the proposed amendment is to eliminate coverage of liability for damage to property which is located at the site of, and used in connection with, a licensed activity, it will have the secondary effect of making it completely clear that the indemnity agreement of a Commission contractor does cover liability for damage to property which is located at the site of, and used in connection with, a contract activity. The enactment of this amendment should effectively eliminate any cause for concern in this area.

As the Commission's activities expand into areas outside the geographical limits of the United States, our contractors are being exposed to a growing risk of liability for nuclear incidents that may occur outside the United States. Commission contractors who engage in the areospace applications of nuclear energy, such as Rover and Snap, or who construct or operate Commission reactors in Antarctica or other foreign locations, or who furnish other Commission contract reactor components, fuel elements, design or other technical data for use in foreign reactors—all incur the risk of being held liable for a nuclear incident that may occur outside the United States. The Price-Anderson indemnity does not protect them against that risk.

The committee recently requested the Commission's views concerning a proposed bill submitted to the committee by Mr. Clark Vogel. The bill would amend the Price-Anderson Act to extend its indemnity protection to cover the liability of AEC contractors and their subcontractors, suppliers, and carriers, for nuclear incidents occurring outside the United States. The Commission furnished its comments on the proposed bill by Chairman Seaborg's letter of July 8, 1961.

I would like to summarize the Commission's position which is set forth in more detail in Dr. Seaborg's letter. The Commission supports the objectives of the bill proposed by Mr. Vogel. The Commission has already recognized that its contractors are entitled to protection against liability for foreign incidents. Since the protection available under the Price-Anderson Act has been limited to incidents occurring within the United States, the Commission has, in some instances, provided further indemnification against foreign liability, exercising the Commission's general contract authority for this purpose. Due to statutory restrictions on the exercise of this contract authority, the indemnity commitment in these instances must normally be conditioned upon the availability of appropriated funds for its fulfillment. The proposed bill would have the effect of providing to these contractors the assurance of an unconditional indemnification against liability for foreign nuclear incidents arising out of or in connection with their contractual activities. The Commission believes that its contractors should have this additional assurance.

The Commission has suggested some revisions in the specific provisions of the proposed bill. We have suggested that the proposed amended definition of "person indemnified" in subsection 11 r. be revised to provide clearly that the extraterritorial coverage would extend to all those persons who participate at any level in the AEC contractual chain and who may be held liable for a nuclear incident as a result of such activities. We have recommended the addition of a new section 4 to the bill which would assure that the additional coverage would be extended under contractual indemnity agreements now in effect, without the necessity of amending those agreements.

Since submission of our formal comments on July 8, it has come to our attention that the proposed amendment of subsection 11 r. of the act would have the effect of reducing the scope of the indemnity provided for the NS *Savannah* by Public Law 85–602. The *Savannah* indemnity agreement now covers any person who may be liable for public liability for a nuclear incident connected with the *Savannah* whether the incident occurs within or outside of the United States. Under the proposed amendment, only the Maritime Administration, its subcontractors, suppliers, and carriers would be protected in the case of a nuclear incident occurring outside the United States.

You might ask who is left out. It is third parties that are left out, in the Vogel bill, and we think this should be restored.

The Commission believes that the scope of the *Savannah* indemnity coverage should be preserved. We are prepared to furnish proposed revised language that would leave the current status of the *Savannah* unaffected.

In our formal comments of July 8, we pointed out that the proposed amendment of subsection 170 e. would have the effect of requiring, in the case of nuclear incidents caused by U.S. ships such as the NS *Savannah*, that applications for orders for enforcement of the limitation of liability provisions of this subsection be brought in the U.S. District Court for the District of Columbia rather than in the U.S. district court having venue in bankruptcy matters over the location of the principal place of business of the shipping company owning or operating the ship. We informed the committee that, in the interest of uniformity of application of the limitation of liability provisions as applied to liability for foreign nuclear incidents, we believed it desirable that the venue in all such proceedings be established in a single district court, as proposed by Mr. Vogel.

One final area of concern to some contractors has been some doubt as to whether the Price-Anderson indemnity covers damages caused outside the United States as a result of a nuclear incident occurring within the United States.

The General Counsel of the Commission, Olson, by name, at the time in an interpretation published in the Federal Register on May 7, 1960, stated his opinion that an indemnity agreement entered into under the authority of the Price-Anderson Act indemnifies persons indemnified against public liability for damages caused outside the United States by a nuclear incident occurring within the United States. Notwithstanding this formal interpretation, a desire for a clarifying amendment to the act has been expressed.

On June 14, 1960, Mr. James H. Campbell, president of Consumers Power Co., submitted to your committee a proposed amendment to the definition of "nuclear incident" contained in subsection 11 o. of the Atomic Energy Act. The proposed amendment would insert the parenthetical phrase "(within or outside of the United States)" between the words "causing" and "bodily injury" in the statutory definition.

While the Commission believes that the formal interpretation of the Commission's General Counsel affords adequate assurance in this respect and that legislative clarification is unnecessary, the Commission would have no objection to enactment of the amendment to subsection 11 o. proposed by Mr. Campbell, if the committee concludes that a clarifying amendment is desirable.

PROBLEMS OF FOREIGN INDEMNITY

During the past year a number of developments have substantially advanced the U.S. objective of attaining adequate international standards to govern civil liability for nuclear hazards.

In cooperation with other U.S. Government agencies, we have actively encouraged several approaches to the problem of providing adequate financial protection to the public, to the operators of nuclear facilities, and to the suppliers of nuclear equipment. The desirability of resolving this problem has been recognized also by a number of other nations, particularly in Western Europe and Japan, where the problem is of most immediate interest.

Perhaps the most important development of the year was the conclusion and signature of an international convention by 16 members of the OEEC. This convention will go into force upon ratification by five signatories. The convention is generally satisfactory from the standpoint of the United States.

Mr. NEWMAN. Mr. Olson, I wonder if you could outline the principal features of the OEEC convention and how it is related to the Euratom convention that you speak of in the next few paragraphs. Is there some relation between the two?

Mr. OLSON. Well, of course, any Euratom action is subordinate to the overlying OEEC action.

You mean you would like detail of what is covered by OEEC?

Mr. NEWMAN. Does the OEEC convention, for instance, provide a limitation on liability? Does it channel liability?

Mr. OLSON. Mr. Naiden?

Mr. NAIDEN. Mr. Newman, the convention provides for absolute liability and for channeling of liability to the operator. It has a limitation, and I think it has a 10-year term. That is, the convention is for a period of 10 years.

Mr. NEWMAN. What is the limitation on liability?

Mr. NAIDEN. It is $5 to $15 million in the OEEC, and in the Euratom convention it is $70 million for each of the countries and above that a $50 million pool provided by the signatories.

Mr. OLSON. The most significant problem therein relates to the 10-year term, because of course there will be reactors built, and the OEEC convention expires before the useful life of those reactors will have passed.

Senator ANDERSON. I had to be away for a moment. On page 8, if I may return to that, Mr. Olson, in the last paragraph, you have a sentence starting: "Since the protection available." If you had that authority, why did you pass the act at all?

Mr. OLSON. Of course, it would be subject to the availability of funds—this authority, this contract authority—and that is a little uncertain.

Senator ANDERSON. Is that the only reason? Availability of funds? You might say the same thing as to the United States. The funds are not available, as we learned in connection with the Texas explosion, until Congress makes them available.

Mr. OLSON. Mr. Hennessey is much more familiar with the history of Price-Anderson. Let me turn it over to him, please.

Mr. RAMEY. I think, Mr. Chairman, the other factor was that the main impetus behind the Price-Anderson Act was to cover licensed

activities. And then we brought in contractor activities in order to eliminate this problem of availability of funds.

Mr. HENNESSEY. That is right, Mr. Ramey.

Senator ANDERSON. What I am trying to get to, and maybe you can explain it, is this: When we were considering the original legislation, efforts were made to get us to expand it outside the United States. The Congress rejected them; whereupon the AEC said: "Well, what difference does it make what the Congress does? We will do it by ourselves." That is what I want you to explain to me.

Mr. OLSON. Well, one thing is clear. We could not extend it to these licensees. And that is half of the picture.

Are there any other explanations in answer to the Senator's question, Mr. Hennessey?

Mr. HENNESSEY. In some cases it was an essential condition of being able to reach contractual arrangements with a contractor that he received this protection.

Mr. RAMEY. We were not thinking then of the Antarctic reactors, which is one of your first examples of extending this outside of the United States.

Mr. HENNESSEY. That is right. Since the enactment of the bill, that is one of the earliest cases.

Representative PRICE. Is this the area where you have made the extensions? Just in reactors that we built for military purposes in certain sections of the world?

Mr. HENNESSEY. There have been one or two cases where a contractor was doing design work, research and design work, directed toward construction of reactors for use outside the United States.

Representative PRICE. When you say "outside the United States," in these specific instances, what are you talking about?

Mr. HENNESSEY. Well, one example is the maritime gas cooled reactor program, which is directed toward the design of ships, which, of course, would be used outside the United States.

Senator ANDERSON. Well, was there not a request that we broaden the coverage to incidents outside the United States when the original bill was under consideration?

Mr. HENNESSEY. It certainly was considered. I do not know who requested it, Senator.

Senator ANDERSON. And did not the Congress reject it?

Mr. HENNESSEY. Yes, sir; the Congress did reject it.

Senator ANDERSON. What I want to know is: How come the Commission can do without legal authority what the Congress has refused to give it legal authority to do? If that is so, we do not need to do anything, do we? Because you will just pass a regulation.

Mr. HENNESSEY. Senator, prior to enactment of Price-Anderson, the Commission had executed indemnity agreements that were not limited to accidents occurring within the United States. The act recognized that the authority given by section 170 d. was in addition to any other authority that the Commission previously had.

Representative PRICE. What legal authority did the Commission previously have?

Mr. HENNESSEY. The Commission since 1947 has been entering into indemnity agreements under its authority to make contracts. These, of course, were limited by the requirement that we not commit ourselves beyond available funds.

Senator ANDERSON. Beyond what?

Mr. HENNESSEY. Beyond the availability of appropriated funds.

Senator ANDERSON. In these contracts overseas, have you committed yourselves beyond the availability of funds?

Mr. HENNESSEY. No, sir; we have not.

Senator ANDERSON. How have you limited it?

Mr. HENNESSEY. By an express condition in the indemnity agreement that the obligations of the Government were conditioned upon the availability of appropriated funds.

Mr. OLSON. This is a matter that has a great deal of history. As Mr. Hennessey says, it has been going on since 1947—these contracts—and the industry found it quite unsatisfactory to be limited to the availability of funds.

Senator ANDERSON. The industry people have been writing us telling us what they need. I do not see they need a thing. You are in good shape.

Mr. OLSON. Well, Senator, I beg to differ with you. I think I would feel much better to have a Price-Anderson agreement if I were running a reactor at Antarctica.

Senator ANDERSON. We are not worrying about how people feel, but how they are protected.

Mr. OLSON. I had reference to an assumed state of protection, imagining that I was in the business.

Representative PRICE. Proceed, if you will.

Mr. OLSON. One difficulty is that in case the convention is terminated, it does not provide for continued protection to installations built where the convention was in force. However, the parties are aware of the problem, and we believe that a satisfactory resolution may ultimately be realized. This could be accomplished either through national legislation or modification of the convention at some later date.

A convention drafted by experts from the six Euratom countries is in an advanced state of preparation. At the meeting of the Euratom Council of Ministers in July, agreement was reached on the principal remaining issue of the formula for apportioning the financial contribution among the signatory countries for that portion of the liability coverage (between $70 million and $120 million) to be provided jointly by the signatories.

Drafting will now be completed by the Committee of Experts and it is hoped that the draft can be circulated to all signatories of the OEEC convention in September, with a view to allowing them to determine their interest in adhering to the Euratom convention. The convention presupposes the simultaneous or previous coming into effect of the OEEC convention. Its primary purpose is to provide from public funds compensation for damage, up to a limit of $120 million, which exceeds the limits prescribed in the OEEC convention. We hope that both the OEEC and the Euratom conventions will come into effect in 1962.

The International Atomic Energy Agency is attempting to prepare an international convention concerning civil liability for land-based reactors which would be both adequate and acceptable on a wider than regional basis. Difficult problems are inherent in such an attempt, in view of the wide divergences that exist in the economic positions, in the status of nuclear development, and in the legal sys-

tems of the various nations of the world. The United States has supported the preliminary work that has been done by the IAEA on this convention. A revised draft, prepared in May 1961, by an intergovernmental committee which included the United States, is to be circulated to all member governments for consideration.

An international convention applicable to maritime reactors was drafted at a diplomatic conference in April 1961, in Brussels at which some 50 countries were represented by official delegations and a number of countries and international organizations were represented by observers. This draft convention is being sent to governments for consideration. The tentative plans are for a signing conference to be called for January 1962. The convention generally conforms to the views of the United States on such a convention except that a significant problem is raised by inclusion of nuclear warships in the coverage of the draft convention.

With regard to national measures in this field, legislation has been enacted in the United Kingdom, the Federal Republic of Germany, Switzerland, Sweden, and Japan. Furthermore, such legislation is before the Philippine Congress, and is in various stages of preparation in Italy, France, Austria, Spain, Norway, Denmark, the Netherlands, Israel, and Venezuela. A number of other governments have reported that the problem is under active consideration.

The Government of Belgium is considering legislation which would provide the supplier of the Belgian power reactor (BR–3) with indemnity against nuclear liability, thus clearing the way for startup of the reactor. We are hopeful that this legislation will be passed in the near future.

Maritime Indemnity Problems

NS "Savannah" foreign acceptance agreements

Designated foreign nuclear, maritime, and public health officials of Belgium, Denmark, France, Germany, Greece, Italy, Norway, The Netherlands, Portugal, Spain, Sweden, and the United Kingdom have met with Maritime Administration and AEC staff to work out acceptance agreements for the NS *Savannah*. In general, negotiations are progressing satisfactorily on matters related to general operating conditions, safety evaluation, and inspection. Liability provisions for an agreement with Germany have been tentatively agreed upon at the staff levels. Negotiation of liability provisions for agreements with the Netherlands, Greece, and Norway are at an advanced stage. The United Kingdom liability position remains unchanged from that described in the Commission's fourth annual report on its indemnity operations, dated March 31, 1961. The conclusion of acceptable indemnity arrangements continues to present problems, which we hope can be resolved through mutual effort during the months ahead.

Statement on H.R. 5215 and S. 1144

The Commission was requested to comment on H.R. 5215 and S. 1144. On June 29, 1961, the committee received testimony on these bills from witnesses representing the owners of potash industry properties located in New Mexico near the site selected for plowshare Project Gnome. This statement reflects the comments of the Com-

mission on these bills which were furnished the committee by letter dated July 14, 1961.

S. 1144 and H.R. 5215 are identical bills the primary purpose of which is to make the United States liable without proof of negligence or a wrongful act for damage from a nuclear incident "which occurs in the course of the conduct of any activity of the Commission involving the deliberate underground detonation of a nuclear explosive device."

Incidentally, Mr. Chairman, might I ask: I understand there is a substitute. Maybe it is pointless to go over this.

Representative PRICE. I was about to ask you about the substitute, because of objections from the Department of Justice to S. 1144 and H.R. 5215. A substitute was drawn up. Has the Commission had an opportunity to look at the substitute?

Senator ANDERSON. Do I understand the Commission does not know about it?

Mr. OLSON. Does not know about——

Senator ANDERSON. The substitute.

Mr. OLSON. I saw it last night. I have been out of town, Senator. The Commission has looked at it, and I am advised that the Commission is amenable to the substitute.

Senator ANDERSON. Was it not worked out with the counsel for the Commission?

Mr. OLSON. Yes.

Senator ANDERSON. That is what I thought.

Mr. OLSON. This statement was prepared before it was worked out, however. I think the statement was prepared 2 days ago, and I believe the bill was worked out yesterday. And in the interest of saving time, I would like to just skip over this portion and come to the substitute, which the Commission does support.

Representative PRICE. Are you prepared to testify on the basis of the substitute?

Mr. OLSON. One moment, please.

I am advised that this did not get Bureau of the Budget clearance yesterday afternoon.

Senator ANDERSON. Do you see any point in your testifying on S. 1144, then?

Mr. OLSON. Pardon?

Senator ANDERSON. Do you see any point in incorporating testimony on S. 1144? It is dead as it can be.

Mr. OLSON. I think that is probably right. I think it might serve some useful purpose if my statement were put in the record to review what the situation was day before yesterday, because this may come up again, and it may be useful to preserve this for the record. If I could introduce that statement into the record, I think it would be useful.

Senator ANDERSON. You say the Bureau of the Budget has not passed on it yet?

Mr. OLSON. On the substitute? I am just advised that they have not given us authority to concur. However, in the absence of instructions to the contrary from them, the Commission views this very favorably.

Senator ANDERSON. I was going to say if they have not taken a stand on it, you ought to feel free to express yourself. I of course am

one who has never liked the Bureau of the Budget saying what is the program of the President. This at least is the program of the President's brother; is it not?

Mr. OLSON. There was quite a flurry of dust in the tort claims section, I guess, with respect to 1144.

Senator ANDERSON. Somebody down in the Bureau of the Budget attempts to pass on what two Cabinet officers do plus people from the Atomic Energy Commission.

Mr. OLSON. It seems to me a little hard to justify a double standard, Senator, one for Uncle Sam and one for the private citizen. So I personally feel very strongly the single standard has its application here.

Senator ANDERSON. Now you have got me confused. In this instance, which is Uncle Sam and which is the private citizen?

Mr. OLSON. Well, the proposed bill would put the potash miners in the position where they could sue Uncle Sam or his contractors and have the same potential of recovery as though they were suing the private citizen; because this would remove the various defenses that would be raised, such as sovereign immunity and special standards under the Federal Tort Claims Act, and so forth.

Senator ANDERSON. Do you feel the defenses ought to be retained, then?

Mr. OLSON. They ought to be removed. If by causation they show we damage their property, I think we should pay under the law of the State, just like a private citizen.

Senator ANDERSON. I have many times said that not being a lawyer I speak very freely on all these legal points; but in this particular instance the Atomic Energy Commission is forewarned that the mines might come in with a claim. The Atomic Energy Commission is going to make measurements. It is going to have the most delicate recording devices inside the mines, so that it can come into court with a very carefully prepared defense and say: "We did not disturb this formation. We did not cause this rock to fall. We know how much vibration there was as a result of it."

I think the Government is in good shape.

Mr. OLSON. I think we are, too.

Senator ANDERSON. I really do. I could not commend the Atomic Energy Commission more highly than I can for the preparations they have made for this particular shot. I think they have done everything to set up a very good defense. And I think that is proper. And having done that, however, I think then we ought to say to the mines: If there can be some damage proved, and you can tie it directly to the explosion, we are not going to require that negligence be proved as to the way the shot was fired.

I am very happy this revised bill is moving forward. I saw nothing wrong with the other bill. The Atomic Energy Commission says there is not a chance in the world of there being any damage. Therefore, there should not be a chance in the world of any recovery.

Representive PRICE. Mr. Olson, could you comment on the difference between the substitute bill and the previous bill? What is the difference between the substitute bill and S. 1144 and H.R. 5215?

Mr. OLSON. The difference in a legal sense is that S. 1144 creates an absolute liability on the part of the Government; whereas the substitute bill simply deprives our contractors of any defenses that might flow from their municipal, State, or Federal character.

Mr. RAMEY. That was because they were worried about the University of California.

Mr. OLSON. Yes. And also we were worried about some cases that showed a contractor who did as his Federal contractor directed him to do and was held not to be liable. He sort of received a sort of umbrella protection of the sovereign; to provide against both of these situations.

Representative PRICE. Do you believe that this bill would be satisfactory to the Commission contractors in Project Gnome? The substitute bill?

Mr. OLSON. We had a tentative indication that it was satisfactory yesterday, but we have a telegram from the University of California this morning that indicates that they will not be able to advise us until they meet with the board of regents on Friday.

But in my own view, this should be satisfactory to them. After all, they incur no liability under it.

Senator ANDERSON. I think you people have done a very fine job in going further, almost, than they might have been required to go. They have cooperated with the people down there in every way, and have tried to reassure them on every count that they are going to make an absolute check so that they will know exactly what took place. I think it is commendable and will help very much in the future program we may have for the peaceful uses of atomic energy. I think it will also help in the seismic improvement program.

Mr. OLSON. Thank you very much for those kind words. I think when you work for the Government, you have an obligation to see that justice is done, and not just to be an advocate.

Representative PRICE. I understand Mr. Graham Claytor, representing the potash mining companies, is here in the room. I wonder if he would care to comment on the substitute proposal.

STATEMENT OF W. GRAHAM CLAYTOR, JR., ATTORNEY, COVINGTON & BURLING

Mr. CLAYTOR. Thank you, Mr. Price.

My name is Graham Claytor, Jr., 701 Union Trust Building, Washington. We are Washington counsel for the International Minerals & Chemical Corp., the potash company whose mining properties are closest to Project Gnome.

Now, we are in agreement that the substitute bill is satisfactory to accomplish the purposes of the original S. 1144 and should be substituted. We found that the Department of Justice had serious reservations about the original bill, particularly about some of the specific provisions it contained, because they might establish a precedent in other areas.

We worked closely with lawyers in the Department of Justice and with counsel for the Commission over the last 2 weeks to see if we could not come up with a substitute that would accomplish the same purpose and yet would meet the objections.

I understand—and I am quite sure that I am correct—that the Department of Justice now has no objection whatever to the substitute bill. As a private citizen, of course, I know nothing about the posi-

tion of the Bureau of the Budget, but it was my understanding that the Bureau of the Budget's original objection was based on the Department of Justice's objection. So I feel fairly confident that any difficulty that the executive department has with this bill has now been removed.

Now, I am authorized also to say that the other six potash companies who were listed in the testimony of Mr. Nelson White, given before the Subcommittee on Legislation on June 29, are also in agreement that the substitute bill is satisfactory, and should be substituted for S. 1144.

Representative PRICE. Mr. Ramey of the staff has some questions.

Mr. RAMEY. Under this revised bill, the substantive requirement of absolute liability is removed. However, under common law in the State of New Mexico, it is pretty well established that a contractor is absolutely liable?

Mr. CLAYTOR. The substantive law of New Mexico has been settled—the State law in New Mexico—that one who is responsible for an intentional underground explosion is absolutely liable, without negligence, for the consequences which result from it. This is correct.

Mr. RAMEY. And then this bill would take away any procedural means of avoiding liability so that it pretty well accomplishes almost the same thing as the original bill?

Mr. CLAYTOR. We think it accomplishes essentially the same purpose as the original bill. It does eliminate the special defenses which a contractor might have because he is a Government contractor and because he is a state agency. And with the elimination of these special defenses, we feel that we are in as good a position to recover as we would be if a private corporation, like Union Carbide or the Du Pont Co. were, as a project of their own, putting off this explosion. And that is all we ask.

Senator ANDERSON. Now, you speak for the Potash Co. of America? United States Potash? Duval?

Mr. CLAYTOR. Yes, sir. All of the six additional potash companies that were listed in Mr. White's testimony on June 29.

Representatives PRICE. Will you also list them with your statement here this morning?

Mr. CLAYTOR. Yes, sir. Just one moment. I have the list of the companies.

These companies are the United States Borax & Chemical Co., the Potash Co. of America, Duval Sulphur & Potash Co., Southwest Potash Co., National Potash Co., and Farm Chemical Resources Development Corp., as well as the company for which I am counsel directly, International Minerals & Chemical Corp. We have been authorized to say that these other companies join International Minerals & Chemical Corp. in this position.

Senator ANDERSON. That covers every producer of potash in the area at the present time?

Mr. CLAYTOR. It is my understanding that it does. Yes, Senator.

Representative PRICE. Senator Anderson and Mr. Morris as sponsors of this legislation, do you think that covers this subject?

Senator ANDERSON. Yes, I think as soon as the Bureau of the Budget reports, what we could do is just substitute this for the bill already introduced and report it favorably to the Senate.

Mr. OLSON. Mr. Chairman, I would like to submit for the record a technical statement of Dr. Beers.

Representative PRICE. Without objection, it will be received for the record.

(The technical statement of Dr. Beers follows:)

DISCUSSION OF THE TESTIMONY OF LEWIS B. BROWDER AND L. DON LEET IN SUPPORT OF S. 1144 AND H.R. 5215

(By Roland F. Beers)

In order to bring the testimony given before this committee by Messrs. Browder and Leet into the discussion which is to follow, it is desirable to state the problem in somewhat more specific terms than those given previously.

1.0 Statement of problem

The primary objective is to predict the probability of damage to properties of the potash companies which may result from the Gnome shot. To attain this objective, three principal factors must be considered:

1.1 Amplitude and form of shock waves generated by the shot.

1.2 Effect of wave transformations by inhomogeneities and discontinuities in the wave paths from the shot to the targets.

1.3 Response of the targets to the impressed seismic waves.

These factors will be considered in order.

1.1 Amplitude and form of seismic waves generated by the shot

The amplitude of seismic waves arising from the shot is determined by the fraction of the total energy transformed into motion of the ground and propagated to distant targets. Thus it is necessary to integrate the partition of energy from the time of its release. The process is nonlinear, being determined by the physical properties of the shot medium as a function of the overpressures developed in the course of the shock reaction. One feature of a nuclear reaction distinguishes it from high explosives: The overpressures and the fraction of energy lost in heat are very much greater. Employing the equation of state of the shot medium, together with the laws of the conservation of energy, mass and momentum, it is possible to compute the overpressure as a function of distance from the shot.

At each successive radius, a declining percentage of energy is converted into "waste heat," and thereby lost to the development of seismic waves. From the hydrodynamic energy remaining at each distance, the shock wave is propagated forward at a declining velocity, ranging from supersonic to slightly subsonic as the pressure falls to the ambient value. The computation of overpressure as a function of distance then leads to the determination of particle velocity at each radius. From these tables the maximum amplitudes of seismic waves can be computed.

1.2 Effects of wave transformations

Seismologists recognize the phenomena of reflection, refraction, and diffraction which may occur in the path of a seismic wave as it travels from one point to another in a layered medium. Under special conditions it is possible that the observed amplitudes at some distance from the source may exceed those in homogeneous media. It is therefore important to analyze each case and to determine the effects which may result from such phenomena.

The stratigraphy of the rocks in the Nevada test site has been, to some extent, determined through geologic mapping. To greater depths the travel times of seismic waves have revealed additional stratification. At each formation interface it is important to determine the effect on wave form and amplitude.

For the Gnome shot it is interesting to note the possible channeling of seismic waves in the salt beds. The velocity of seismic waves in salt, about 14,500 feet per second, is lower than that of the overlying and subjacent formations, 16,000 and 19,000 feet per second respectively. For frequencies greater than about 10 cycles per second, seismic waves may be trapped in the salt, thus exhibiting anomalously large amplitudes for their distance from the source. This and other similar phenomena must be investigated to determine the amplitude of waves arriving at the targets.

1.3 Dynamic response of targets

The reliable prediction of seismic effects on targets involves, first, the seismic wave characteristics at the target, and, second, the response of the targets to these waves. Prediction of the response of structures to earthquake waves is an established procedure. It has been applied successfully in areas of high seismicity. The analysis of targets involved in the Gnome area offers no unusual problems. The procedure is technically more involved than reference to an arbitrarily selected figure of acceleration. As will be shown later, the use of acceleration alone as a guide to damage is considered unreliable. What is intended here is to point out that the dynamic response can be employed to provide answers to the questions of damage from the Gnome shot, provided the requisite information is obtained.

2.0 Summary of procedure

We have considered the methods used to estimate the probability of damage from the shot, Gnome. Three steps have been involved: (1) Computation of overpressure and particle velocity from the shot out to distances of interest; (2) analysis of the seismic wave paths, to determine possible effects of the geology on waves; (3) determination of the response of targets to the seismic waves.

These steps are time-consuming, but straightforward. Machine computers have been used for problems solved to date. The results of this work have been consistent with observed effects in the Nevada test site, Operations Plumbob and Hardtack. In obtaining solutions of these problems, it has been possible to develop reliable procedures which have been applied to the Gnome shot.

3.0 Prediction of the results from the Gnome shot

The overpressure and particle velocity from Gnome have been computed out to the location of the International Minerals & Chemical potash working, 8.6 miles distant. Since other workings are contemplated in the future at a distance of about 3.75 miles from the Gnome site, values have also been computed for this point. The results are given in the table below.

Distance		Maximum overpressure bars	Maximum particle velocity cm. per sec.	Maximum particle acceleration g
Miles	Meters			
3.73	6,000	10.2	6.5	0.0092
8.6	13,840	3.8	.75	.0012

4.0 Discussion or results

The values of pressure, particle velocity, and acceleration given above are so low, it is inconceivable that damage to property will result from the Gnome shot. One figure illustrates the situation very well; the maximum radius where salt will be fractured by the shock wave is about 600 feet.

Since these results are so different from those given in exhibits I to IV, it may be helpful to review the mechanisms which lead to the stated conclusion. The results are likely to come as a surprise when noted for the first time. One reason is that shock wave phenomena fall outside everyday experience. We are likely to be led by our "commonsense" into a feeling for effects. In particular, the frequency occurrence of linear relationships is likely to lead our intuition astray. Consequently, the results of the nonlinear processes involved here stand out in contrast with those we feel likely to occur.

There is one very important factor which accounts for the small amplitude of seismic waves arriving at the target. This is the large amount of heat lost to the propagation of wave energy. At pressures of the order of megabars, the waste heat accounts for a major part of the total energy. At a distance of 1,400 feet from the Gnome shot, it is estimated that less than one-third of 1 percent of the total energy is left for further propagation. Losses along the remainder of the path to the target account for still further reduction.

5.0 References and acknowledgements

The foregoing remarks summarize a very large amount of published information. The list of references is too great to reproduce here. There is one publication which summarizes the field very well: "Proceedings of the Second

Plowshare Symposium," part I, Phenomenology of Underground Nuclear Explosions, May 13–15, 1959, San Francisco, Calif., Lawrence Radiation Laboratory, University of California, and AEC–San Francisco Operations Office.

Papers in this symposium give the basic data on underground nuclear explosions at the Nevada Test Site, Operations Plumbob and Hardtack. In addition, analyses of these data are given, and exposition of the procedures used to arrive at the stated results. By comparing these results with the measurements made in the two series of tests, 1957 and 1958, it is possible to judge the adequacy of the methods developed in these papers.

In addition to this information, other data have been obtained from the Cowboy tests in salt mines of Louisiana. These and other data on the properties of salt (halite) have been used in the computations reported here.

It adds to the significance of these methods to note that practically identical results for the overpressure as a function of distance were obtained by independent investigators. This and many other investigations reported in the literature confirm the usefulness of the methods which have been used.

6.0 Analysis of results given in the exhibits

Previous testimony before this committee ended in the conclusion that no prediction of the seismic effects of the Gnome shot can be made for lack of information. The results given in this report indicate that, by use of more comprehensive methods of analysis, the existing data can be used to advantage. Confirmation of this point may be found in the large number of references which report investigations of the phenomena of the Gnome shot.

It may be of value to examine the evidence reported in the exhibits and to see if they throw additional light on our understanding of the problem. Exhibits I to IV have one feature in common in the improper application of scaling laws to nonlinear phenomena. The discrepancies among the results given in these exhibits show that judgment cannot be based upon them as to the probability of damage by the Gnome shot.

The results given in exhibit V do not apply to the question of damage to the properties of the potash companies from shot Gnome. It will be noted that this exhibit deals with elastic wave measurements made at a distance of 180 kilometers from the Nevada shots. A final statement by the authors of this exhibit is given in the UCRL–5675 reference quoted above:

"It follows that the acceleration at close-in distances is independent * * * of the energy of the explosion."

The testimony contains an interesting item on criteria of damage which may be considered here. Referring to exhibit IV the testimony states:

"* * * a chart which indicates that acceleration is a reliable criterion of damage capability. Below 0.1 g units, damage is unlikely. Acceleration values between 0.1 g and 1.0 g must be looked upon as dangerous while accelerations above 1.0 g would be certain to produce damage. The index of damage here is related to the failure of plaster walls in buildings." (Technical addendum, p. 11.)

In the stenographic transcript of the hearings, page 48, Professor Leet makes the following remarks:

"* * * I went through this whole preparation of technical data of Mr. Browder and concur in it fully * * *"

I should like to draw your attention to excerpts from a book written by Professor Leet, published by the Harvard University Press in 1960 and entitled "Vibrations From Blasting Rock." After explaining the relations between particle displacement, velocity, acceleration and energy, Professsor Leet states:

"The trouble lies entirely in the inadequacy of acceleration as a criterion of damage." Professor Leet illustrates his point by comparing the accelerations observed in walking, in a dynamite blast and in an earthquake. He then gives the energy in these three forms of motion and observes that:

" * * * the maximum acceleration, hence the maximum force, caused by the earthquake was only 2.8 times that computed for the quarry blast, but the maximum kinetic energy was 450 times as much. The blast vibrations did no damage of any kind, but the earthquake vibrations did a great deal of damage."

Professor Leet goes on to say:

"Observations and computations of this kind have led to the conclusion that the best guide to damage-causing possibilities of vibrations is the energy they are found to possess." (pp. 95–105.)

To summarize the portions of the testimony quoted above, we may say that the evaluation of damage criteria must rest upon the details of each case. If scaling laws are to be used, proper attention must be given to the principles of similarity which apply. Failure to observe this rule has led to the discordant results presented in the exhibits.

BIOGRAPHICAL OUTLINE

Roland F. Beers is a consultant in geology and geophysics. He received the degree of electrical engineer from Rensselaer Polytechnic Institute, studied at the Harvard Graduate School of Arts and Sciences in geology and geophysics and received the doctorate in geology from Massachusetts Institute of Technology in 1943. He has been professor of geophysics and head of the Department of Fuel Resources at RPI. For many years he has been active in exploration for petroleum and minerals in the United States and Canada and has traveled extensively in Europe. His services have been employed by the Atomic Energy Commission, the U.S. Army, Navy, and Air Force and the Department of the Interior as consultant and contractor on geological and geophysical problems. He has conducted extensive exploration programs for the petroleum industry and during recent years, in the search for strategic minerals in the United States and Canada. In all these efforts, use has been made of geology, geophysics, and modern methods of processing large quantities of data. Dr. Beers is a member of many professional societies and has contributed to scientific periodicals. He is a member of the Society of Sigma XI, Eta Kappa Mu Association, and Tau Beta Pi Association. He is a fellow of the American Academy of Arts and Sciences, the Geological Society of America, and the American Association for the Advancement of Science.

1957–61: Consultant to U.S. Atomic Energy Commission.

1955–61: President and director, Roland F. Beers, Inc., 447 Pinewoods Avenue, Troy, N.Y. This firm provides management and consulting services in the fields of petroleum and minerals exploration, employing geophysics, geochemistry, and geology, and modern practices in data handling and processing. Equipment is airborne and ground types, developed and manufactured in laboratories of this company through programs of research and development.

1946–56: Partner, Beers & Heroy, Troy, N.Y., and Dallas, Tex. A firm of consulting geologists, geophysicists, and engineers, engaged in contracts for the U.S. Air Force, the U.S. Geological Survey, and the U.S. Atomic Energy Commission. Some commercial engagements. Emphasis on information theory and applications in data processing. Development and manufacture of special computers. Operation of data processing systems.

1948–52: Professor of geophysics and head of Department of Fuel Resources, RPL, Troy, N.Y.

1948–57: Director, Aeromagnetic Surveys, Ltd., Toronto. Director, Canadian Airborne Geophysics, Ltd., Toronto. Director, Hunting Geophysics, Ltd., London, England.

1948–51: Director, W. & L. E. Gurley Co., Troy, N.Y.

1946–48: Lecturer in Geophysics, RPI, Troy, N.Y.

1942–46: Research associate, Department of Geology, MIT, Cambridge, Mass. Consultant, USGS, Department of Interior.

1950–61: Director, Manuafcturers National Bank of Troy, N.Y.

1936–52: President and chairman of the boards, the Geotechnical Companies, 3712 Haggar Drive, Dallas, Tex. Contractors in geophysical exploration, geophysical instrument manufacturers; 1943–45, contractor, U.S. Navy.

1931–36: Supervisor and vice president, Geophysical Service, Inc. (now Texas Instruments), Dallas, Tex. Geophysical contractors and instrument manufacturers.

1928–31: Party chief, Geophysical Research Corp., Tulsa, Okla. Geophysical exploration contractors.

1927–28: Physicist, Submarine Signal Corp., Boston, Mass.

1925–27: Development engineer, Raytheon Co., Cambridge, Mass.

1923–25: Manager, A. S. Beers, Manufacturer, Binghamton, N.Y.

1922–23: Development engineer, Western Electric Co., New York City.

1921–22: Instructor, electrical engineering and physics, RPI, Troy, N.Y.

PROFESSIONAL COMMITTEES

Member, National Research Council Commitee Measurement of Geologic Time, 1945–46.
Member, NRC Committee Seismic Effects of Detonations, 1945–46.
Member, NRC Commitee on Sedimentation, 1947.
Member, NRC Advisory Committee on Geophysics to Office of Naval Research, 1948.
Chairman, Committee on Geophysical Sciences, Research and Development Board, Washington, D.C., 1946–48.
Chairman, Research Project 1, "Clay Minerals," AAPG, 1946–48.
Chairman, Best Paper Award Committee, Society of Exploration Geophysicists, 1946–48.
SEG Representative on Council of AAAS, 1956–60.
Member, Advisory Committee to SMU, Geology Department, 1947.
Consultant member, Research Committee on Surface and Subsurface Exploration, and Dynamic Properties of Soil, ASTM, 1947–59.
U.S. Delegate, International Union of Geodesy and Geophysics, Rome, 1954.
AGI delegate, First and Second International Congresses, Nuclear Engineering and Science, 1956, 1957.
Panel on Gravity and Seismology, International Geophysical Year, 1955–59.
Member, Advisory Committee on Radioactive Mineral Exploration, 1953–56.

CIVIC ACTIVITIES

Member board of trustees, Albany Medical College, Albany, N.Y.
Member board of trustees, First Presbyterian Church, Troy, N.Y.
Member board of trustee, Rensselaer County Historical Society, Troy, N.Y.
Secretary and member board of trustees, Russell Sage College, Troy, N.Y.
President, director, and member executive committee, Troy Community Chest, 1956–58.
General chairman, 1956 campaign, Troy Community Chest.
Director, Troy YMCA.
Director, Troy Rotary Club, 1957.
President, United Community Services, Mohawk-Hudson area, 1958–61.

PROFESSIONAL MEMBERSHIPS

American Academy of Arts and Science (fellow).
American Association for the Advancement of Science (fellow).
Geological Society of America (fellow).
American Association of Petroleum Geologists.
American Ceramic Society.
American Institute of Mining and Metallurgical Engineers.
American Geophysical Union.
Canadian Institute of Mining and Metallurgy.
Dallas Geological Society.
Dallas Geophysical Society.
Geochemical Society.
Institute of Radio Engineers (senior member).
Seismological Society of America.
Society of Economic Geologists.
Society of Economic Paleontologists and Mineralogists.
Society of Exploration Geophysicists.
Texas Society of Professional Engineers.
Society of Sigma Xi.
Etta Kappa Nu Association.
Tau Beta Pi Association.

CLUBS AND SOCIETIES

Albany Institute of History and Art
Brook Hollow Golf Club, Dallas, Tex.
Cosmos Club, Washington, D.C.
English-Speaking Union
Harvard Club of Boston
MIT Club (New York City)
Petroleum Club, Dallas, Tex.
Photographic Society of America
Royal Photographic Society, London, England
The Fifty Group
Troy Club
University Club, Albany, N.Y.
Wedgewood Club of Boston (first vice president)

Born: Owego, N.Y., June 6, 1899, son of A. S. Beers and Jessie (Creveling) Beers.

Married: Helen E. Clark of Troy, N.Y., October 29, 1921. Children: Roland F., Jr., and Barbara Helen Langstaff.

Education: Rensselaer Polytechnic Institute, E.E., 1921. Massachusetts Institute of Technology, S.M., 1928, E.E. and math. Harvard Graduate School of Arts and Sciences, 1940–41, geology. Massachusetts Institute of Technology, Ph. D., 1943, geology.

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Mr. OLSON. Dr. Beers is here, if anyone has any question for him, as to the likelihood of damage to these mines. He is an expert in shock reaction to a blast such as this.

Representative PRICE. I think not.

Senator ANDERSON. Maybe Dr. Beers can tell us what experience he has had with the explosion of nuclear material underground.

Mr. OLSON. I am sure he has not had any experience with that. I am sure his experience is set forth in considerable detail in his bibliography, but if you wish him to come forward, we would be glad to have him do so, Senator.

Representative PRICE. Mr. Beers, would you please come forward?

Senator ANDERSON. I assume, Dr. Beers, that this is in the nature of expert testimony that you have given us on this shot.

Dr. BEERS. Yes, sir. I have examined the evidence which the Commission has collected on numbers of explosion experiments, and have stated the conclusions in the technical abstract which you have in your hands.

Senator ANDERSON. Have you been to the test site?

Dr. BEERS. Yes, I have.

Senator ANDERSON. Have you examined what happened in the Rainier shot?

Dr. BEERS. Yes, I have.

Senator ANDERSON. And on the basis of that and your other studies, you think that this Gnome shot can be safely undertaken without damage to the surrounding property?

Dr. BEERS. Yes, sir. Absolutely.

Senator ANDERSON. Well, since that is my view, you are a good expert.

Representative MORRIS. In your view there is no question that there will not be any damage resulting? There is no chance of any damage?

Dr. BEERS. There is no chance of any damage to the properties of the potash mines.

Senator ANDERSON. I am glad to have that statement.

I would agree with Commissioner Olson that this is the thing to do to try to get a good bill.

Representative MORRIS. There certainly should not be any harm in enacting the legislation, if there is no possibility of any damage occurring.

Mr. OLSON. It just gives the potash people an assurance that I think they are entitled to.

Representative PRICE. Thank you very much, Dr. Beers.

Will you proceed with your testimony, Mr. Olson?

Mr. OLSON. Possible activities of the Commission that would fall within the scope of the bill are underground nuclear detonations in the Plowshare program, the seismic improvement program, and in nuclear weapons testing programs if they should be resumed. As you know, no nuclear detonation has been authorized in any of these programs.

We understand that the bills were introduced to provide a basis for assuring residents and property owners in the vicinity of a proposed underground nuclear detonation that they would be compensated in the event of injury or damage from the detonation. The Commission cannot give such an assurance under existing laws since none of the courses of action available to a person damaged by an underground nuclear detonation provides a guaranteed remedy. For example:

(1) Under the Federal Tort Claims Act an agency of the United States is not liable for damage arising from its activities in the absence of proof of a negligent or wrongful act or omission by a Government employee acting within the scope of his employment.

(2) Under the Price-Anderson Act the Commission may enter into indemnity agreements with its contractors under contracts for the benefit of the United States involving activities under the risk of public liability for a substantial nuclear incident. Public liability is defined by the act as "legal" liability. In connection with any program involving the deliberate underground detonation of a nuclear explosive device, the Commission would expect to enter into Price-Anderson indemnity agreements with the principal contractors engaged in the program. However since the indemnification runs only to the "legal" liability of an indemnified person, it may be possible for the indemnified contractor to prove a defense in an action for damages—a defense such as sovereign immunity to suit; the absence of negligence, if the applicable State law does not recognize strict liability; the fact that the contractor was merely performing a Government contract in accordance with its specifications; or that the Commission and not the contractor was liable for acts of the contractor's employees while they were under the control of the Commission's Test Manager.

(3) Any administrative settlement by the Commission under the Federal Tort Claims Act of claims for damages in amounts not exceeding $2,500 is limited to damage caused by a negligent or wrongful act of a Government employee.

(4) The Commission's authority under section 167 of the Atomic Energy Act to settle claims not in excess of $5,000 is limited to claims for damage produced in the conduct of the Commission's programs for testing atomic weapons. This procedure is, therefore, not available in connection with Plowshare or Seismic Improvement program detonations. However, it should be noted that the omnibus bill recommended by the Commission (S. 2117 and H.R. 7798) which is now before the committee, contains a proposed amendment to section 167 which would extend the Commission's authority under section 167 to settle claims not in excess of $5,000 for damage resulting from detonations of explosive devices in any Commission program. It would also authorize the Commission to recommend to the Congress meritorious claims in excess of $5,000.

A person damaged by an underground nuclear detonation must, therefore, in order to recover, either prove negligence or a wrongful act or omission or overcome any defenses that may be available to indemnified persons.

However, we believe the probability of serious damage from any underground nuclear detonation is remote. The Commission follows the practice of approving the detonation of nuclear devices only after it is satisfied that the detonation can be conducted safely. With respect to Plowshare Project Gnome in which it is planned to detonate a 5-kiloton nuclear device at a dept of 1,200 feet, independent expert consultants recommended by the National Academy of Sciences and retained by the Commission have reported that there is no serious danger of damage to any of the potash mines from a 10-kiloton detonation at the proposed location selected. That report of the Panel stated:

> In general, it is concluded that there is no serious danger of major damage to any of the mines that would result from a 10-kiloton detonation at the proposed location for Project Gnome. The added stresses that will be produced by such a shot are negligible in comparison with those which already occur in the mined areas as the pillars are robbed and the mining operation is completed. The effects that might be reasonably expected from the nuclear shock are probably less than those several hundred feet away from the normal blasting operations daily conducted in the mines. Since these only rarely produce any damage at distances more than a few feet away, it is not expected that the nuclear shock will produce any serious effects. The possibility of a crack or breakthrough from the mine to the surface, causing possible flooding of some of the mined areas, might be of more serious concern. However, it is not considered that this would be a major source of difficulty because of the small motions and accelerations that are involved, and the general large scale of the wavelength of the motions, which is considerably larger than the width of the mined areas, in general. It is, therefore, believed that the possibility of damage to be expected is slight enough that the project should be carried out as planned.

Since that report the yield of the device has been reduced from 10 kilotons to 5 kilotons.

Even though in our opinion the probability of serious damage from any underground detonation is slight and enactment of the Commission's omnibus bill will provide authority to settle claims in amounts up to $5,000, enactment of S. 1144 or H.R. 5215 should allay the concern of residents and property owners in the vicinity of a proposed underground nuclear detonation over their possible inability to obtain compensation for serious damage from a detonation. Enactment of either bill should therefore make programs of the Commission involving deliberate underground nuclear detonations more acceptable to the public.

At the same time, the proposed bills would have the undesirable effect (identified in the letter of the Department of Justice which was furnished the committee with the Commission's letter of July 14) of creating an avenue other than the Federal Tort Claims Act for suits against the Government, by making the United States absolutely liable in a suit in a Federal court for damage arising out of the activities covered by the bills. Generally speaking, statutes authorizing redress, outside the Federal Tort Claims Act, to persons injured or damaged by Government activities provide an administrative remedy, often limited in amount, to be exercised in the discretion of the interested agency, rather than a legal right to be asserted in the Federal courts.

(Section 167 of the Atomic Energy Act is such a provision.) In addition, relief by private bill is available in such cases.

In the above-mentioned letter the Department of Justice stated:

> Inasmuch as the United States is currently liable for the results of negligent or wrongful acts or omissions of its employees pursuant to the Federal Tort Claims Act (28 U.S.C. 1346(b)), it would appear that the principal thrust of the present legislation is to subject the United States to liability in the courts whether the plaintiffs can show negligence or fault on our part or not. The bills establish no criteria or standards for determining the liability provided by this legislative proposal. In addition, there is the incongruity of tacking a Federal consent statute onto a provision of the law which is primarily concerned with the indemnification of independent contractors with the Commission.
>
> The Department of Justice is opposed to the enactment of legislation which would provide for "absolute liability" without the necessity of showing negligence or fault in the Federal courts. In other words, if compensation is to be a matter of grace as distinguished from a provable right, an administrative rather than a judicial remedy should be provided. If it is desired to compensate third parties on such a basis, it would appear that the machinery provided by 42 U.S.C. 2207 which currently authorizes the Commission to settle and adjust claims for any damage can be made available for that purpose.

The Department's letter also indicated several areas in which the bills, in its opinion, should be amended.

We have been advised by the Bureau of the Budget that it strongly recommends against enactment of either bill for the reasons set forth by the Department of Justice.

I have concluded my testimony. If there are any questions, I would be glad to answer them.

Representative PRICE. Mr. Olson, on page 3 of your statement, you state that the Commission has the authority, under the Atomic Energy Act of 1954, to reserve the right to approve the settlement of any claims asserted against the licensee. Section 178 would appear to limit the Commission's right to approve claims to those claims under the agreement of indemnification.

How do you reconcile your position with this provision of section 178?

Mr. OLSON. I would like Mr. Lowenstein to answer that, Mr. Price.

Mr. LOWENSTEIN. Subsection 170 h. in the first sentence has a provision which says that the agreement of indemnification may contain such terms as the Commission deems appropriate to carry out the purposes of this section.

We felt, looking ahead, that it was important, in cases where the Commission has determined that the amount of claims would exceed the amount of financial protection, that we be in a position, by having reserved the right to require approval of payments, to assure that payments were being handled on an orderly and expeditious basis and on a fair basis to the various claimants.

Senator ANDERSON. Could I ask a question?

How far would you carry that theory? If I have an automobile insurance policy that indemnifies me for accidents that may occur, and I run over somebody, and they sue me for a lot of money, do you think I can put in there that the insurance company cannot settle it unless I approve it?

Mr. LOWENSTEIN. No, sir.

Senator ANDERSON. Is this not the same situation?

Mr. LOWENSTEIN. I think this is a different situation, Senator Anderson.

Senator ANDERSON. How?

Mr. LOWENSTEIN. The case that we are talking about is only where the claims will exceed the amount of insurance, so that Government indemnity does become involved. In these cases the insurance companies will essentially be in the position of stakeholders. We would anticipate there would be large numbers of claims having been filed, which would be paid both out of insurance and Government money. And for this reason, we thought that it was important to reserve this right.

I should like to add that we are very close to working this out on a mutually amicable basis with the insurance people in light of an agreed upon system for claims investigation and handling. I am optimistic that within the next few months this will be worked out.

Senator ANDERSON. I am not at all critical of your answer. I think it is a good answer. But it just so happens that in insurance operations once in a while a man is faced with a suit and possibly with a settlement for more than the amount of his insurance protection. And he therefore does have a right. And that is just exactly what I hoped you might answer.

Mr. LOWENSTEIN. That is the situation here.

Senator ANDERSON. I went through a situation of that nature not too long ago, where a person carrying an insurance policy was involved in a very unusual but horrible accident. And the settlement ran beyond what he thought was reasonable coverage, and therefore he had a great deal of interest, because that came out of his own pocket. And in this instance this comes out of the Government's pocket.

Mr. LOWENSTEIN. Yes, sir.

Senator ANDERSON. I think your answer is a very good one, and I am glad you have tried to work it out.

Representative PRICE. On page 5, Mr. Olson, you indicate that the insurance pools have received no claims under their nuclear energy liability policy.

Can you tell us what the experiences have been for the insurance pools which cover private property damage?

Mr. OLSON. Mr. Lowenstein tells me that we have no information on the nuclear property damage.

Mr. NEWMAN. There have been claims under those policies, though, have there not?

Mr. LOWENSTEIN. They have not been brought to my attention if there have been any. I just do not know.

Senator ANDERSON. These would be relatively small claims, then, would they not?

Mr. LOWENSTEIN. I believe they would be. If there were any, they would involve damage to property at the site under property insurance policies.

Senator ANDERSON. I do not know whether it comes within our rights, but I see no objection to asking as to the disposition.

Representative PRICE. We will have insurance people before us, tomorrow, and they will not mind bringing us up to date on their experiences.

As to the proposed amendment to expanded indemnity coverage with regard to incidents outside the United States, what effect would

the pending legislation have on international conventions on nuclear liability?

Mr. OLSON. Well, if they do not move faster than they have been moving in the past 2 or 3 years, it will not have any effect on them.

I really do not think that there is any conflict, Mr. Price.. The OEEC convention is for a small area. It is a law of the place. It is true that our contractors, our manufacturers, do not need an extension of Price-Anderson to an area like that, where you have an adequate limitation of liability and available insurance. It is the limitation of liability, of course, and insurance up to that limitation, that worries them.

All I can say, in answer to your question, is that where there is, if there is going to be—I understand there is no convention in effect at the present time, but if OEEC comes into effect and Euratom comes into effect, and if in the long distant future the international agency gets some sort of a treaty in effect, those areas will not require the extension of Price-Anderson.

Representative PRICE. Has any nation, aside from the United States and aside from the OEEC, done anything on indemnification on their own?

Mr. OLSON. I believe that Germany and some others have.

Mr. KRATZER. I am Myron Kratzer, Division of International Affairs of AEC. There is indemnity legislation in effect in Germany, the United Kingdom, Switzerland, and Japan. In addition, there is legislation under consideration in perhaps half a dozen other countries.

Representative PRICE. They have already been enacted?

Mr. KRATZER. Yes, sir; the four that I first mentioned have enacted legislation. And I think perhaps Sweden has, as well. I will have to check that.

The most parallel legislation is the German, which is very similar to Price-Anderson, and provides for maximum coverage and limitation of liability of $125 million. The amounts involved in the other legislation are considerably smaller, in the range of $5 to $15 million.

Representative PRICE. The German system is somewhat similar to our own?

Mr. KRATZER. It is very parallel to Price-Anderson.

Representative PRICE. With an indemnification of $125 million?

Mr. KRATZER. It provides for absolute liability, but not exclusive liability, on the part of the operator.

Representative PRICE. Do they have a starting point, as we do, before the Government takes over?

Mr. KRATZER. I do not have the answer to that question, sir.

Representative PRICE. The proposal to extend indemnity coverage outside of the United States has been criticized on the ground that as a result of such legislation the U.S. Government would be paying claims to the whole world. Would you comment on this criticism?

Mr. OLSON. That assumes, I guess, that we have damaged the whole world. There would be claims only where we had damaged people, or where someone claimed that we had damaged them, or that our contractors had damaged them.

That is pretty hard to answer; but if our contractors, our U.S. manufacturers, are going to sell their product abroad, they need some protection, some insurance, that there is a limitation to their liability. And they need to have an insurable risk in order to merchandise their wares.

I really do not know any other way to answer that question, Mr. Price.

Mr. NEWMAN. If I may ask a question, Mr. Chairman:

I think the question we are trying to get at was: Does this proposal by Mr. Vogel in your opinion create any potential new legal liabilities, or is it just a provision to assist our contractors?

Mr. OLSON. Well, thank you. It does not create any new legal liabilities. It only undertakes to indemnify against legal liability existing by the law of the place. So it does not create any new liabilities.

Representative PRICE. I am a little confused on the relative situation involved in the *Savannah* indemnity coverage and some of your suggestions that it extend to coverage outside the United States. You go to quite some length on the *Savannah* problem in your statement. What would be the situation with regard to this matter?

Mr. OLSON. You mean the impact of the Vogel bill upon the *Savannah* legislation at the present time?

Representative PRICE. Yes.

Mr. OLSON. Well, we discovered that in the new language we unwittingly left out third parties. Our Price-Anderson, as you well know, indemnifies all persons who may be liable. That would include the contractor, or it would include the licensee or the airplane pilot that flew into the licensee's reactor and caused the damage. Now, the airplane pilot is a third party. He is not a contractor or subcontractor or licensee, but he is a third party. And unwittingly the third party was deleted from the *Savannah* legislation. And we think that probably that should be restored.

Representative PRICE. Would this restore it?

Mr. OLSON. We are recommending or commenting with respect to the Vogel bill that it be left as it was originally.

Representative PRICE. Were there any further questions of Mr. Olson?

Does the staff have any questions?

Senator Anderson?

Mr. Morris?

Thank you very much, Mr. Olson.

(The full text of the AEC's statement follows:)

TESTIMONY OF THE U.S. ATOMIC ENERGY COMMISSION BEFORE THE JOINT COMMITTEE ON ATOMIC ENERGY REGARDING INDEMNITY ACTIVITIES, JULY 18, 1961

INDEMNIFICATION OF LICENSED ACTIVITIES

This statement summarizes the principal developments in the administration of the indemnity program since the committee's hearings held in April 1960. They are discussed in somewhat greater detail in the Commission's report of March 31, 1961, to the Joint Committee, on operations under section 170 of the 1954 act.

Reevaluation of financial protection requirements

As the Joint Committee was informed at the indemnity hearings in April 1960, the Commission, in announcing a comprehensive revision of the financial protection requirements in part 140 in March 1960, also stated its intention to reevaluate those requirements by the end of 1960. The reevaluation study included consideration of the recommendations of the two nuclear liability insurance pools, comments received in connection with those recommendations, and suggestions and views expressed at an AEC industry advisory conference held on October 11, 1960, with representatives of the reactor and insurance industries.

As a result of its study, the Commission issued an amendment to part 140, which increased to 200 percent (from the former 150 percent) the maximum adjustment in the amount of financial protection because of population density in the area surrounding the reactor site. The insurance pools had recommended an increase to 400 percent. No other change was made concerning amounts of financial protection.

The Commission revised the location factor range because its study had indicated the desirability of giving greater effect in the formula to variations in population density.

Adoption of forms of indemnity agreements

With respect to indemnity agreements, the Commission, in March of this year, adopted amendments to part 140 which establish the forms of agreements which the Commission will execute with licensees furnishing financial protection. Before adopting these forms of indemnity agreements, the Commission considered numerous comments and suggestions received from interested members of the public and from participants in industry advisory conferences held to consider the agreements.

By letter dated June 5, 1961, the Ad Hoc Committee on Nuclear Liabiilty and Insurance of the Atomic Industrial Forum made a number of suggestions concerning these definitive forms of indemnity agreement.

With the permission of the committee, I would like to offer a copy of the forum's letter for incorporation in the record of this hearing. Most of the forum's suggestions are editorial in nature; however, there are three suggestions of a substantive nature which are discussed beginning on page 5 of the letter. The Commission has these suggestions under consideration.

Article IV of the form of indemnity agreement provides that the Commission "shall have the right * * * to require the prior approval of the Commission for the settlement or payment of any claim or action asserted against the licensee or other person indemnified * * *." This provision applies in cases only where the Commission determines that the United States will probably be required to make indemnity payments under the provisions of the agreement. NELIA and MAELU have objected to the provision on the ground that they believe it exceeds the Commission's statutory authority; and might interfere with prompt handling of claims.

The provision in question does not require Commission approval, but only reserves to the Commission the right to require Commission approval. The Commission believes it has authority under section 161 and 170 of the Atomic Energy Act of 1954, as amended, to adopt the provision. We expect that this authority would be exercised only in special circumstances and in such manner as to avoid undesirable delay in the settlement and defense of claims and actions. Discussions have been held with both pools looking toward the adoption of an agreement between them and the AEC concerning claims investigations and handling. Such arrangements for claims administration, as finally agreed upon, may very likely provide a basis for composing our and the pools' views on the "right of approval" question.

By notices of proposed rulemaking, which were also published in March of this year, public comment has been invited on proposed forms of agreement which the Commission will execute with those Federal agencies and nonprofit educational institutions who are subject to part 140. Except for changes made because Federal agencies and nonprofit educational institutions are not required to furnish financial protection, the forms of these proposed indemnity agreements are substantially similar to those adopted by the Commission for execution with licensees who furnish financial protection. Only one comment has thus far been received on the proposed forms of agreement.

Indemnification of licensees using unirradiated uranium

We should like, now, to mention two matters which the Commission has under consideration. One study relates to the question whether the Commission should exercise its authority to extend the provisions of the Price-Anderson Indemnity Act to licensees (such as reactor fuel processors and fabricators) who possess and use substantial quantities of unirradiated, enriched uranium. It will be recalled that section 170 of the Atomic Energy Act gives the Commission discretionary authority to require financial protection with respect to licenses for source, special nuclear, and byproduct material. If the Commission should exercise this authority, the act requires that the Commission indemnify the licensee and other persons indemnified from public liability, arising from nuclear incidents, which is in excess of the required level of financial protection.

As an aid in considering the question relating to fuel fabricators, the Commission, by Federal Register notice, published on March 29, 1961, invited public comments from the atomic energy industry, the nuclear energy insurance company, and other interested persons and organizations. Approximately 26 responses are presently under review.

The second matter is concerned with whether indemnity should be extended to licensed users of plutonium, U^{233}, and megacurie quantities of byproduct material.

Proposed legislation

By letter dated April 8, 1959, and again in a letter dated April 15, 1960, the Commission recommended to the Congress the adoption of an amendment to the indemnity provisions of the 1954 act to eliminate coverage of liability for damage to property which is at the site of, and used in connection with, the licensed activity. The proposed amendment was reintroduced as section 3 of the omnibus bill (H.R. 7798, S. 2117) at this session of the Congress. Commission representatives testified in support of this proposed amendment at hearings on the omnibus bill held on June 27 and 29, 1961.

Administration of licensee indemnity

As of June 30, 1961, 51 reactor licensees were indemnified under the provisions of the Price-Anderson Act. These included 15 private organizations; 30 nonprofit educational institutions; and 6 Federal agencies.

The Commission, thus far, has received no claims under indemnity agreements with licensees. Our most recent information indicates that the insurance pools, also, have received no claims under their nuclear energy liability insurance policies.

It may also be of interest to note that the Commission, for the first time, has recently applied Price-Anderson indemnity to a licensed nuclear facility other than a reactor. This is the Martin Co. plant at Quehanna, Pa., in which the company will chemically process irradiated americium containing plutonium. Because the plant will separate small quantities of plutonium, it is a "production facility" as defined in part 50 of the Commission's regulations, and the Price-Anderson Act is, therefore, automatically applicable. Pending determination by the Commission of specific criteria for establishing amounts of financial protection to be required for chemical processing facilities, the amount of financial protection ($3.5 million) for the Martin facility was established, on an interim basis, by relating the facility to a theoretical, fictitious "reactor equivalent." Based on amounts of radioactive material to be present, the radioactive material in a single cell of the Martin plant was considered to be approximately equivalent to the inventory of strontium 90 and iodine in an 11-megawatt (thermal) reactor operated at power for approximately 180 days.

INDEMNIFICATION OF COMMISSION CONTRACTORS

Under the authority contained in subsection 170d. of the Atomic Energy Act, the Commission has entered into indemnity agreements with 46 of its contractors. These agreements cover all of the major AEC installations where production and utilization facilities are operated.

The protection afforded by the Price-Anderson Act and the indemnity agreements offered by the Commission under its authority have found general acceptance among the Commission's contractors. There have been three areas, however, where some contractors and subcontractors have expressed recurring concern as to the adequacy of coverage.

The first of these is the fear expressed by some subcontractors and suppliers that the Price-Anderson indemnity does not cover their liability for damage to property located at the site of indemnified activity. Their concern stems from the language of the definition of "public liability" contained in subsection 11 u. of the Atomic Energy Act. A proposed amendment of subsection 11 u. is included in the Commission's omnibus bill which was the subject of recent hearings before this committee. While the primary purpose of the proposed amendment is to eliminate coverage of liability for damage to property which is located at the site of, and used in connection with, a licensed activity, it will have the secondary effect of making it completely clear that the indemnity agreement of a Commission contractor does cover liability for damage to property which is located at the site of, and used in connection with, a contract activity. The enactment of this amendment should effectively eliminate any cause for concern in this area.

As the Commission's activities expand into areas outside the geographical limits of the United States, our contractors are being exposed to a growing risk of liability for nuclear incidents that may occur outside the United States. Commission contractors who engage in the aerospace applications of nuclear energy, such as ROVER and SNAP, or who construct or operate Commission reactors in Antarctica or other foreign locations, or who furnish under Commission contract reactor components, fuel elements, design or other technical data for use in foreign reactors—all incur the risk of being held liable for a nuclear incident that may occur outside the United States. The Price-Anderson indemnity does not protect them against that risk.

The committee recently requested the Commission's views concerning a proposed bill submitted to the committee by Mr. Clark Vogel. The bill would amend the Price-Anderson Act to extend its indemnity protection to cover the liability of AEC contractors and their subcontractors, suppliers and carriers, for nuclear incidents occurring outside the United States. The Commission furnished its comments on the proposed bill by Chairman Seaborg's letter of July 8, 1961.

I would like to summarize the Commission's position which is set forth in more detail in Dr. Seaborg's letter. The Commission supports the objectives of the bill proposed by Mr. Vogel. The Commission has already recognized that its contractors are entitled to protection against liability for foreign incidents. Since the protection available under the Price-Anderson Act has been limited to incidents occurring within the United States, the Commission has, in some instances, provided further indemnification against foreign liability, exercising the Commission's general contract authority for this purpose. Due to statutory restrictions on the exercise of this contract authority, the indemnity commitment in these instances must normally be conditioned upon the availability of appropriated funds for its fulfillment. The proposed bill would have the effect of providing to these contractors the assurance of an unconditional indemnification against liability for foreign nuclear incidents arising out of or in connection with their contractual activities. The Commission believes that its contractors should have this additional assurance.

The Commission has suggested some revisions in the specific provisions of the proposed bill. We have suggested that the proposed amended definition of "person indemnified" in subsection 11 r. be revised to provide clearly that the extraterritorial coverage would extend to all those persons who participate at any level in the AEC contractual chain and who may be held liable for a nuclear incident as a result of such activities. We have recommended the addition of a new section 4 to the bill which would assure that the additional coverage would be extended under contractual indemnity agreements now in effect, without the necessity of amending those agreements.

Since submission of our formal comments of July 8, it has come to our attention that the proposed amendment of the subsection 11 r. of the act would have the effect of reducing the scope of the indemnity provided for the NS *Savannah* by Public Law 85–602. The *Savannah* indemnity agreement now covers any person who may be liable for public liability for a nuclear incident connected with the *Savannah* whether the incident occurs within or outside of the United States. Under the proposed amendment, only the Maritime Administration, its subcontractors, suppliers and carriers would be protected in the case of a nuclear incident occurring outside the United States. The Commission believes that the scope of the *Savannah* indemnity coverage should be preserved. We are prepared to furnish proposed revised language that would leave the current status of the *Savannah* unaffected.

In our formal comments of July 8, we pointed out that the proposed amendment of subsection 170 e. would have the effect of requiring, in the case of nuclear incidents caused by U.S. ships such as the NS *Savannah*, that applications for orders for enforcement of the limitation of liability provisions of this subsection be brought in the U.S. District Court for the District of Columbia rather than in the U.S. district court having venue in bankruptcy matters over the location of the principal place of business of the shipping company owning or operating the ship. We informed the committee that, in the interest of uniformity of application of the limitation of liability provisions as applied to liability for foreign nuclear incidents, we believed it desirable that the venue in all such proceedings be established in a single district court, as proposed by Mr. Vogel.

One final area of concern to some contractors has been some doubt as to whether the Price-Anderson indemnity covers damages caused outside the United States as a result of a nuclear incident occurring within the United States. The General Counsel of the Commission, in an interpretation published in the Federal Register on May 7, 1960, stated his opinion that an indemnity agreement entered into under the authority of the Price-Anderson Act indemnifies persons indemnified against public liability for damages caused outside the United States by a nuclear incident occurring within the United States. Notwithstanding this formal interpretation a desire for a clarifying amendment to the act has been expressed.

On June 14, 1960, Mr. James H. Campbell, president of Consumers Power Co., submitted to your committee a proposed amendment to the definition of "nuclear incident" contained in subsection 11 o. of the Atomic Energy Act. The proposed amendment would insert the parenthetical phrase "(within or outside of the United States)" between the words "causing" and "bodily injury" in the statutory definition. While the Commission believes that the formal interpretation of the Commission's General Counsel affords adequate assurance in this respect and that legislative clarification is unnecessary, the Commission would have no objection to enactment of the amendment to subsection 11 o. proposed by Mr. Campbell, if the committee concludes that a clarifying amendment is desirable.

PROBLEMS OF FOREIGN INDEMNITY

During the past year a number of developments have substantially advanced the U.S. objective of attaining adequate international standards to govern civil liability for nuclear hazards.

In cooperation with other U.S. Government agencies, we have actively encouraged several approaches to the problem of providing adequate financial protection to the public, to the operators of nuclear facilities and to the suppliers of nuclear equipment. The desirability of resolving this problem has been recognized also by a number of other nations, particularly in Western Europe and Japan where the problem is of most immediate interest.

Perhaps the most important development of the year was the conclusion and signature of an international convention by 16 members of the OEEC. This convention will go into force upon ratification by five signatories. The convention is generally satisfactory from the standpoint of the United States. One difficulty is that in case the convention is terminated, it does not provide for continued protection to installations built where the convention was in force. However, the parties are aware of the problem and we believe that a satisfactory resolution may ultimately be realized. This could be accomplished either through national legislation or modification of the convention at some later date.

A convention drafted by experts from the six Euratom countries is in an advanced state of preparation. At the meeting of the Euratom Council of Ministers in July, agreement was reached on the principal remaining issue of the formula for apportioning the financial contribution among the signatory countries for that portion of the liability coverage (between $70 million and $120 million) to be provided jointly by the signatories.

Drafting will now be completed by the Committee of Experts and it is hoped that the draft can be circulated to all signatories of the OEEC convention in September with a view to allowing them to determine their interest in adhering to the Euratom convention. The convention presupposes the simultaneous or previous coming into effect of he OEEC convention. Its primary purpose is to provide from public funds compensation for damage, up to a limit of $120

million, which exceeds the limits prescribed in the OEEC convention. We hope that both the OEEC and Euratom conventions will come into effect in 1962.

The International Atomic Energy Agency is attempting to prepare an international convention concerning civil liability for land-based reactors which would be both adequate and acceptable on a wider than regional basis. Difficult problems are inherent in such an attempt, in view of the wide divergences that exist in the economic positions in the status of nuclear development and in the legal systems of the various nations of the world. The United States has supported the preliminary work that has been done by the IAEA on this convention. A revised draft, prepared in May 1961 by an intergovernmental committee which included the United States, is to be circulated to all member governments for consideration.

An international convention applicable to maritime reactors was drafted at a diplomatic conference in April 1961 in Brussels at which some 50 countries were represented by official delegations and a number of countries and international organizations were represented by observers. This draft convention is being sent to governments for consideration. The tentative plans are for a signing conference be called for January 1962. The convention generally conforms to the views of the United States on such a convention expect that a significant problem is raised by inclusion of nuclear warships in the coverage of the draft convention.

With regard to national measures in this field, legislation has been enacted in the United Kingdom, the Federal Republic of Germany, Switzerland, Sweden, and Japan. Furthermore, such legislation is before the Philippine Congress and is in various stages of preparation in Italy, France, Austria, Spain, Norway, Denmark, the Netherlands, Israel, and Venezuela. A number of other governments have reported that the problem is under active consideration.

The Government of Belgium is considering legislation which would provide the supplier of the Belgian power reactor (BR–3) with indemnity against nuclear liability, thus clearing the way for startup of the reactor. We are hopeful that this legislation will be passed in the near future.

MARITIME INDEMNITY PROBLEMS

NS "Savannah" foreign acceptance agreements

Designated foreign nuclear, maritime, and public health officials of Belgium, Denmark, France, Germany, Greece, Italy, Norway, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom have met with Maritime Administration and AEC staff to work out acceptance agreements for the NS *Savannah*. In general, negotiations are progressing satisfactorily on matters related to general operating conditions, safety evaluation, and inspection. Liability provisions for an agreement with Germany have been tentatively agreed upon at the staff levels. Negotiation of liability provisions for agreements with the Netherlands, Greece, and Norway are at an advanced stage. The United Kingdom liability position remains unchanged from that described in the Commission's fourth annual report on its indemnity operations, dated March 31, 1961. The conclusion of acceptable indemnity arrangements continues to present problems, which we hope can be resolved through mutual effort during the months ahead.

STATEMENT ON H.R. 5215 AND S. 1144

The Commission was requested to comment on H.R. 5215 and S. 1144. On June 29, 1961, the committee received testimony on these bills from witnesses representing the owners of potash industry properties located in New Mexico near the site selected for Plowshare Project Gnome. This statement reflects the comments of the Commission on these bills which were furnished the committee by letter dated July 14, 1961.

S. 1144 and H.R. 5215 are identical bills, the primary purpose of which is to make the United States liable without proof of negligence or a wrongful act for damage from a nuclear incident "which occurs in the course of the conduct of any activity of the Commission involving the deliberate underground detonation of a nuclear explosive device."

Possible activities of the Commission that would fall within the scope of the bill are underground nuclear detonations in the Plowshare program, the seismic improvement program, and in nuclear weapons testing programs if they should be resumed.

We understand that the bills were introduced to provide a basis for assuring residents and property owners in the vicinity of a proposed underground nuclear detonation that they would be compensated in the event of injury or damage from the detonation. The Commission cannot give such an assurance under existing laws since none of the courses of action available to a person damaged by an underground nuclear detonation provides a guaranteed remedy. For example:

1. Under the Federal Tort Claims Act an agency of the United States is not liable for damage arising from its activities in the absence of proof of a negligent or wrongful act or omission by a Government employee acting within the scope of his employment.

2. Under the Price-Anderson Act the Commission may enter into indemnity agreements with its contractors under contracts for the benefit of the United States involving activities under the risk of public liability for a substantial nuclear incident. Public liability is defined by the act as legal liability. In connection with any program involving the deliberate underground detonation of a nuclear explosive device the Commission would expect to enter into Price-Anderson indemnity agreements with the principal contractors engaged in the program. However, since the indemnification runs only to the legal liability of an indemnified person it may be possible for the indemnified contractor to prove a defense in an action for damages—a defense such as sovereign immunity to suit; the absence of negligence, if the applicable State law does not recognize strict liability; the fact that the contractor was merely performing a Government contract in accordance with its specifications; or that the Commission and not the contractor was liable for acts of the contractor's employees while they were under the control of the Commission's test manager.

3. Any administrative settlement by the Commission under the Federal Tort Claims Act of claims for damages in amounts not exceeding $2,500 is limited to damage caused by a negligent or wrongful act of a Government employee.

4. The Commission's authority under section 167 of the Atomic Energy Act to settle claims not in excess of $5,000 is limited to claims for damage produced in the conduct of the Commission's programs for testing atomic weapons. This procedure is therefore not available in connection with Plowshare or seismic improvement program detonations. However, it should be noted that the omnibus bill recommended by the Commission (S. 2117 and H.R. 7798) which is now before the committee, contains a proposed amendment to section 167 which would extend the Commission's authority under section 167 to settle claims not in excess of $5,000 for damage resulting from detonations of explosive devices in any Commission program. It would also authorize the Commission to recommend to the Congress meritorious claims in excess of $5,000.

A person damaged by an underground nuclear detonation must therefore in order to recover either prove negligence or a wrongful act or omission or overcome any defenses that may be available to indemnified persons.

However, we believe the probability of serious damage from any underground nuclear detonation is remote. The Commission follows the practice of approving the detonation of nuclear devices only after it is satisfied that the detonation can be conducted safely. With respect to Plowshare Project Gnome in which it is planned to detonate a 5 kiloton nuclear device at a depth of 1,200 feet, independent expert consultants recommended by the National Academy of Sciences and retained by the Commission have reported that there is no serious danger of damage to any of the potash mines from a 10 kiloton detonation at the proposed location selected. That report of the panel stated:

"In general, it is concluded that there is no serious danger of major damage to any of the mines that would result from a 10 kiloton detonation at the proposed location for Project Gnome. The added stresses that will be produced by such a shot are negligible in comparison with those which already occur in the mined areas as the pillars are robbed and the mining operation is completed. The effects that might be reasonably expected from the nuclear shock are probably less than those several hundred feet away from the normal blasting operations daily conducted in the mines. Since these only rarely produce any damage at distances more than a few feet away, it is not expected that the nuclear shock will produce any serious effects. The possibility of a crack or breakthrough from the mine to the surface, causing possible flooding of some of the mined areas, might be of more serious concern. However, it is not con-

sidered that this would be a major source of difficulty because of the small motions and accelerations that are involved, and the general large scale of the wavelength of the motions, which is considerably larger than the width of the mined areas, in general. It is therefore believed that the possibility of damage to be expected is slight enough that the project should be carried out as planned."

Since that report the yield of the device has been reduced from 10 kilotons to 5 kilotons. With your permission we would like to submit for the record a statement proposed by Dr. Roland F. Beer as member of the panel of consultants, commenting on the technical testimony furnished the committee at the hearing June 29, 1961, together with an outline of Dr. Beer's professional background.

Even though in our opinion the probability of serious damage from any underground detonation is slight and enactment of the Commission's omnibus bill will provide authority to settle claims in amounts up to $5,000 enactment of S. 1144 or H.R. 5215 should allay the concern of residents and property owners in the vicinity of a proposed underground nuclear detonation over their possible inability to obtain compensation for serious damage from a detonation. Enactment of either bill should therefore make programs of the Commission involving deliberate underground nuclear detonations more acceptable to the public.

At the same time the proposed bills would have the undesirable effect (identified in the letter of the Department of Justice which was furnished the committee with the Commission's letter of July 14) of creating an avenue other than the Federal Tort Claims Act for suits against the Government, by making the United States absolutely liable in a suit in a Federal court for damage arising out of the activities covered by the bills. Generally speaking statutes authorizing redress, outside the Federal Tort Claims Act, to persons injured or damaged by Government activities provide an administrative remedy, often limited in amount, to be exercised in the discretion of the interested agency, rather than a legal right to be asserted in the Federal courts. (Sec. 167 of the Atomic Energy Act is such a provision.) In addition, relief by private bills is available in such cases.

In the above-mentioned letter the Department of Justice stated:

"Inasmuch as the United States is currently liable for the results of negligent or wrongful acts or omissions of its employees pursuant to the Federal Tort Claims Act, 28 U.S.C. 1346(b), it would appear that the principal thrust of the present legislation is to subject the United States to liability in the courts whether the plaintiffs can show negligence or fault on our part or not. The bills establish no criteria or standards for determining the liability provided by this legislative proposal. In addition, there is the incongruity of tacking a Federal consent statute on to a provision of the law which is primarily concerned with the indemnification of independent contractors with the Commission.

"The Department of Justice is opposed to the enactment of legislation which would provide for 'absolute liability' without the necessity of showing negligence or fault in the Federal courts. In other words, if compensation is to be a matter of grace as distinguished from a provable right an administrative rather than a judicial remedy should be provided. If it is desired to compensate third parties on such a basis, it would appear that the machinery provided by 42 U.S.C. 2207 which currently authorizes the Commission to settle and adjust claims for any damage can be made available for that purpose."

The Department's letter also indicated several areas in which the bills in its opinion should be amended.

We have been advised by the Bureau of the Budget that it strongly recommends against enactment of either bill for the reasons set forth by the Department of Justice.

Representative PRICE. The committee will adjourn until 10 a.m. tomorrow morning, at which time we will resume these hearings with public witnesses.

(Whereupon, at 11:15 a.m., Tuesday, July 18, 1961, the subcommittee was adjourned, to reconvene at 10 a.m., Wednesday, July 19, 1961.)

OPERATIONS UNDER THE INDEMNITY PROVISIONS OF THE ATOMIC ENERGY ACT OF 1954

WEDNESDAY, JULY 19, 1961

CONGRESS OF THE UNITED STATES,
SUBCOMMITTEE ON RESEARCH,
DEVELOPMENT, AND RADIATION,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to notice, in room P–63, the Capitol, Hon. Melvin Price (chairman of the subcommittee) presiding.

Present: Representatives Price, Thomas, and Morris; Senator Pastore.

Also present: James T. Ramey, executive director; Jack R. Newman, professional staff member, Joint Committee on Atomic Energy.

Representative PRICE. The subcommittee will be in order.

The Subcommittee on Research, Development, and Radiation of the Joint Committee on Atomic Energy continues hearings this morning on indemnity.

We shall receive the testimony of representatives of the reactor and insurance industries as to operations under the indemnity provisions of the Atomic Energy Act of 1954. We also look forward to receiving comments of these witnesses on proposed legislation to amend the Price-Anderson Act so as to cover incidents occurring outside the United States. We understand that witnesses testifying this morning may also wish to comment on recent legislative proposals concerning the Commission's liability for underground nuclear detonations.

Our first witness this morning is Mr. D. R. Shoults, of the General Electric Co.

Mr. Shoults, will you come around?

We are glad to have you with us again, Mr. Shoults.

STATEMENT OF D. R. SHOULTS, REPRESENTATIVE, ATOMIC DEVELOPMENT, GENERAL ELECTRIC CO.; ACCOMPANIED BY E. T. MAHER, COUNSEL, ATOMIC DEVELOPMENT, GENERAL ELECTRIC CO.

Mr. SHOULTS. Thank you, Mr. Price.

Representative PRICE. You and I have been fighting a losing battle on the nuclear-powered airplane. Maybe some day our judgment in that cause may be vindicated.

Mr. SHOULTS. I hope so, sir.

I am D. R. Shoults, representative, atomic development for General Electric Co. I am accompanied here this morning by Mr. E. T. Maher, counsel, atomic development, General Electric Co.

I am here to speak in support of the proposal for an amendment to the Atomic Energy Act to enable the Atomic Energy Commission to indemnify contractors against liability for nuclear incidents involving U.S. Government activities which occur outside of the United States.

Two proposals are before the committee. One would extend the Price-Anderson definition of "nuclear incident" to embrace incidents outside the United States for the purpose of contractor indemnification.

The second would additionally enlarge the authority of the Atomic Energy Commission to enable it to enter into indemnification agreements with contractors of all Government agencies.

Generally, our position is this:

(1) The first proposal for coverage of contractors for offshore incidents involving Government instrumentalities would provide an urgently needed solution to a pressing current problem. We urge the committee to take action to provide this coverage.

(2) To be fully purposeful for contractor protection, the covered offshore incidents should include those involving licensed agencies of the Government.

(3) The Atomic Energy Commission should also be authorized to provide indemnification for those Department of Defense joint projects which are not now being covered.

A number of comments on the drafting of the proposals before the committee are in an appendix which has been filed with this statement.

DOMESTIC GOVERNMENT ACTIVITY

The provisions of the Price-Anderson Act as they relate to private licensees are well adapted to providing the unbrella-type indemnity coverage which was contemplated by the Congress when it enacted this statute. In the main, in this area the hazard remains resident at a site, or in transit between sites.

The contract activities, on the other hand, are in major portion devoted to work which entails the creation not only of a hazard at a site, but also of highly mobile, uninsurable hazards, worldwide in range, which continue to exist long after work on the contract under which they were created is completed.

We believe that the provisions of section 170d were intended to afford ample authority in the Commission to assure that any hazard of a substantial domestic nuclear incident which comes into being in the course of work under any Commission contract or joint project could be adequately covered by an agreement of indemnification. This coverage would be without regard to the time or the place within the United States of the occurrence of the incident.

As in the case of licensees, we believe it was contemplated that the contractor indemnification authority of the Commission would be adequate to extend the statute's umbrella-type coverage to any person who might become liable for any domestic nuclear incident which is made possible by work under a Commission contract or joint project.

Moreover, we think it reasonable for the law to have been so intended to assure that the objectives of public and contractor protection would, to the extent of Commission-created nuclear hazards, be realized.

While we believe that existing legislative authority was intended to be ample in this area, this is not to say there have been no problems in the administration of the present law. This is referred to in our accompanying memorandum. We urge the committee fully to review this area so as to be sure that the full protection required to cover the hazard is in fact made applicable.

GOVERNMENT ACTIVITY ABROAD

The most significant gap in present law is that involving nuclear incidents in connection with Government instrumentalities outside the United States.

When the Price-Anderson Act was under consideration, appreciable study was given to the problem of the potential liability of Government contractors for nuclear incidents occurring outside the United States. Action on the problem was deferred at that time. As testimony in the 202 hearings earlier this year indicated, and as the committee has recognized, a reconsideration of this problem is now timely.

The significant change in the situation since 1957 has been the steady expansion in governmental activities which involve risks of a foreign nuclear incident. Upon the basis of the publicly known activities of our Government, current and projected, a foreign nuclear incident could involve a broad range of governmental nuclear gear sent abroad for both scientific and defense purposes.

Reactors are in place, and projected for installation, in the Antarctic and Greenland; a nuclear space propulsion system is planned; there are devices for auxiliary nuclear space power, one of which has already been placed in orbit; and our fleet of nuclear naval vessels is growing rapidly. The problems associated with these vessels were made quite clear in the testimony before this committee on the naval reactor program and the Polaris missile system on April 9, 1960, last year.

Moreover, it was made abundantly clear, as I understand it, by the 1959 report by the Harvard Law School on the International Problems of Financial Protection Against Nuclear Risk, that under the legal principles applicable in most foreign countries these activities entail the assumption of grave risks of liability for a nuclear incident abroad. That study also establishes that we are dealing here not only with those cases in which a contractor may be sued in a foreign court. The fact is that in the event of a foreign nuclear incident involving a U.S. Government project, contractors may be reached through U.S. courts, as well as through those abroad, with the strong probability, in either case, that liability will be determined by the law of the place where the injury or damage was sustained.

There is also the problem that for incidents abroad the provisions of the act limiting liability cannot be fully effective unless they are complemented by international agreements.

We feel it essential that coverage be provided to contractors now for this very grave potential liability. Indeed, we think the principle

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involved here was very clearly recognized and adopted by this committee, and the Congress, when it wrote the Price-Anderson amendments to provide foreign coverage for the nuclear ship *Savannah*.

UNUSUAL DEFENSE PROJECTS

As an additional proposal, it has been suggested that section 170d, which is applicable "* * * to contracts and projects financed in whole or in part by the Commission * * *" be amended to give the Commission explicit authority to indemnify contractors of other Government agencies.

At this point we should focus on an important feature of this matter. Because of the act's licensing requirements, for the purposes of direct contractor indemnification we are concerned only about Commission contractors and those of the Department of Defense in unlicensed activities. Contractors for other governmental agencies, and for licensed Defense facilities, can be protected by the indemnification of the licensed contracting agency under other provisions of the act.

As we understand it, the Defense Department's nuclear work all includes either participation or significant support by the AEC. This, of course, is why the great majority of nuclear defense projects, as we understand it, have been covered. The outstanding example unquestionably has been the broad, coordinated efforts of the Commission and the Navy Department in the nuclear naval program which was described in the naval reactor hearings.

Further, on the basis of current and projected defense programs, it would appear that significant AEC participation or support will continue to be required to an extent that will make coverage appropriate under the terms of the act.

This approach is wholly in keeping not only with the way the work is done, but also with our dominant national policy, which places the prime responsibility for the development of the Nation's atomic energy program in the Commission. This is the cornerstone of the Atomic Energy Act. You will recall, indeed, that the Department of Defense may carry on unlicensed activity in this field only on the authorization of the Commission, given by direction of the President.

The provision by the Commission of idemnity protection for defense projects through contracts and joint projects naturally complements the Commission's coverage of other governmental agencies under licenses. This is appropriate, additionally, because there is in the Commission—and in this committee—a special competence in dealing with this hazard—and in the administration of this new and unique indemnity law.

Despite these considerations, however, and the essential contributions, Commission work will in fact have made to all nuclear defense projects, we understand there are unlicensed nuclear defense facilities to which coverage has not been provided. We thus have the anomaly of most nuclear defense projects being covered while a few are not.

We assume this situation must be the result of an administrative determination that the projects involved did not qualify for coverage even under the broad and properly general terms of section 170d.

But, whatever the reason, if the condition continues, or grows worse, there will be a serious risk of frustration of the law's objectives.

We suggest, therefore, that despite the broad joint project authority now in the law, the committee approve an amendment to cover these unusual defense projects in order to complete the Commission's authority to extend protection to this nuclear hazard.

We appreciate this opportunity to express our views on these proposals. We believe that favorable action to provide coverage for foreign nuclear incidents involving Government projects is urgently needed.

Now I will be happy to respond to any questions the committee may direct to me.

Representative PRICE. Thank you very much, Mr. Shoults.

Did you want the appendix which is attached to your statement included in the record?

Mr. SHOULTS. If you please, sir.

Representative PRICE. Without objection, it will be included in the record.

(The appendix referred to follows:)

APPENDIX TO THE STATEMENT OF D. R. SHOULTS BEFORE THE JOINT COMMITTEE ON ATOMIC ENERGY CONCERNING PROPOSALS BEFORE THE COMMITTEE FOR THE AMENDMENT OF THE PRICE-ANDERSON ACT TO PROVIDE COVERAGE FOR GOVERNMENT CONTRACTORS FOR LIABILITIES ARISING FROM FOREIGN NUCLEAR INCIDENTS

I

1. The proposed amendment of section 11o of the act, to be fully effective, should be modified to extend coverage for offshore incidents not only to contractors who are indemnified under section 170d but also for such incidents involving Federal agencies, and their contractors, which are indemnified under section 170c. The following is a revision of the proposed amendment of section 11o for this purpose. Language which has been added to the proposal is in boldface:

"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 byproduct material: *Provided, however*, that as the term is used in subsection 170.1., it shall mean any such occurrence outside of the United States rather than within the United States: *And provided further*, that as the term is used in section 170d, **and with respect to Government agencies which are indemnified under the provisions of section 170c,** it shall include any such occurrence either within the United States or outside the United States."

2. The proposed change in the definition of the term "person indemnified" in section 11r raises a question. As submitted, the proposal reads:

"The term 'person indemnified' means the person with whom an indemnity agreement is executed and also (1) with respect to a nuclear incident occurring within the United States, any other person who may be liable for public liability, or (2) with respect to a nuclear incident occurring outside the United States, any other person who may be liable for public liability and who is also a subcontractor or supplier of or a carrier for the person with whom an indemnity agreement is executed."

This language is too limited to embrace all of the contractors, subcontractors, and suppliers who should be indemnified for foreign incidents. In particular, it does not cover collateral contractors and subcontractors and suppliers of all tiers who may be at risk in connection with a Government nuclear instrumentality abroad. We suggest that the proposed section 11r be modified to read:

"r. The term 'person indemnified' means the person with whom an indemnity agreement is executed and, (1) with respect to a nuclear incident occurring within the United States, any other person who may be liable for public liability; or (2) with respect to a nuclear incident occurring outside the United

States, any contractor, subcontractor or supplier of any tier of the United States which may become liable for public liability."

It should be noted that this language could have the effect of limiting the coverage which has been provided for the nuclear ship *Savannah*. If the proposal is further modified on this account, the contractor coverage provided should, in any form of amendment, be broad enough to cover all of those at risk.

3. We believe that the proposed change in section 170e of the act is necessary and would be effective to secure the objectives of the proposed amendment of the law.

II

We understand that more recent forms of the Commission's contractor indemnity agreements fail to make it quite clear that the public and the persons who may be held liable for a nuclear incident involving products of work under AEC contracts and joint projects will be covered. In view of the nature of work under Commission contracts and such projects it is imperative that a continuing coverage of the hazard be assured. If the agreement were construed to provide a more limited coverage than the risk requires, and which section 170d authorizes, we feel it would be significantly less than the coverage Congress intended would be provided.

Representative PRICE. Are there any questions?

Representative THOMAS. It was a very clear presentation, Mr. Chairman.

Mr. SHOULTS. Thank you.

Representative PRICE. Senator Pastore?

Senator PASTORE. Where your company enters into a contract with a foreign corporation, even though there may be some participation on the part of the United States, or an agency of the United States, on what premise do you justify the fact that the United States should indemnify, in the case of an accident, when all of the benefits would flow to that foreign country?

Mr. SHOULTS. Senator Pastore, our point of view and our understanding, in this, is that in regard to foreign reactor projects, indemnity, if any, protecting our activities there, must flow from legislation or treaties brought into force by that country. It is not our impression that the Price-Anderson Act, as presently in force, or as amended as we are recommending here, would in any way affect that activity.

Senator PASTORE. And you are not advocating any modification in that regard, but you think it is the responsibility of the United States to bring these other foreign governments around to reaching these agreements of indemnification. Is that the point that you make?

Mr. SHOULTS. In the testimony, it is an entirely separate thing. We have, in a separate activity, been closely in touch with the Atomic Energy Commission, the State Department, and our associates overseas, to recommend to various countries in which we may have commercial interests, so that they, by treaty, national legislation, or otherwise, would put into place a suitable indemnification system, making it reasonably practical to do business there.

I think that is a completely separate thing from this question here we have discussed this morning, which covers, as we see it, and as we requested it, coverage for our U.S. governmental activities, which, by nature of their mobility, may perhaps involve an incident overseas, in any country, perhaps, and for which those countries would, in my understanding, in no way have indemnity protection which would flow to the United States or any of its contractors.

I would like to inquire of counsel if I have made a complete statement on that.

Senator PASTORE. I understand your position clearly. I do.

Mr. MAHER. I think the principal point there is that the proposed amendment is not intended to deal in any way with the private activities of the people who may be in the industry. It is intended to deal only with their activities in their capacity as contractors on a U.S. Government project.

Representative PRICE. Mr. Shoults, why is it that the general contract authority of the Commission is not adequate to provide indemnity protection for contractors outside the United States?

Mr. SHOULTS. Well, we believe that the general contract authority of the Commission is not adequate and that an amendment to the act is necessary to provide adequate coverage.

Now, the general contract authority, except perhaps in unusual cases, is subject to the availability of funds. And as the testimony pointed out initially, the hazard may run long after the contract is terminated. The activities under the contract may have long since been completed. Funds available may be totally inadequate to an incident that may be thoughtfully described.

Representative PRICE. That may be the reason that it would be subject to having this limitation, as to availability of funds.

Mr. SHOULTS. Furthermore, the general contract authority—we find it is practically impossible to make it cover all of the potentially liable subcontractors and suppliers. It just does not flow down the train of contract authority in any reasonable fashion.

And further, as a very practical matter, it is something that has to be bargained for in each contract, and from a practical standpoint I can state that it is very difficult to secure; which seems additionally a reason why it is not the mechanism that will provide adequate coverage for the incident that is potential overseas.

Representative PRICE. You think the $500 million limitation in the Price-Anderson Act would be effective to cover incidents occurring outside the United States?

Mr. SHOULTS. The liability limit is quite high. However, if I understand the advice from counsel, the limitation of liability is not necessarily recognized by foreign courts. It would be recognized by our own. And in this case, it would seem that some negotiations, intergovernmental negotiations, with other countries, of major interest in this, might possibly be in order.

Other countries are in their own right, as regards their own private ventures, embodying the principle of limitation of liability in their legislation. But they do not specifically recognize ours, to my knowledge.

Representative THOMAS. Is not the distinguished witness saying this in so many words: After some length of time this atomic energy work will have to be finished and the project wound up, and a cause of action may arise in Germany, when they are finished with the project, but their property in Germany is still subject to the arm of the German courts.

I think he has a point. But what about the period of limitation? Should this liability run on indefinitely? Are you going to cover that with treaty? Are you going to put it in the law? How are you going to handle it? Liability should not go on indefinitely.

Mr. SHOULTS. I would like to be sure that I am focused clearly on your question. Is the question relating to our commercial activity?

Representative THOMAS. After you have finished your project under the Atomic Energy Act and you move out, your property inside Germany is going to be subject to the reach of the courts, regardless of whether the project that raised the liability is completed or not. No one sees that any more clearly than you do. And I think you have a point there. But how are you going to handle it? Is that going to be worked out by treaty, or what?

Mr. SHOULTS. Again, I want to be certain that we are talking now about our activities in regard to U.S. Government contracts.

Representative THOMAS. What you are concerned with is that whenever you do a job in a foreign country for the Atomic Energy Commission, and the other wing of the company is also doing business there, when you have wound up the atomic energy business, some liability accrues, maybe several years later. Your property in Germany is subject to reach of the German courts, or whichever country it is. And you are liable. And you want to protect yourself against that. And I cannot blame you.

The question I asked you was a very simple one: Are you going to have a period of limitation on the liability for your atomic work? If so, should it be in the act, or will that be a matter of treaty arrangement?

Mr. SHOULTS. I would like to ask Mr. Maher's opinion in this connection. It is a legal matter.

Mr. MAHER. I think, sir, that the premise of your question is that any property that we might have in Germany might be reached in a claim against us on account of work on an Atomic Energy Commission project.

It could be reached, presumably, there, for as long as the German law permitted us to be sued in German courts.

With respect to the proposal for a limitation upon our potential liability in this regard, it would relate to the risk or the hazard, and it would appear to us that the coverage ought to be provided for as long as the hazard subsisted, or for as long as the risk of our being held liable either in German courts or in any other foreign court, as the case may be, or in courts of the United States.

And let me suggest again that our problem here is not only the possibility of our being reached in foreign courts, or in any other contractor being reach in foreign courts, but the possibility of our being reached here and contractors generally being reached in U.S. courts.

In either case, very likely the question of liability would be determined by the law of the place where the incident occurred.

Representative THOMAS. Congress cannot write a law that will be binding inside Germany.

Mr. MAHER. So far as the limitation of liability is concerned, there is no question about that.

Representative THOMAS. Your problems are going to have to be reached, then, through the State Department, not by U.S. statutes.

Mr. MAHER. Well, I think we have a twofold problem, sir. One is to secure the coverage of the present provisions of the act, and in

due course, it seems to us, to work out the matter of protecting the limitation of liability provision by appropriate international arrangements.

And I think, as Mr. Shoults' statement pointed out, the point of focus this morning is on the extension of the coverage presently provided in the statute to these offshore incidents involving governmental instrumentalities.

Senator PASTORE. If the Congressman will yield:

Is this situation unique insofar as atomic installations are concerned? Or do you not have this problem with regard to other defense contracts?

Mr. MAHER. I am sure, Senator Pastore, that we do.

Senator PASTORE. How is it handled in that case?

Mr. MAHER. Well, there are three major devices for handling it. One is the authority that is existent in the military departments to indemnify research and development contractors for unusual hazards. This is not limited geographically. And in respect of some of the more advanced Defense Department work, that kind of coverage is provided in the contract.

Secondly, there is a general contract authority in the military departments, as there is in the Atomic Energy Commission, which is subject to the availability of funds, which is a significantly more comfortable protection for defense activities, to the extent that they do not involve nuclear hazards. The unusual problem we are dealing with here is the nuclear hazards.

Senator PASTORE. You mean the nuclear hazards are excluded from those contracts?

Mr. MAHER. No, they are not, sir. Customarily the contract clause involved will be one which will deal in a very general way with third-party liability risks associated with the performance of the contract. They will not be pinpointed, other than perhaps in most generally descriptive language.

But the difficulty in that situation, and in dealing with the nonnuclear hazard, is that in trying to apply similar methods with respect to the nuclear hazards, we just find the mechanism completely inadequate.

The problem of the lapsing of funds, the problem of exhaustion of funds, in appropriations, is a very difficult one when you are talking about hazards of the magnitude that are involved in nuclear defense projects. That problem is not nearly so acute when you are talking about the nonnuclear risks that may be involved.

Senator PASTORE. What you are saying, essentially, is this: that you would like the same kind of coverage insofar as nuclear contracts are concerned as you are now enjoying under other Defense Department contracts?

Mr. MAHER. I would like to put it another way, Senator Pastore. What we would like now is the same kind of coverage for nuclear work for the Government abroad as is extended in the statute today for nuclear work in the United States. The statute has provided for coverage for domestic risks in the nuclear area. And the pinpoint of the proposal before the committee today is for that coverage to be extended, so far as contractors are concerned, to the oversea incident involving the U.S. Government instrumentality.

Senator PASTORE. In other words, where the Government is a party, it does not make any difference as to the geography. You want that liability to carry with the contract.

Mr. SHOULTS. That is right, sir; carry with the contract, carry with the hazard.

Representative PRICE. Mr. Shoults, on page 7 you discuss certain types of projects. You say that most of your nuclear defense projects are covered by this indemnity legislation. There are a few that are not.

Would you give us an example of the few that are not covered, that you had in mind?

Mr. SHOULTS. From personal knowledge, perhaps I can relate one in connection with the proposal now current for work on an Army portable reactor, in which it is proposed that an Atomic Energy Commission indemnity contract—reactor contract. And we understand that I cannot quote you certain——

Representative PRICE. Are the few that are not, that you are thinking about here, those of a type that involve also the Department of Defense?

Mr. SHOULTS. These are Department of Defense projects, which, for reasons unknown to me, have not been deemed to be joint projects, and for which the Commission has not proposed, under joint project language, to indemnify.

It seems to me, with some study in the matter, that any of the Department of Defense reactor projects must in fact be joint projects. The Atomic Energy Commission, in my belief, continues to exercise certain scrutiny over safety aspects of these to supply information and associated help, even though they do not have specific contract funds flowing to the contractor. And it appears in this connection that these are in fact and in truth joint projects, and should be so treated in regard to indemnity protection.

Representative PRICE. Do you think it could be handled under existing legislation, or would you suggest legislation specifically for the Department of Defense?

Mr. SHOULTS. There is I believe Department of Defense legislation proposed—I believe it has not been introduced in this Congress—which would tend to deal with those activities, and I think properly, but for reasons unknown to me, the defense legislation has been pretty stagnant in this session.

But I should say that it appears that in regard to the nuclear hazard, in regard to reactor projects, this hazard is properly coverable under Price-Anderson Atomic Energy Commission legislation under the joint project term. And this is part of the point of our discussion here, that perhaps this committee and the Congress may want to make it quite clear that in these joint projects it is intended that the public and the contractors of the Nation shall be protected with this indemnity provision.

Representative VAN ZANDT. Mr. Shoults, do you know that there is pending before the House and Senate Armed Services Committees a bill which would do the very thing that you are advocating? In other words, the Anderson-Price law covers AEC activities; but what you are advocating now is additional law to cover the handling of materials that are not related to AEC. And I doubt whether this

committee has jurisdiction. Therefore the bills have been referred to the House and Senate Armed Services Committees, and are pending there at the present time.

Mr. SHOULTS. Mr. Van Zandt, I believe that the defense indemnity bills have a purpose beyond the associated nuclear hazards, having to do with intensely powerful rocket propellant devices and hundreds of thousands of pounds of missiles in space to be launched, and so on, which carries with it its own risk, its own hazard, and certainly I would agree with you that it does not appear that the Atomic Energy Commission or this committee has a particular voice in that area.

I would point out, however, that in the draft bill that the Defense Department sent to the Military Affairs Committee of the Armed Services Committees, it was specifically stated that there was not a redundancy in coverage there or in the atomic energy business.

And I think our point today and our plea to you is to be sure that in the atomic energy field alone, where the Atomic Energy Commission has generated the knowledge and participates in projects in regard to reactors and creation of reactor hazards, this is rightly and properly coverable and should be covered under the atomic energy legislation, where this committee and the Atomic Energy Commission by their long experience, contacts, knowledge, and so forth, are in the best position to judge and recommend action to the Congress.

Representative VAN ZANDT. I might say that the Department of Defense did not send these bills to the Armed Services Committee. They were introduced at the suggestion of the Association of American Railroads. And they were introduced in early February. And, as of yesterday, the Department of Defense has not yet complied with the request of the House Armed Services Committee for the views of the Department of Defense. Therefore, no action has been taken on the bill from the House standpoint, simply because we do not have a departmental report on the bill.

Mr. SHOULTS. We, too, are distressed by the lack of support from the Defense Department of this very serious matter.

Senator PASTORE. Referring to section 170d, it reads:

> 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 activites under contracts for the benefit of the United States involving activities under the risk of public liability for a substantial nuclear incident.

That does not carry over into another country? It seems to be rather broad. It does not refer to incidents in the United States.

Mr. SHOULTS. The problem, I believe, is in the definitions of the law in regard to "nuclear incident."

Senator PASTORE. That is what it says here. It says "for a substantial nuclear incident." Now, it would strike me that the gravamen of the matter is the fact that the U.S. Government and the contractor are the two parties involved. There is nothing here as to limitation of geography. What have you to say to that?

Oh. I see. "Nuclear incident" means any occurrence within the United States.

Mr. SHOULTS. Yes, sir.

Senator PASTORE. In other words, if we knock that out, we might cover it.

Mr. SHOULTS. Yes. Now in the *Savannah* legislation, in the amendment with regard to the *Savannah*, the definition of "nuclear incident" was changed, and specifically with regard to the *Savannah* "nuclear incident" covers any activity outside as well as in.

Senator PASTORE. Let me ask this other question of your attorney.

If we took paragraph o, which reads in part: "The term 'nuclear incident' means any occurrence within the United States causing bodily injury"—suppose we dropped out the words "within the United States." Would that not do the job?

Mr. MAHER. Senator Pastore, there is no question that it would. And without more, this problem would be disposed of.

Let me point out, however, that there are several ramifications of that approach which you should be aware of. First, the simple elimination from the definition of the words "within the United States" would have the effect of extending the indemnity protection afforded by the statute not only to contractors, but to licensees in their private activities, and conceivably could result in the indemnification of American firms in the course of private commercial activity abroad.

Senator PASTORE. On the question that I previously brought up?

Mr. MAHER. Precisely. I want to be very careful that the committee understands that we do not seek and do not suggest in any way that that coverage of the statute be amended.

It is for that reason that there have been several rather complicated proposals for amending the definition of "nuclear incident"—just to avoid that result.

Senator PASTORE. I get your point.

Mr. MAHER. And, if I may, I would like to add one footnote, Senator Pastore, to answer to your previous question.

I think that the colloquy between Mr. Shoults and Mr. Van Zandt pointed out, but I would like to make perfectly clear, that the existing authority with respect to what are called somewhat euphemistically "conventional hazards," that is, nonnuclear hazards associated with the Department of Defense and Space Administration work, is getting increasingly inadequate, which is the reason why a strong effort has been made by the Space Administration for additional indemnification authority, and why bills have been presented to the Congress with respect to a similar authority in the Department of Defense.

Today, with the very revolutionary and explosive development of weapons technology and space technology, existing authority just is not adequate. But we are talking in that regard, primarily, about the protection of nonnuclear hazards.

It has been recognized, of course, for years, that the existing authority with respect to nuclear hazards is totally inadequate, which is the explanation for Price-Anderson in the first place.

Representative PRICE. Mr. Shoults, I believe that you have been interested in the proposal in this year's AEC omnibus bill to exclude onsite property coverage in the licensee program. Will you make some comment on this proposal?

Mr. SHOULTS. We have studied to some extent the Commission's proposed amendment, and it appears, on the basis of this study so far, that the amendment and the accompanying proposed Commission administrative actions would, as suggested in their testimony earlier this

year, result in suppliers and subcontractors, particularly, being exposed to a significant uninsurable hazard for the plants, the commercial plants, which they might be connected with.

Mr. NEWMAN. Mr. Shoults, just how serious is the risk that the suppliers face? They are not subject to suit by the insurance companies, because the insurance companies, as I understand it, have waived subrogation against the suppliers. So the risk the suppliers face is not a risk of payment for the loss of the entire plant, is it?

Mr. SHOULTS. It is not certain, of course, that the property would be insured with the property insurance pool. The owner may well choose to self-insure. And in that case, there is no legal compulsion or requirement to my knowledge that would provide the same effect as the passing over of the right of subrogation.

And secondly, there is the possibility that even though insured, the owner might choose, in regard to loss of property, to claim against one of the suppliers on the basis of negligence, rather than to claim against his insurer; because claims against the insurer would almost certainly affect his prospective rates in regard to continuing insurance.

Mr. NEWMAN. And do you say that the supplier's risk is uninsurable?

Mr. SHOULTS. The supplier's risk, I am informed by our insurance people, is uninsurable, in any of the nuclear pools. Your normal product liability insurance will not run to that, and is unavailable to that amount in any case, and has normal nuclear exclusions. So that there are only, to my knowledge, two sources for that insurance, the liability pools and the property insurance pools. And neither, I am informed, would cover the supplier's potential liability for the plant.

I would like to ask Mr. Maher if I have correctly stated this, in his belief.

Mr. MAHER. According to my understanding, that is the case. The insurance is not to be found in the marketplace. The property policy of the property pool, nuclear pool, does not cover the supplier, nor does the casualty policy from the NELIA pool cover this potential liability of the supplier.

Representative PRICE. Do you have any further comments, Mr. Shoults?

Mr. SHOULTS. I believe that covers the thoughts we had in mind.

Representative PRICE. Thank you very much, Mr. Shoults, for your testimony here this morning.

The next witness will be Mr. DeRoy C. Thomas, assistant general manager of the Nuclear Energy Liability Insurance Association.

You may proceed, Mr. Thomas.

STATEMENT OF DeROY C. THOMAS, THE NUCLEAR ENERGY LIABILITY INSURANCE ASSOCIATION

Mr. THOMAS. My name is DeRoy C. Thomas, and I am an assistant general manager of the Nuclear Energy Liability Insurance Association, commonly referred to as NELIA, which is the stock casualty association formed to provide nuclear energy liability insurance. With me is Mr. Richard H. Butler, who is a secretary of The Travelers Indemnity Co., serving on the governing committee of NELIA, and

who is familiar with the underwriting of nuclear energy liability insurance. We have asked for the opportunity to appear before the committee today in order to urge that proper use be made of the insurance capacity which has been made available with respect to liability arising from the nuclear energy hazard.

More specifically, we are concerned with the proposal made by Clark C. Vogel, assistant general counsel to the Martin Co., to Chairman Holifield in a letter dated March 21, 1961. That proposal would extend indemnity under the Price-Anderson Act to occurrences within and without the United States. Indemnity afforded with respect to incidents occurring outside of the United States is limited to Atomic Energy Commission contractors, subcontractors, suppliers, "or a carrier for the person with whom an indemnity agreement is executed."

In addition, Mr. Vogel suggested in his letter to Chairman Holifield that it might be a good idea for the Congress to extend Price-Anderson indemnities under section 170d to projects contracted for by Government agencies other than the Commission.

At the outset, we are anxious to make it clear that insurers have no objection to the extension of Government indemnity in areas where private insurance is unable to perform. Moreover, from past pleas to the Joint Committee on Atomic Energy and to the Atomic Energy Commission, insurers have made it abundantly clear that they feel that they are capable of affording nuclear energy liability insurance at reasonable rates to Government contractors. Our concern, then, does not run to the concept of the extension of indemnity to incidents occurring outside the United States, or to the extension of indemnity by the Commission to contractors for other Government agencies.

Rather, our difficulties stem from the manner in which the Commission has elected to administer section 170 d. The Commission has elected not to require its contractors to furnish underlying financial protection, even though 170d gives them the discretion to require such protection, and on several occasions, the casualty insurance industry has urged that it be allowed to provide nuclear energy liability insurance on all contract operations which would qualify for a license under existing Commission regulations and safety standards.

It is our fear that if Mr. Vogel's proposals are adopted, further encroachments into areas of private insurance will result. We are even more apprehensive over the possibility that first-dollar indemnity against the nuclear energy hazard will be extended to contractors for other agencies, even though such agencies at present do not make a practice of extending first-dollar indemnity to their contractors. We would like to emphasize that we in no way seek to have the Government insure its own liabilities. Instead, we urge the Government to refrain from affording first-dollar indemnity to its contractors, thereby depriving insurers of an appreciable market.

It may very well be that the problems of insurers could be solved, if in addition to Mr. Vogel's proposal, section 170d were amended to provide:

* * * In such agreements of indemnification the Commission (may) *shall* require its contractor to provide and maintain financial protection of such a type and in such amounts as the Commission shall determine to be appropriate to cover public liability arising out of or in connection with the contractual activity.

Such an amendment would assure the use of underlying financial protection and the retention of the words "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" would grant the Commission flexibility in selecting the amount of financial protection to be required.

It is interesting to note that Mr. Vogel amended section r of the act to provide:

> r. The term "person idemnified" means the person with whom an indemnity agreement is executed and also (1) with respect to a nuclear incident occuring within the United States, any other person who may be liable for public liability, or (2) with respect to a nuclear incident occurring outside the United States, any other person who may be liable for public liability and who is also a subcontractor or supplier of or a carrier for the person with whom an indemnity agreement is executed.

Subdivision (2), which limits coverage for incidents outside of the United States to contractors, subcontractors and suppliers of or a carrier for the person with whom an indemnity agreement is executed, cuts back coverage which was extended with respect to the nuclear ship *Savannah* by the passage in 1958 of section 170 l of the Atomic Energy Act of 1954, as amended. Section 170 l extends coverage to anyone who may be liable. In addition, coverage is extended to the carrier of the indemnified contractor with whom an indemnity agreement is executed, but not to carriers for subcontractors and suppliers. There seems to be no reason for the distinction. It is possible that both results are inadvertent.

Insurers are concerned as well with S. 1144, which was introduced by Senator Anderson. Our prime concern stems from the proposed change in section 170 h, which would amend the Atomic Energy Act of 1954, as amended, to give the Commission final authority—

> * * * on behalf of the United States to settle or approve the settlement of any such claim or any other claim under this section.

While the addition of the words "or any other claim" is probably designed to permit settling of claims brought against the United States under the proposed 170 m, the language could be interpreted to give the Commission final authority over claims for which private insurance is provided within the areas of financial protection.

At present, insurers are working with the Commission to establish the closest type of cooperation in the event nuclear incidents occur which are likely to involve payments by both insurers and the Commission. Indeed, they have offered complete cooperation in areas where underlying private insurance is involved exclusively. Nevertheless, insurers feel that the granting of final authority to the Commission to settle claims for which insurers are solely liable would be a serious and unnecessary invasion of private insurance.

Furthermore, such a course would create discord because of the contractual obligation of insurers to settle claims made against their insureds and the statutory duties imposed by State laws in this area.

Finally, it should be added, that casualty insurers over the years have demonstrated their capacity to efficiently and expeditiously handle claims made against their insureds.

Consequently, we recommend that the language be amended to read "or any claim made against the United States," instead of "or any other claim."

We also have some doubts as to the need for this measure. The laws of many States, including New Mexico, the site of the proposed detonations, already imposes strict liability on those engaged in blasting. It would seem that injured third parties would have adequate recourse against the individual conducting the detonation operations, despite any defense of immunity available to the Government or its contractor, the University of California. Section 170 d could be utilized to afford indemnity to such persons, since it provides:

> 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.* [Emphasis added.]

The above language makes it clear that the Commission already has the authority to afford indemnity with respect to underground detonations.

On March 29, 1961, the Commission requested public comment as to whether the financial protection and indemnity requirements of section 170 should be extended to persons licensed by the Commission to possess and use substantial quantities of unirradiated uranium enriched in the isotope 235. Since this is an important aspect of the problem that we brought to your attention today, we have appended for consideration and possible inclusion in the record, copies of Mr. J. Dewey Dorsett's letter to the Commission on the subject.

We want to thank you again for your courtesy and attention.

On page 3 of my prepared testimony, I had made reference to the amendment to subsection r in Mr. Vogel's proposal and its effect on the indemnity which the Congress has authorized in connection with the *Savannah*. However, my point was amply covered by the Commission testimony, and the committee questions, yesterday.

I had also prepared some comments in connection with Senate 1144, which are no longer pertinent, in view of the amendment which was the subject for discussion at the hearings yesterday.

I would like to add that the insurers' difficulties with the bill were completely removed by the revision.

Representative PRICE. In other words, you favor the substitute bill that we talked about yesterday?

Mr. THOMAS. We do, sir.

I also want to register our accord with the Commission's statements made yesterday that there is every reason to believe that the differences of opinion between insurers and the Commission in the claims area is on the verge of resolution.

As you know, although insurers recognize that the Commission has a legitimate right of control in the area where a claim involves Government funds, we feel that the Commission has no right to dictate settlement terms as to a claim wholly compensated by insurance.

However, as indicated in my statement, we have offered to the committee by contract to extend every cooperation to the Commission in this area.

Representative PRICE. Do you want the copy of the letter from Mr. Dorsett, that you have attached to your statement, included in the record?

Mr. THOMAS. Yes, sir, I would appreciate that.

Representative PRICE. Without objection, it will be.

(The letter referred to follows:)

May 16, 1961.

SECRETARY, U.S. ATOMIC ENERGY COMMISSION,
Washington, D.C.
(Attention Acting Director, Division of Licensing and Regulations):

On March 29, 1961, you published in the Federal Register a notice of proposed rulemaking and requested public comment as to whether the financial protection and indemnity requirements of section 170 of the Atomic Energy Act of 1954, as amended, should be extended to persons licensed by the Commission to possess and use substantial quantities of unirradiated uranium enriched in the isotope 235.

As you indicate in the notice, NELIA participated in an industry advisory conference on the subject on November 10, 1960, and on February 10, 1961, prompted by a report submitted by the Atomic Industrial Forum, a letter was sent to the Commission outlining NELIA's position on the subject. Normally, we would be content with such an oral and written expression of our views. However, comments contained in the Commission's notice and in its 1961 Annual Report to the Joint Committee on Atomic Energy have caused us to question whether the Commission fully understands the position of NELIA's members.

For instance, the Commission's report to the Joint Committee in dealing with this subject reads in part:

"The Commission has also received letters from Nuclear Energy Liability Insurance Association and Mutual Atomic Energy Liability Underwriters commenting upon the report received from the Atomic Industrial Forum group. The letter from MAELU states, in part, that:

"'* * * we submit it is not in the public interest for the Commission to bring within Price-Anderson indemnification every licensee who is processing enriched uranium or fabricating fuel. We do recognize that in an occasional case a licensee under section 53, 63, or 81 may be engaged in operations the nature of which makes indemnification advisable.'

"Essentially similar views are expressed in the NELIA letter."

We had thought that we had clearly expressed views essentially dissimilar from MAELU, on the question whether Price-Anderson indemnification should be extended to every licensee who is processing enriched uranium or fabricating fuel. For instance, in the second paragraph of our letter of February 10, 1961, we said:

"Insurers have always taken the position that they can have no objection to Government indemnity against hazards in areas where they are unable to afford insurance. Hence, if the Commission determines that the potential liability for the nuclear hazard of a fuel fabricator or a fuel processor exceeds $60 million, we would be unopposed to the extension of indemnity in that area. We do not presume to offer an evaluation of the magnitude of the hazard."

As we have indicated in the past, our interest in this area relates to the third question set forth in your notice:

"3. If the financial protection and indemnity should be extended, what amount(s) of financial protection, or methods for deriving amounts of financial protection should be adopted. Should the financial protection required be set at a flat amount, such as $10 million, or a variable amount, depending on the nature of the licensed operation?"

We feel that the only proper level of financial protection is the amount of private insurance available. Establishment of a lesser level can only result in encroachment upon private insurers.

As we have indicated repeatedly in the past, we are at a loss to understand the position of those proponents of indemnity who also assert that the financial protection requirements should be set at extremely low levels in order to foster private development of the atom. For instance, at the industry advisory conference a level of $1 million was suggested.

In view of the amounts of nuclear energy liability insurance which are presently in force, such a suggestion is patently absurd. The limits of nuclear energy liability insurance which have been purchased by the chemical concerns and fuel fabricators working with appreciable quantities of special nuclear material demonstrates forcibly the drastic curtailment of existing insurance relationships which would result from such a proposal.

The two pools are presently insuring 18 such risks at the following limits:

1 risk at	$2,000,000
5 risks at	5,000,000
6 risks at	10,000,000
2 risks at	15,000,000
3 risks at	20,000,000
1 risk at	60,000,000
Average limit (18)	13,166,667

In the same vein, we were amazed by the comment on page 7 of the forum statement that:

"On the other hand, establishment of very high levels of financial protection having no reasonable relationship to the probabilities of important accidents would unduly subsidize the nuclear insurance industry and unduly burden the costs of nuclear energy."

From our past communications, I am sure you understand that we do not want the Commission to require licensees to purchase private insurance. We think that private industry should purchase only that insurance it feels it needs. If a fabricator or processor feels that an established level of financial protection "has no reasonable relationship to the probabilities of important accidents" he can self-insure for all or part of the required financial protection.

We have never sought nor do we seek now, Government subsidy. Rather, we ask the Commission not to displace private insurance with Government indemnity.

It should be noted, that the forum comment is self-contradictory. If very high levels of financial protection bear no reasonable relationship to the probabilities of important accidents, it is hard to see why Government indemnity is needed at all.

As previously indicated, we see no need for a 3-year grace period. (See p. 9 of the forum statement.) If the Commission decides to indemnify fuel fabricators, financial protection should be established at the same time.

Most sincerely,

J. DEWEY DORSETT, *General Manager.*

Representative PRICE. Now, in connection with your proposal, which would in effect require contractors to purchase liability insurance, would this be a departure from the Government's normal procedure of self-insurance?

Mr. THOMAS. We think not, sir. I have tried to indicate in my remarks that we have no quarrel with the Government insuring its own liabilities. Our quarrel is when the Government steps into our field and insures its contractors against their liability.

Representative PRICE. And you feel if your recommendation were accepted, it would not be a departure from the Government's policy on the matter of self-insuring?

Mr. THOMAS. That is right, sir. Rather, we think the present Commission attitude is a departure.

Mr. NEWMAN. Mr. Thomas, would it not be true that the Government would end up paying the premiums for the insurance policy in these contractor operations?

Mr. THOMAS. I think that is right; as, for instance, does a building owner who has a contractor perform work for him. The cost of the contractor's insurance is usually included in the cost of his charges.

Representative PRICE. What is the distinction that you make there, as to how they are operating now as against the way you recommend they operate?

Mr. THOMAS. We think, sir, that by extending indemnity to contractors, the Government is stepping into the insurance field, since indemnity is, indeed, a type of insurance. And these liabilities of the contractors are insurable. And we think, as with other seg-

ments of private enterprise, where we are able to perform, our services should be utilized.

Representative PRICE. Did the representatives of NELIA ever discuss this with the legal people in the Atomic Energy Commission?

Mr. THOMAS. We did at some length, sir, a year ago last May I think. We made extended presentations to the Commission, and they have deemed it appropriate to exercise their discretion in favor of requiring no insurance.

If you will refer to section 170d, you will notice that the language now provides that they may require underlying financial protection. To date, they have not deemed it appropriate to do so.

Representative PRICE. On page 5 of your statement, you mention the Commission's proposal to extend indemnity protection to persons who use substantial quantities of unirradiated enriched uranium. Now, what is the position of the NELIA pool on this matter?

Mr. THOMAS. I think that the statement that we appended to the record of Mr. Dorsett's covers our position, but in general I might say that we have no comment to make on the magnitude of the hazard. We feel that that is a decision for the Commission to make.

We only ask that if the Commission deems this hazard to be serious enough to afford indemnity, they should allow insurance to play the part that it is capable of playing. You will notice in Mr. Dorsett's statement that substantial amounts of insurance are now being purchased by these contractors. We think it would be unfortunate if the Government entered into this area and edged part of the insurer's capacity from present use.

Mr. NEWMAN. Mr. Thomas, is not the Commission's proposal to require $10 million as a flat rate from these people?

Mr. THOMAS. Mr. Newman, I am unaware of any Commission proposal in this area.

Mr. NEWMAN. Was this a Forum proposal?

Mr. THOMAS. As I understand it, the Atomic Industrial Forum has recommended that $10 million be used.

Mr. NEWMAN. Would that be a satisfactory figure?

Mr. THOMAS. I can only say, in answer to that, Mr. Newman, that present coverage being purchased averages in excess of that amount.

To refresh your recollection, the pools have assembled a capacity of some $60 million to protect insureds against this hazard, and we think in areas where we have this capacity, it is unfortunate to have the Government intervene and extend free indemnity, which is always preferable to insurance for which a cost is charged.

Representative PRICE. This was back in March, or around the 1st of April, that the Commission requested an accounting on this matter.

Mr. THOMAS. As I understand it, the proposals and all the comments which were entered in response to the requests for comment in the Register are still under study by the Commission, Mr. Chairman.

Representative PRICE. In addition, did you ever call in the insurance people and the contractors and discuss the matter with them?

Mr. THOMAS. There was an industry conference prior to this, just subsequent to receipt of the Convair report, in which all segments of the industry were called in to express their view. And we expressed substantially similar views then.

Representative PRICE. Mr. Van Zandt, any questions.

Representative VAN ZANDT. On page 2, you are recommending that the bill be amended to include the word "shall"?

Mr. THOMAS. Yes, sir.

Representative VAN ZANDT. Would you go into a little detail in support of the suggestion?

Mr. THOMAS. Well, sir, we feel, as I have tried to indicate heretofore, that we are a segment of private enterprise here attempting to fill a need, and we think insurers here have stepped up to the demands for capacity by furnishing a pool. We are now anxious to see that our pool is used properly.

We feel that when the Government extends indemnity to its contractors, obviously a great segment of the market available to this pool is lost to us, and we think that it is not only unfortunate but deprives the Government of the use of our facilities and our expertise in the claims area.

Representative VAN ZANDT. In other words, according to the provisions of existing law, the word "may" is used?

Mr. THOMAS. That is right, sir.

Representative VAN ZANDT. And it gives the AEC the prerogative of dealing along the lines you suggest. Is that correct?

Mr. THOMAS. That is exactly correct, sir. And we feel the remaining language that exists in 170 d. would still give the Commission a great deal of discretion as to how much underlying financial protection it would require.

Our point is that there should be some underlying insurance.

Representative VAN ZANDT. Have you any idea what it amounts to in dollars and cents? In round figures?

Mr. THOMAS. I would like to ask Mr. Butler to answer that.

Mr. BUTLER. I think the answer is "No," Mr. Van Zandt. We do not. We do not know enough about the contract operations, really, to come at a figure. We have not had the opportunity.

Representative VAN ZANDT. Let me put it to you this way, then: Does the contractor concerned possess the capability of buying up the protection from the pool? Or does the AEC think that the contractor does not have the capability?

Mr. THOMAS. I think the AEC's concern, sir, very frankly, is that the costs will ultimately reflect in their costs.

Representative VAN ZANDT. In other words, it will be lost in the overall amount as far as the cost of the project is concerned?

Mr. THOMAS. That is a surmise on my part, but I assume so.

Representative VAN ZANDT. In other words, the Government pays it either way?

Mr. THOMAS. I think, sir, that this is another necessary cost of these types of operations, if you will permit me to say so, just as for instance the cost of hiring a contractor to do the work itself.

Representative VAN ZANDT. By taking advantage of the word "may," is the AEC given probably a little more control over this protection that is provided?

Mr. THOMAS. To date the control has been absolute, sir. That has been our problem.

Representative PRICE. Thank you very much, Mr. Thomas. We appreciate having your testimony.

Mr. THOMAS. Thank you, Mr. Chairman.

Representative PRICE. The next witness will be Mr. Hubert W. Yount, executive vice president, Liberty Mutual Insurance Co.

Mr. Yount?

STATEMENT OF HUBERT W. YOUNT, EXECUTIVE VICE PRESIDENT, LIBERTY MUTUAL INSURANCE CO.

Mr. YOUNT. I prepared a statement some time ago, Mr. Chairman, and since that time there have been some developments that invalidate certain portions of it. So I will correct some of this as I go through it.

I might say, by introduction, that I do not want to discuss a lot of details with you this morning. I am primarily concerned about the same general area that Mr. Thomas mentioned, namely, the fact that the insurance business is a supplier in the same sense that any other industry is a supplier. And we seem to find our function being gradually curtailed.

Now, to get into my statement: My name is Hubert W. Yount, executive vice president, Liberty Mutual Insurance Co., Boston, Mass. I am speaking on behalf of Mutual Atomic Energy Liability Underwriters.

In April of last year I had the privilege of appearing at hearings held by this committee on atomic energy indemnity problems. At that time I pointed out the gradual attrition of the function of the American insurance companies, stock and mutual, in affording insurance protection against the hazards occasioned by the development of the peaceful uses of nuclear energy and its replacement by Government indemnity.

Specifically I referred to the low level of financial protection required of the Commission's licensees and the fact that the Commission does not require any financial protection of its contractors engaged in activities which would qualify for a license if the facilities were privately owned. I shall not now dwell on these points, as my complete testimony is a part of the record of those hearings.

During the past year there is no evidence that the process of attrition has slowed down. In fact, there is some evidence that its rate appears to be increasing.

Early in the spring of 1960, the Commission started a reevaluation of its regulations as respects the limits of financial protection required of licensees.

Representative PRICE. Mr. Newman would like to ask a question at that point.

Mr. NEWMAN. It is in connection with your next sentence, where you go on to say that "The insurance industry recommended changes in determining the amounts of financial protection to be required," and so forth. Can you tell us what the difference was between the liability insurers and the Commission, as far as establishing the level of financial protection required?

Mr. YOUNT. Well, in general, the Commission ended up with substantially lower recommendations than we did. We recommended a different formula in approaching the problem, and the net result would have been higher recommendations. We could furnish a copy of those recommendations, if you like, but I believe they are a matter of record.

Mr. NEWMAN. Are these differences that are based on a population density factor?

Mr. YOUNT. That was one of the factors.

Mr. NEWMAN. And you would recommend a 400-percent figure, as opposed to the AEC's recommendation?

Mr. YOUNT. That was one of the differences.

Mr. NEWMAN. Was that difference based on an actuarial determination of risk with respect to reactors?

Mr. YOUNT. It is a little difficult to use the word "actuarial" in connection with this problem. But in attempting to evaluate hazards, we took into account the fact that if a reactor incident occurs, the population density and the property incidental thereto are intimately involved in the extent of the loss. We felt that merely basing it on population was not quite enough, because we feel a big part of the loss is going to be property, if we have a major incident. Therefore we wanted to put a higher relationship to population as reflecting property, too.

That was not all the difference, but it was a major difference.

Mr. NEWMAN. I believe the Commission concluded that there was no scientific basis for arriving at either figure, and that it was largely a subjective evaluation.

Mr. YOUNT. In the last analysis, it becomes a matter of best judgment.

Representative PRICE. You may proceed.

Mr. YOUNT. The insurance industry recommended changes in determining the amounts of financial protection to be required which we felt to be a more accurate measure of the hazard involved, but, although the Commission did modify its formula slightly, no substantial change in the levels of financial protection required was made. Although detailed testimony was presented, no change has been made in the Commission policy not to require financial protection with respect to the activities of its contractors. It also appears that there are those who would further reduce the role of private insurance in the nuclear field with proposals that the Government afford indemnity to fuel fabrication operations and to incidents occurring outside the United States.

The Commission has under study a recommendation by a representative of the Atomic Industrial Forum and by representatives of a number of members of the forum, that the Commission extend the financial protection and indemnity requirements of section 170 of the act to licensed fuel element fabricators and processors and that $10 million be specified as the amount of financial protection to be furnished by such licensees.

This recommendation illustrates how far the Commission's policies with respect to the amounts of financial protection required of its licensees operating reactors have departed from any attempt to measure accurately the degree of risk involved. It is generally conceded that the hazard attendant upon the processing of fuel elements is less than that involved in the operation of nuclear reactors, yet the amount of financial protection recommended for fuel fabricators is several times that required for most of the reactor operators—other than large-scale power reactors—which are required to furinsh financial protection under existing Commission regulations. This recom-

mendation with respect to the amount of financial protection bears out our view that the levels required of reactor licensees are extremely low.

The position of the private insurance industry with respect to the advisability of the Atomic Energy Commission affording Price-Anderson indemnification to fuel fabricators has been thoroughly reviewed with the Commission. Basically, it is doubted that public interest requires the granting of such indemnity. Certainly the large number of private manufacturers now engaged in this work would indicate the absence of indemnity up to this time has caused no hardship.

For a more detailed discussion of our position, may I refer you to letters written the Commission by Ashley St. Clair, counsel, Mutual Atomic Energy Liability Underwriters, dated February 10, 1961, and by Mr. DeRoy C. Thomas, assistant general manager of Nuclear Energy Liability Insurance Association, on the same date. Copies of these letters are being filed with this statement.

It has been proposed to authorize the Commission to extend Price-Anderson indemnity to the activities of the Commission's contractors outside the United States. If the present policy of the Commission is maintained, requiring no financial protection, and this proposal is adopted, private insurers will be deprived of the opportunity to participate in the insuring of such activities.

The liability pools, NELIA and MAELU, have offered to make a substantial amount of liability insurance available to contractors engaged in activities for the Commission outside the United States, as the need arises, e.g., the reactor to be built at McMurdo Sound, Antarctica.

And incidentally, on some of the questions presented by Mr. Shoults earlier this morning, there would be insurance available for a great many of those activities which would offset to a considerable degree some of the questions raised about the delay in liability and the fact that the Government might be involved in first-dollar liability on delayed claims.

We admit, however, there are some phases of nuclear activity outside the borders of the United States that might be difficult to insure. We have had rather limited enthusiasm for proposed nuclear airplanes and for nuclear rocket propulsion.

But on the remote facilities, my company, for instance, has been insuring operations in Greenland since the first day that operation started. And we have been insuring operations around the border of the Arctic Ocean ever since that operation began.

And there is no reason why the insurance industry cannot furnish, within reasonable limits, the protection that is needed for operations of that sort outside the United States.

Mr. NEWMAN. Is it your position, then, that there is no need for an amendment such as the one we have before us now?

Mr. YOUNT. I would not want to leave the impression that there is no need for it. I point out that this repetitive demand to bring the Government in on the first dollar of loss is a thing that is extremely troublesome to us. Where insurance is available, it has the advantage of spreading the cost and keeping the Government out of indemnification from the first dollar on a lot of these lawsuits.

Now, there may be an area in which Government indemnity is needed above the amounts of available insurance. But certainly not from the basic coverage up.

Mr. NEWMAN. Then essentially your problem is with 170 d as it is presently written, rather than with the amendment that is before us now.

Mr. YOUNT. All right. I will admit that.

Representative VAN ZANDT. I wish you would repeat the argument.

Mr. YOUNT. I believe the basis of the argument—it was not stated that way, but I think it was implied—was that there could not be any insurance given on these projects. And I wanted to point out that so far as insurance on remote areas is concerned, our company and others, perhaps, have been insuring projects outside the continental United States for a long time. It would be perfectly possible for us to extend coverage on these routine portable reactors or temporary reactors or reactors operated at Government sites outside the United States, within the limits of the capacity we could afford.

Representative VAN ZANDT. You have reference to Project Century. Is that correct?

Mr. YOUNT. Well, I do not know——

Representative VAN ZANDT. It is a portable reactor.

Mr. YOUNT. A portable reactor.

Representative VAN ZANDT. How much insurance?

Mr. YOUNT. Well, I think for that one we probably could afford all that would be needed; which might be $10 to $15 million. It is inconceivable to expect too much liability at a remote location. I think we could furnish the liability insurance.

Representative VAN ZANDT. I would like to have that information.

Now, what was the other project you mentioned?

Mr. YOUNT. Well, there was some talk about projects in Greenland. I point out that American insurance companies are now covering—my company happens to be covering—operations in Greenland, and has from the first date of the beginning of that project there.

Representative VAN ZANDT. Did you not mention a project in the Antarctic?

Mr. YOUNT. The pools have had some discussions about that and have offered to provide coverage on the proposed reactor at McMurdo Sound.

Representative VAN ZANDT. Who were your discussions with?

Mr. YOUNT. The two nuclear pools.

Representative VAN ZANDT. And was it with the Government?

Mr. YOUNT. Could I ask one of my colleagues?

Who did we discuss that with?

The inquiry came from the submitting insurance company as to whether insurance would be available, and the pools said, "Yes, it would be." We have had no formal discussions with the Government on that, as I understand it.

Now, in my prepared statement, I had some comments on S. 1144.

And, in that connection, I wrote a letter to Senator Anderson when I first saw a copy of the bill. I understand from developments yesterday that a suitable substitute is being prepared, and so far as my statement before you is concerned, I am striking that section.

I would like to leave for the record a copy of the letter which I wrote to Senator Anderson, which explains some of the reservations we had on the original approach.

Representative PRICE. Without objection, it will be included in the record.

(The letter referred to follows:)

LIBERTY MUTUAL INSURANCE CO.,
Boston, Mass., May 26, 1961.

Re underground nuclear explosions, S. 1144.

Hon. CLINTON P. ANDERSON,
Senate Office Building, Washington, D.C.

DEAR SENATOR ANDERSON: Upon receipt of a copy of the above bill, which you recently introduced and which would provide compensatory damages for those who may suffer injury to person or property as the result of the deliberate, underground detonation of a nuclear device, I referred it to our legal department for study and comment. We have certain reservations about the bill, which we find are generally shared by representatives of other insurers. I will set those reservations forth below.

We note first of all, that S. 1144 proposes to amend the Price-Anderson Act to make the United States absolutely liable for damages resulting from underground nuclear detonations. This is a major departure from a basic principle of the Price-Anderson Act; namely, that there is to be no change in the normal situation that the rights of injured third parties are determined under applicable State law. I refer you to Joint Committee Report No. 296 on S. 2051, 85th Congress. We see no persuasive reason for such a departure. If the problem to be met is the protection of the public, it is apparent that the same problem exists in connection with other potentially hazardous activities of the Commission carried on by its contractors. The existing provisions of the Price-Anderson Act appear to afford the basis for an adequate solution to the overall problem, including that arising out of underground nuclear explosions.

We reach this conclusion because even if some questions may arise as to the liability of the United States for the Commission's activities we know of no legal bar to successful suits against its contractors. We anticipate that State tort law will, in practice if not always in theory, impose absolute liability with respect to the use of nuclear explosives. As a general rule one engaged in blasting is liable without proof of negligence. The Supreme Court of New Mexico in a recent decision has expressly adopted the principle of strict liability for explosion damage (*Thigpen* v. *Scousen & Hise*, 64 N.M. 290, 327 P. 2d 802). Thus all that seems necessary to provide protection for the public is to make certain that the contractor's liability is adequately secured.

Such an approach appears preferable because it avoids the confusion which seems bound to result from superimposing a Federal tort law upon the body of State tort law. For example, we note that S. 1144 does not fully adopt the existing concepts of "agreements of indemnification," "persons indemnified" and "public liability." Unless S. 1144 is supplemented in some manner, such as by an indemnification agreement under section 170d of the Atomic Energy Act, there does not appear to be any indemnity running directly in favor of the Commission's agents, employees, contractors, or subcontractors. They will remain exposed to liability under the applicable State law to direct suits by persons injured and, possibly, to subrogation claims by the United States.

Should the Commission enter into such an agreement of indemnification with the contractor, however, there may be a conflict with proposed State legislation. The National Conference of Commissioners of Uniform State Laws is giving consideration to recommending a Uniform Nuclear Facilities Liability Act for adoption by the several States. I enclose for your convenience a copy of the sixth tentative draft of this act which in effect would make the person with whom the U.S. Atomic Energy Commission has executed an indemnity agreement in accordance with section 170 of the Atomic Energy Act liable without proof of fault for injuries arising out of or resulting from a nuclear incident involving a nuclear facility as defined in the act. The definition of "nuclear facility" in the proposed act includes nuclear explosive devices. While no doubt this act could be harmonized with S. 1144 it illustrates the sort of problems that may arise in overlapping State and Federal jurisdiction.

We are also concerned about the fact that S. 1144 makes no provision for any underlying financial protection. We believe that private insurance may be available for a substantial portion of the hazard involved in underground nuclear explosions. Although the Commission does not presently require financial protection with respect to the activities of its contractors, the Price-Anderson amendment authorizes the Commission to establish such a requirement. We feel strongly that S. 1144 should follow a similar course and that consideration should be given to a greater utilization of the facilities of private insurance in connection with the activities of all the Commission's contractors.

Should Congress, however, decide that S. 1144 is desirable you may wish to explore further some points which occurred to us with respect to the provisions of the bill itself:

(1) Provision probably should be made to require the Commission to enter into an agreement of indemnification with the contractor under section 170d to insure that the Commission's agents, employees, contractors, and subcontractors are fully protected.

(2) Since S. 1144 creates a new right against the United States but imposes no limitation on the time within which that right must be enforced, you may wish to insert in the bill a provision establishing a reasonable limitation.

(3) The amendment of section 170h of the Atomic Energy Act therein proposed appears inadvertently to have been made unduly broad in effect. The proposed new language, "or any other claim under this section," seems to grant the Commission final authority to settle or approve the settlement of claims which are wholly within the scope of any financial protection presently required with respect to other activities. In order to clarify this we suggest that the phrase "against the United States" be added at the end of the proposed new language quoted above.

(4) As one last comment which, from our standpoint may not be too important, we are inclined to look a bit askance at the proposed amendment to subsection 170e which would limit the liability of the United States under the Tort Claims Act for nuclear incidents to which the negligence of an employee of the United States contributed. The Tort Claims Act, when enacted, contained no such limitation. To insert in the Atomic Energy Act a special limitation applicable only to a serious hazard seems an action more than a little incongruous for the Government of the United States.

We understand that the activities of the Commission in connection with underground nuclear detonations will be carried out by contractors of the Commission. If so, we believe that the difficulties outlined above can be overcome and yet the objectives of S. 1144 achieved by having the Commission exercise the authority which it already possesses under section 170d of the Atomic Energy Act and enter into an agreement of indemnification with the contractor concerned.

I am certain that representatives of the mutual and stock insurers affording nuclear energy liability insurance will be glad to meet with you and your staff if you feel a fuller explanation of the views set forth above will be helpful.

Cordially,

HUBERT W. YOUNT,
Executive Vice President.

Representative PRICE. Also, the substitute has been prepared.

Mr. YOUNT. We have not had an opportunity to examine it, but I saw a copy last night, and it seemed to me that approach would be suitable.

In addition to the attrition resulting from failure to make full use of the amounts of private insurance available, there appears to be a desire to extend Government control over the payment and handling of claims which are wholly within the amounts of coverage provided by private insurers under policies of nuclear energy liability insurance issued to licensees as proof of financial protection.

I am striking the rest of that section, because I think we are now getting to a point where that will perhaps not be a major problem.

Representative PRICE. Your stand on the claims matter would be about the same as that of Mr. Thomas?

Mr. YOUNT. Yes. The problem very simply is this: Where an incident arises and we are handling claims within the limits of the Pool policies, we would expect to do so without having the Government stepping in, appearing through the Attorney General, or taking over approval of payments, just as we have handled claims within our own limits on cost-plus projects for the Government since 1939.

Where the claims run into a catastrophic proportion, and it is evident they are going to, we have no question whatever but that we have got to sit down with the Commission and work out a program.

Representative PRICE. What type of claims have you had since the beginning of this program? Have there been an appreciable number?

Mr. YOUNT. No. We have had no difficulty. But we are still trying to formalize a working arrangement with the Commission on this. Some discussions earlier this year indicated that there was still a desire on the part of the Commission to approve every payment. We felt this would place us in a very peculiar position as an insuror, because we could not move until the Commission gave us its approval.

Now, we understand that the difficulty is being resolved, and we think we will be able to work it out satisfactorily.

We feel that when the size of the loss is such as to indicate that Government indemnity may be involved, the Commission should have the right to veto any settlement that the insurers contemplate which the Commission considers excessive, but not the right to take over the defense and settlement of claims for the account of the insurers. This matter is still under discussion with the Commission's staff, and we hope that a satisfactory solution can be worked out.

And as I indicated, I think we are further along toward that than we were when this was written.

Representative VAN ZANDT. At this point, let me ask the witness a question.

What right does the Commission have to take over the settlement of claims for the account of the insured?

Mr. YOUNT. I think the argument, Mr. Van Zandt, would run that if the total losses are going to run into the area of Government indemnity, then they should have the right to step in from the first dollar up.

I believe that there was some ruling from the General Accounting Office, that had some bearing on this.

But that has not been our usual procedure in handling insurance contracts for the Government on a cost-plus-fixed-fee basis, for instance. If the cases were bad, we used to talk with the department involved about it. Routine cases were handled in a routine manner. I think we can solve this one.

Representative PRICE. At any rate, you are getting together with the Commission?

Mr. YOUNT. That is right. We have been working with them.

Representative VAN ZANDT. It is just a case of where the Commission wants to be kept informed in the event that this damage would run into millions and millions of dollars, beyond the reach of the pool to pay.

Mr. YOUNT. Our feeling has been that if a nuclear incident should occur that involved a number of claims, and not running to the Commission's indemnity at all—at least it would not look as if it should—

there is considerable merit in being able to get out and dispose of those with some alacrity and settle them promptly rather than have them drag. If we were going to have a procedure where too many people were involved, it would be very difficult to operate.

Representative PRICE. I think just for the sake of the record we ought to include here the fact that the law provides that we enter into this particular phase of the thing and says:

when the Commission makes the determination that the United States will probably be required to make indemnity payments under this section—

this is practically what you have said—

the Commission shall collaborate with any person indemnified and may approve the payment of any claim under the agreement of indemnification.

That is, in effect, really what you have said.

Mr. YOUNT. It is a matter of getting a satisfactory working arrangement.

We do not wish, however, merely to catalog instances of dissatisfaction. Many of us are coming to recognize that the problems of insurance and Government indemnity arising out of the peaceful uses of atomic energy, while somewhat unique, are in their essence similar to those involved in many other ultrahazardous activities undertaken for other governmental agencies.

We believe it important, therefore, that governmental agencies, industry, and insurers not only maintain but intensify their efforts to develop a sound program of insurance and indemnity—a program which will provide for a reasonable balance between the two, which will make fuller use of the services that only private insurers are equipped to provide, and which will reverse the accelerating tendency to turn to Government indemnity to the exclusion of insurance.

We welcomed the opportunity to appear before you today because we feel that this acceleration of the attrition of the role of private insurance is a matter of fundamental governmental policy which should be of concern to your committee. We have always believed that the role of private insurance was one of partnership with Government indemnity in providing protection to the public and to the nuclear energy industry against the nuclear energy hazard. We feel very strongly that the Government should not usurp any portion of the field in which the private insurance industry is not only ready and willing to undertake at reasonable cost the writing of insurance itself, but also to provide the claims and loss prevention services not otherwise available for the protection of the public.

Representative PRICE. Mr. Yount, at page 4, you state that the liabilities pools have offered to make a substantial amount of insurance available to the contractors engaged in activities outside of the United States.

Now, can you describe the type and amount of coverage that has been offered?

Mr. YOUNT. I will have to call on my experts on that, Mr. Merritt and Mr. Butler.

How much will we make available at McMurdo Sound, Dick?

Representative PRICE. Will you come around, Mr. Butler, and identify yourself to the reporter?

Mr. BUTLER (Richard Butler, secretary, Travelers Insurance Co.) My name is Richard Butler. I am secretary of The Travelers Insurance Company. And you have the rest of my activities listed in Mr. Thomas' statement.

To the best of my recollection, the NELIA stock pool offered $10 million of coverage on the McMurdo Sound reactor, on which I believe the prime contractor is the Martin Co.

The mutual pool, MAELU, to the best of my knowledge, offered $5 million. So that we had a total offer of $15 million.

Perhaps I could enlarge on that a little bit, in that outside the United States we do not have reinsurers. We have reinsurers within the United States, and we also have companies, like my own, who operate principally here. So that we have companies putting in larger amounts, and we have reinsurance. Outside the county, we do not. And that is the reason that we have a smaller capacity abroad than we have here.

Representative PRICE. The offer is specifically in reference to the McMurdo Sound reactor?

Mr. BUTLER. That was the one that was submitted; yes, sir.

Representative PRICE. I was about to ask you: How much insurance was available for the contractors' nuclear risk for Navy application without geographical limitation?

Mr. BUTLER. I would think about the same.

Representative PRICE. What did you say? $10 million? Or $15 million?

Mr. BUTLER. $15 million.

Representative PRICE. Without geographical limitation?

Mr. BUTLER. That is right.

Representative PRICE. Mr. Yount?

Mr. YOUNT. I was going to ask whether you were putting any qualifications on the naval use. Are you thinking of reactors in naval vessels, or are you thinking of reactor sites that might be established by the Navy?

Representative PRICE. I think you would have to think of it in connection with vessels, if they are for naval use.

Mr. BUTLER. This gets a little complicated, but there the operator is the United States of America, the Navy. We do not suggest the United States buy insurance on its own risks. The insurance we would have to offer would be product liability insurance for the contractors who built or contributed to that submarine, in the event that it let go at Holy Loch in Scotland.

Representative PRICE. Your overall answer would be that which you gave on the McMurdo project?

Mr. BUTLER. Yes.

Representative VAN ZANDT. Would this apply to U.S. contractors on the continent?

Mr. BUTLER. In a supplier capacity, Mr. Van Zandt. We have tried to be careful not to enter the actual reactor operation market, let us say, in Germany. The Germans, I believe have a pool. We have offered reinsurance capacity at that pool. It has not been taken. But we do not propose to offer to insure the operation of a reactor in Germany. We would, however, offer insurance to a contractor who supplied the reactor or who supplied the pressure vessel.

Representative VAN ZANDT. Let me go one step further. Would your coverage apply worldwide as far as the supplier is concerned?

Mr. BUTLER. It could be made to; yes, sir.

Representative PRICE. Mr. Ramey, any questions?

Mr. RAMEY. Mr. Yount, how are your arrangements working out with the Commission on safeguard reports in connection with the siting of reactors and your establishment of proper coverage? Are you getting access to the reports, keeping up to date on that?

Mr. YOUNT. That is one matter I should have checked up on before I left. I have had no complaints from my technical staff in that respect recently. A year ago I did mention that there had been some little difficulty there. Currently I have no complaints.

Perhaps Mr. Butler has some thing on that.

Mr. BUTLER. I am not aware of any difficulty.

Mr. NEWMAN. Does this insurance which you offered to prime contractors in the Navy program also cover all other subcontractors and suppliers who may be at risk?

Mr. YOUNT. The nuclear insurance which we issue would cover anybody that might be liable for the nuclear loss. That would be the prime contractor and any subcontractors that might be involved.

Mr. BUTLER. Mr. Newman, that would only be within the 3-mile limit. The foreign cover is offered individually to contractors.

Mr. NEWMAN. I did not hear the first part of your remark.

Mr. BUTLER. What we call the omnibus clause in the policy, the sweeping coverage of all people involved, would be limited to the territorial United States, or the 3-mile limit. The coverage offered abroad is a single-cover policy for the individual contractor.

Mr. YOUNT. If the prime contractor gave his subcontractors indemnification agreements, hold-harmless agreements, Dick, then that would be swept in.

For instance, we are covering some reactors now in the mutual pool, on the Continent, and I believe in one or two of those cases there may have been that kind of an arrangement. This is product liability insurance for the nuclear hazard. Any claim for loss arising out of alleged malfunction, improper product, and so on, whether created by the prime contractors or his subs, would be covered.

The basic coverage, for foreign insurance, though, is a single interest rather than a multiple interest.

Representative PRICE. Thank you very much, Mr. Yount.

The letters from Mr. St. Clair and Mr. Thomas that you mentioned will be placed in the record.

(The letters referred to follow:)

MUTUAL ATOMIC ENERGY LIABILITY UNDERWRITERS,
Chicago, Ill., February 10, 1961.

Re Price-Anderson indemnification for fuel fabricators and processors.

U.S. ATOMIC ENERGY COMMISSION,
Washington, D.C.
(Attention Mr. Harold L. Price, Director, Division of Licensing and Regulation.)

GENTLEMEN: Mr. Yount has asked me to send you, in compliance with your request when you talked by telephone with him on February 2, a statement of MAELU's position with respect to the advisability of the Commission's affording Price-Anderson indemnification to fuel fabricators. Prior to that conversation our attention had been called to the memorandum of the Atomic Industrial Forum recommending that the Commission enter into contracts of indemnification with its licensees processing and fabricating nuclear fuel.

As the forum memorandum states, Congress, in enacting the Price-Anderson Act in 1957, was seeking to accomplish two objectives. The first objective was to protect the public by making certain that all persons suffering bodily injury or property damage as a result of a major nuclear incident would be compensated. The second objective, less important, was to encourage private enterprise to participate in the development of the uses of nuclear energy by affording industry protection against the crushing loss that might result from a major nuclear incident.

It is obvious, however, from the provisions of the Price-Anderson Act, as well as from the report by the Joint Committee in submitting the act to Congress, that the members of the Joint Committee, after careful investigaion, believed that, in general, only the operation of production and utilization facilities carried the risk of a catastrophe loss of such magnitude to make Government indemnity necessary. At the same time, the Joint Committee and Congress recognized that it was possible that Government indemnification might be advisable in other circumstances and for that reason the act was so worded as to give the Commission authority to enter into an agreement of indemnification with a person having a license under section 53, 63, or 81 of the Atomic Energy Act. The following excerpt from the report of the Joint Committee sets forth the purpose of Congress in giving the Commission this discretionary authority:

Section 170 of the Atomic Energy Act is added as a new section. Subsection a. makes the providing of financial protection and the signing of an indemnity agreement a condition of each license under sections 103 and 104 and each construction permit under section 185. Section 103 licenses are for reactors which are found to be of practical value and section 104 licenses are for research and demonstration reactors. In addition, the Commission is given the option of requiring financial protection for any license issued under section 53, 63, or 81. Section 53 permits the licensing of special nuclear material; section 63 permits licensing of source material; section 81 permits licensing of byproducts material. It is not expected that ordinarily the Commission will use the authority given it with respect to these later three types of materials. However, there may be rare instances in which the ilcensee, without at the same time being a licensee of a facility, may have such large quantities of materials or such quantities of especially dangerous or hazardous materials as to warrant the imposition of the provisions of this bill.

Based upon such information as we have obtained from our own technicians, it has been our opinion that the processing of enriched uranium and the fabrication of nuclear fuel, including processes incidental thereto, do not ordinarily create hazards which justify Government indemnity, on either of the above stated grounds for either processors or fabricators. Our opinion in that respect is strengthened by the report of the study made by the Convair Division of General Dynamics Corp. under contract AT(30–1)–2271 with the Commission. It is true that the report gives no estimate of the number of persons who might be injured and the amount of property damage which might result from a serious incident in a fuel fabrication plant. It is, however, obvious that the writers of the report were convinced that the injury and damage resulting from such an incident would not be comparable in magnitude with that resulting from a major incident at a reactor.

If the loss from a nuclear incident occurring at a facility operated by a licensee having a contract of indemnification from the Commission exceeds the amount of financial protection maintained by the licensee, damage to and loss of use of the licensee's property, both on and off site, is within the indemnity given by the contract. A facility policy issued to a licensee, including a fuel fabricator, does not cover any damage to the facility or to property at the facility, but does cover any damage to off-site property of the licensee or of any other person liable for the nuclear incident. A policy issued to a fuel fabricator usually carries a restricted description of the facility and its site, sometimes one building or a part of a building in a complicated industrial complex. To protect himself against loss by reason of damage to the facility itself, the licensee, here the fuel fabricator, can buy physical damage insurance. In short, we believe that almost every fuel fabricator can protect himself against damage to his own property resulting from a nuclear incident by buying adequate amounts of physical damage and liability insurance. We question that it is sound public policy to use Government indemnity to replace private insurance in this area.

It must be admitted that almost every industrial activity may result in an accident causing a catastrophe loss. Perhaps the best illustration of this fact is the Texas City explosion in April 1947. Because of this fact, almost every

substantial industrial concern carries liability insurance in an amount in excess of what its management believes to be the maximum probable loss which its operations might produce. In many instances the amounts of insurance purchased far exceed the $10 million financial protection recommended for fabricators by the Forum memorandum. The maximum possible loss cannot be insured, even by the U.S. Government, as the Price-Anderson Act recognized by its $500 million limitation on Government indemnity.

From the foregoing analysis we are inclined to doubt that the public interest requires the giving of Price-Anderson indemnification to fuel processors and fabricators. The possibility of an incident in a processing or fabricating plant causing a loss in excess of the amount of insurance available is so remote as to be almost inconceivable. A number of industrial operations necessary to the welfare and comfort of our people carry a greater hazard of catastrophic loss, a risk which is borne by the insurance industry and by the industrial organizations concerned.

Further, it does not appear that to date the absence of Price-Anderson indemnification has handicapped the development of the private processing of enriched uranium and the fabrication of nuclear fuel. The 1959 Atomic Industry Directory, published by the Forum, lists 26 of its U.S. members as engaged in fabricating fuel elements. The absence of Government indemnity has not deterred businessmen from entering the field. It should also be noted that the greatest development in nuclear energy has been in the use of radioisotopes, where there has been no Government subsidy except insofar as the Commission has sold isotopes below cost or has furnished them free for research or therapeutic purposes.

In a free enterprise society the time must come when the development and use of atomic energy for peaceful purposes must stand on its own feet and pay its own way. Because Price-Anderson indemnity is a form of subsidy, it is undesirable except where necessary for the protection of the public. It is an encroachment by the Government on an area traditionally left to private enterprise and in which private insurance can and will give industry and the public the protection they need.

We cannot forbear comment on the statement on page 7 of the Forum memorandum that the establishment of high levels of financial protection for fuel fabricators would unduly subsidize the nuclear energy insurance industry. We do not argue that any businessman should buy, or be compelled by law to buy, more insurance than sound judgment dictates. The prudent man, however, purchases liability insurance in an amount several times his maximum probable loss. It might also be noted that the insurance industry is one of the few industries involved in the development of the use of atomic energy which have not sought Government subsidies or insisted on working under cost-plus contracts. As of November 30, 1960, after 3½ years of operation, the two nuclear energy liability pools have collected slightly less than $2½ million in premiums. Of that amount, almost 70 percent has been set aside for payment of losses and loss expenses, and for refunds to policyholders under the Industry Credit Rating Plan in the event loss experience is good. One medium excursion in which fission products escape an insured reactor's containment would probably cost the insurers several times the premiums collected to date. It would require many years for insurers to recoup the loss from a major incident. If the loss portion of the premiums paid the insurers for the risk they have assumed prove to be more than is required to pay loss and loss expenses, the excess will be refunded to policyholders. If the premiums prove inadequate, the insurers stand the loss. In short, not only have the insurers not been subsidized, but the insurance industry has assumed a risk as great as, if not greater than, any other industry involved in the private nuclear energy program.

For the reasons above stated, we submit it is not in the public interest for the Commission to bring within Price-Anderson indemnification every licensee who is processing enriched uranium or fabricating fuel. We do recognize that in an occasional case a licensee under Section 53, 63, or 81 may be engaged in operations the nature of which makes indemnification advisable.

If, in its discretion, the Commission decides it is in the public interest to give indemnification to some or all fuel fabricators, we agree with the Forum recommendation that the Commission should establish simple criteria for determining the level of financial protection to be maintained by fuel fabricators. We express no opinion on whether the amount of financial protection should be

the same in every case. In any event, it should not be less, in any case, than the amount of insurance a prudent man would carry if Government indemnity were not available.

Yours very truly,

A. ST. CLAIR, *Counsel.*

NUCLEAR ENERGY LIABILITY INSURANCE ASSOCIATION,
February 10, 1961.

Mr. HAROLD L. PRICE,
Director, U.S. Atomic Energy Commission,
Washington D.C.

DEAR MR. PRICE: Although we had decided not to submit a written statement after the industry conference concerning the desirability of affording indemnity to fuel fabricators and processors, the recent memorandum by the Atomic Industrial Forum on the subject requires some comment on our part.

Insurers have always taken the position that they can have no objection to Government indemnity against hazards in areas where they are unable to afford insurance. Hence, if the Commission determines that the potential liability for the nuclear hazard of a fuel fabricator or a fuel processor exceeds $60 million, we would be unopposed to the extension of indemnity in that area. We do not presume to offer an evaluation of the magnitude of the hazard.

We have been startled by comments made by some members of industry at the hearings dealing with the levels of financial protection and similar intimations at the hearing dealing with extension of indemnity to fuel fabricators to the effect that indemnity should be afforded and extended downward to extremely low levels in order to foster private development of the atom.

For instance, at the hearing dealing with indemnity for fuel fabricators a million dollar financial protection floor was suggested. We should point out that decisions on the part of the Government to subsidize private industry only become a subject for comment on our part when such a subsidy is afforded at our expense. We strenuously object any program which offers free indemnity in lieu of private insurance.

Of course from our past communications on the subject, I am sure you understand that we do not want licensees to be compelled to purchase private insurance. We have always felt, as in other areas where indemnity does not operate, private industry should purchase only the protection it thinks it needs. We find ourselves in partial accord with the Forum that a single level of financial protection should be employed. We have always felt that in an economy such as ours, which is bottomed on the principle of private enterprise, that the only proper level of financial protection is the amount of private insurance available.

We were amazed by the comment on page 7 of the Forum statement that:

"On the other hand, establishment of very high levels of financial protection having no reasonable relationship to the probalities of important accidents would unduly subsidize the nuclear insurance industry and unduly burden the costs of nuclear energy."

Aside from the fact that it is hard for us to see why indemnity is needed in an area where establishment of very high levels of protection would have "no reasonable relationship to the probabilities of important accidents," we take vigorous exception to the thought that the establishment of high levels of financial protection will "unduly subsidize the nuclear insurance industry and unduly burden the costs of nuclear energy." As we have already indicated, if a fabricator or processor thinks the level of protection has no reasonable relation to the probability of important accidents he can self-insure for all or part of the financial protection required.

Certainly, by refraining from invading an area where private insurance is able to perform, the Commission cannot be accused of affording a subsidy to insurance. It is true that implicit in such a determination is a decision not to subsidize private industry with respect to insurance costs.

We are unable to see any reason why a 3-year grace period should be instituted (see p. 9 of the Forum's memorandum). If any decision to indemnify fuel fabricators is made, financial protection requirements should be established at the same time.

Very truly yours,

DEROY C. THOMAS,
Assistant General Manager.

Representative PRICE. The next witness will be Mr. Ambrose Kelly, general counsel, Associated Factory Mutuals, Providence, R.I.

STATEMENT OF AMBROSE B. KELLY, GENERAL COUNSEL, ASSOCIATED FACTORY MUTUALS

Mr. KELLY. Mr. Chairman and members of the committee, I am Ambrose B. Kelly, general counsel of the Associated Factory Mutuals.

At its hearing on March 2, 1961, the Joint Committee on Atomic Energy heard testimony by Dr. Emerson Jones of the Consumer Public Power District with respect to the difficulties his company has had in securing property insurance on a basis satisfactory to them. Part of the problem arose from the reluctance of insurance companies to provide standard insurance at standard rates on the generating equipment owned by Consumers Power. There was an implication that violation of the antitrust statutes might be involved and reference was made to a request to the Department of Justice and the Federal Trade Commission that the matter be investigated. (Correspondence between NELIA and the Antitrust Division is published in app. 10, page 794 of the published 1961 hearings on the development, growth, and state of the atomic energy industry.)

My purpose in appearing before you today is to place on record the position of the mutual companies on the questions raised by Dr. Jones. The Factory Mutuals are participants in the Mutual Atomic Energy Reinsurance Pool. Most of the property insurance written on nuclear risks by mutual companies was originated and is serviced by our companies, the Factory Mutuals. Our engineers have provided the loss prevention service on such insured risks. We are therefore familiar with the problems involved.

The agreement under which mutual companies participate in the reinsurance of nuclear risks is a contract between the American Mutual Reinsurance Co. of Chicago and the separate mutual companies. In the field of property insurance, it applies to policies insuring nuclear risks approved by the Underwriting Committee of AMRECO set up to review such risks.

All such risks are rated by the Nuclear Insurance Rating Bureau, operating under the supervision of State insurance departments, to which other rating bureaus have surrendered jurisdiction. The reinsurance capacity of MAERP is therefore only available on nuclear risks.

The mutual companies, in the property insurance field, including ours, are entirely free to insure nuclear or nonnuclear risks without reinsuring them with MAERP. If these risks do not have a substantial nuclear hazard, they may insure them at rates they have filed, or which have been filed on their behalf by the rating organizations to which they belong. If they are nuclear risks, the rates used must be those of the Nuclear Insurance Rating Bureau. Without MAERP capacity, it would be difficult to handle a large nuclear risk.

There is vigorous competition for the insurance on nuclear risks between stock and mutual companies, and between mutual companies themselves. We take an active part in such competition.

Many of the mutual companies participating in MAERP have no other insurance on public utility risks or large manufacturing risks. They have agreed to accept this reinsurance as their contribution to

the development of the atomic energy industry. They are naturally reluctant under these circumstances to accept insurance on a power-plant associated with a nuclear reactor, a type of risk on which they have no experience, and for which they would have to secure facultative reinsurance.

The Department of Justice has addressed a letter of inquiry with reference to the operations of MAERP to the American Mutual Reinsurance Co. similar to that sent to NEPIA. A copy of both the original letter from the Department of Justice and the reply of MAERP were sent to Chairman Holifield of the Joint Committee on Atomic Energy, and I would request that they be made a part of the record of this hearing.

I will, of course, be glad to answer any questions with reference to our operations in the field of property insurance on nuclear risks, and I appreciate an opportunity to appear before you.

Representative PRICE. Have the property insurers had any number of claims under nuclear property policies?

Mr. KELLY. We have had some. We have only had one that I can think of that was of any substance involving the operations of a reactor. Westinghouse has its own experimental reactor at Waltz Mill in Pennsylvania. And there was a claim in connection with the operation of that reactor resulting from the failure of certain fuel elements, which resulted in a loss to the companies on the property side of the business of substantially over a million dollars.

I have reviewed the experience of the mutual companies, and we have collected more premium than we have had loss, I am happy to say. But the volume has been extremely small in proportion to the hazards assumed.

For example, from the period from the organization of MAERP until February 28, 1961, the total earned premiums on property insurance were only $288,000. Our share of the losses, including this loss at Westinghouse—and we participated in that through reinsurance of NEPIA, which handled the original policy—was fairly small, and in consequence, our gross losses on this business were some $196,000, I believe. And we did recover from our foreign reinsurance to the point where our net loss was $132,000.

So that up to the present time, there has been, as a result of our operations in this field from the beginning, some small underwriting profit. It has been business handled with an extremely low expense ratio, because I think all companies participating in it have done so with the thought that they hoped to be of some service.

The total surplus from property insurance operations from the beginning of MAERP until March 1, 1961, is $103,000, which is being held for future large losses. The Westinghouse loss was, as I say, well over a million. And this is shared among 102 mutual companies, which are at present participants in MAERP.

Representative VAN ZANDT. What was the Westinghouse incident?

Mr. KELLY. The Westinghouse incident was one in which the cladding on certain fuel elements apparently was defective. The test procedures have now been improved. A fuel element disintegrated. There was substantial contamination.

Mr. RAMEY. This was their test reactor?

Mr. KELLY. This was their test reactor. There was substantial contamination within the reactor. One of the great problems in connection with it was contaminated water. It was at first proposed that the water be run through a series of filters, which would reduce the level of radioactivity to what the insurance companies felt was a safe level. But the State of Pennsylvania took a different view of it, and it was not going to have any water discharged into its streams which had been exposed to such contamination. It was therefore necessary to purchase an evaporator, through which this water was evaporated, so that the water was not drained into the area.

Representative VAN ZANDT. What was the overall amount of damage?

Mr. KELLY. Roughly $1,250,000, without giving you the exact figures.

Mr. RAMEY. Are you continuing your insurance on this test reactor?

Mr. KELLY. Oh, yes.

Mr. RAMEY. And have you taken any action or had any problem with the fact that the Commission did not review the design with the Reactor Safeguards Committee?

Mr. KELLY. Well, we have not. We are, of course, doing our best in all these cases. And I can easily be taken outside of my own field, Mr. Ramey, because I am a couple of steps removed from the operating level, as you know. But we have been very careful to see, in all such cases, that before a facility is insured, it not only meets the standards set up by the Commission, but those established by us.

And occasionally—and this is amusing to me—we find that in reactors in which very elaborate precautions have been taken against the nuclear hazards, they have disregarded elemental precautions against the risk of fire. And we feel that in this area we have been able to be of real service.

But in these cases, we feel that the fact that the Commission will not permit a reactor to operate until it is satisfied that its operation is safe, is a substantial help to us.

Mr. RAMEY. Mr. Kelly, the AEC omnibus bill this year included a provision to eliminate coverage of on-site property in the licensee program. Would you care to comment on this proposal?

Mr. KELLY. Well, I am not really in a position to comment on it as well, say, as Mr. Yount was, who has been familiar with the problem. I listened to some of the earlier testimony today.

The problem arises in connection with self-insured reactors, and it can also arise to a lesser degree in connection with the deductible amount under the property insurance which is afforded by both NEPIA and by the mutual companies reinsured through MAERP, and it could arise in connection with business interruption insurance. In all these cases there is uninsured loss.

As I think Mr. Newman brought out earlier in the testimony, the insurance pools operating in the property field, both NEPIA and MAERP, have adopted a new subrogation clause, under which they have agreed not to take subrogation against any suppliers.

However, in the event that the reactor is not insured, and the owner of the reactor wishes to take action against the contractors, there is

no bar to his doing so. And in the case of an insured reactor, let us say, if it were a large power reactor, where the deductible might be as much as $75,000, with reference to that amount of money, which is not insured, the position of the property insurance companies would not in any way prevent the reactor owner from taking action against the contractor.

This is a bogeyman, in my judgment. By and large, if you are working on a reactor which you know is not going to be insured, it is possible, in the terms of the contracts made between the eventual operator of the reactor and the contractor, to take care of the problem.

I can understand the desire of industry to have protection in this field. It has been discussed in many cases with representatives of the insurance companies. There has been some study given by the companies in the property insurance field to a possible new type of coverage, which could be used to provide protection for such liability in those cases in which there is capacity available on the risk.

Let me explain that very briefly. If we were dealing with a large power reactor, such as Dresden or Indian Point, we can and will commit the complete property insurance capacity of the pools on that risk. There would, therefore, be no coverage left which we could give if a contractor wanted, for example, coverage for the amount of the deductible. It would be all used.

But suppose we were dealing with a small reactor, being operated by a State university, which had a value of a million dollars, that was not insured. In that case, since we would have no property insurance on that risk, we could, if we could develop a type of coverage at a satisfactory rate, insure the possible liability of the contractor for onsite damage.

And work has been and is being done in this field, and perhaps we can make some small contribution to the solving of the problem.

Representative PRICE. Any further questions?

Mr. Newman?

Mr. NEWMAN. I was wondering if the problem of insuring tunnel and turnpike facilities had come to your attention in recent months. We have received some inquiries about it. Apparently there are State agencies and their turnpike authorities, that have had difficulty in getting their property insured.

Mr. KELLY. Yes, they have. And it is my understanding that that problem, too, has been solved by making available to the inland marine carriers as reinsurance the capacity of the property insurance pools.

Now, this is a problem I do not want to dismiss too quickly, and say it is all worked out. I think a very substantial amount has been done. The one area we were particularly concerned with was the tunnels. The bridges were not so bad. But it was felt that with a traffic accident which resulted in substantial nuclear contamination in the tunnel, you might find yourself with a very substantial problem.

I think to the degree that the capacity of the pools can help to solve this problem—and I put that qualification on, because I do not know how much these tunnel installations might cost—to the degree that its capacity will help to solve the problem, it is my understanding that it is being made available to the Inland Marine Underwriters, who normally provide coverage.

Mr. NEWMAN. Does their policy cover loss of use of property, as well as damage?

Mr. KELLY. It can be written to cover loss of use. And I think this has been part of the problem, in that you have to add to the physical value of the tunnel itself the loss in revenue that might result if it were closed for a period of 6 months or a year while decontamination and reconstruction were going forward.

Representative PRICE. Thank you very much, Mr. Kelly.

The committee will stand adjourned until 10 a.m., tomorrow morning, when we will hear further from other public witnesses.

(Whereupon, at 11:40 a.m., Wednesday, July 19, 1961, the subcommittee was adjourned, to reconvene at 10 a.m., Thursday, July 20, 1961.)

OPERATIONS UNDER THE INDEMNITY PROVISIONS OF THE ATOMIC ENERGY ACT OF 1954

THURSDAY, JULY 20, 1961

CONGRESS OF THE UNITED STATES,
SUBCOMMITTEE ON RESEARCH,
DEVELOPMENT, AND RADIATION,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to notice, in room F–82, the Capitol, Hon. Melvin Price (chairman of the subcommittee) presiding.

Present: Representative Price; Senators Pastore and Aiken.

Also present: James T. Ramey, executive director; and Jack R. Newman, professional staff member, Joint Committee on Atomic Energy.

Representative PRICE. The Subcommittee on Research, Development, and Radiation of the Joint Committee on Atomic Energy resumes hearings this morning on nuclear indemnity.

Our witnesses this morning will testify concerning proposed amendments to the Price-Anderson Act, and will also discuss regulatory and insurance problems associated with the transportation of radioactive materials across toll facilities.

Our first witness this morning is Mr. Clark Vogel.

Mr. Vogel, we are pleased to have you. Will you take a seat at the center of the table?

STATEMENT OF CLARK C. VOGEL, THE GLENN L. MARTIN CO.

Mr. VOGEL. Thank you, Mr. Chairman. I have only a short statement.

At this year's 202 hearings it was my privilege to appear before the Joint Committee and to suggest that consideration be given to the problem of indemnity in two important areas not now covered by the Price-Anderson amendments; that is, indemnity against liability for a nuclear incident occurring outside the United States as a result of (1) the utilization of nuclear energy in space, or (2) the installation and operation of nuclear powerplants or other nuclear devices at Government sites outside the United States.

During the course of my previous testimony, Senator Anderson suggested that I try my hand at drafting legislation designed to meet the problem outlined. This was subsequently done, and on March 21, 1961, a draft bill and accompanying explanatory letter were transmitted to the chairman of the Joint Committee. Both appear in the

official transcript of the 202 hearings (pp. 137–139), and copies are attached to this statement.

As stated in the letter to the chairman, the draft bill attempts to achieve its objective as simply as possible by (1) adding an additional proviso to the definition of "nuclear incident" in section 11 o of the act, (2) changing the definition of "person indemnified" in section 11 r of the act, and (3) changing section 170 e of the act to give the U.S. District Court for the District of Columbia jurisdiction in the case of nuclear incidents occurring outside the United States upon a showing that the public liability involved will probably exceed the statutory limit of liability.

Since its submission several improvements in the draft have been suggested. First, it was not clear to some that indemnity would extend to lower tier subcontractors and suppliers, although such persons were intended to be covered. I respectfully suggest, therefore, that this matter be clarified. Secondly, through inadvertence, the draft limits the present scope of coverage under section 170 l with respect to the NS *Savannah*. There was no intent to amend section 170 l, and, again, I respectfully suggest that this mistake be corrected.

The committee's attention is directed to the fact that the draft bill would limit Price-Anderson protection as to incidents occurring outside the United States to the contractor with whom an indemnity agreement is executed, and to subcontractors or suppliers of or a carrier for such persons. This represents a departure from the scope of protection now afforded by Price-Anderson in the case of domestic incidents, which protection is extended to any person who may be liable for the incident. It was felt that to provide such broad protection in the case of incidents outside of the United States would raise a host of problems and questions of policy. Accordingly, the draft bill provides indemnity only to those in privity, so to speak, with the Government work involved.

It should also be noted that the draft bill does not necessarily provide indemnity protection in connection with Government projects outside the United States which are contracted for by Government agencies other than the Atomic Energy Commission. I personally believe that the AEC's authority should be broadened to permit the execution of indemnity agreements with contractors of any Government agency. To this end, in my letter to the chairman I suggested language amending section 170 d.

My feelings in this matter are based on the desirability of uniform ground rules, administration, and implementation. It seems appropriate for one agency to be responsible for all programs of indemnification involving nuclear incidents, and the AEC certainly has both the competence and experience to do the job.

Thank you, Mr. Chairman.

Representative PRICE. Mr. Vogel, are you suggesting that the attachments to your statement be included in the record?

Mr. VOGEL. The attachments to my statement, Mr. Chairman, are in the official transcript of the 202 hearings (1961 hearings on the "Development, Growth, and State of the Atomic Energy Industry," pp. 137–139); so I do not think it would be necessary to include them in the record of this hearing.

I did it more for convenience of members of the committee.

Representative PRICE. Why does not the general indemnity authority now vested in the AEC adequately provide indemnity protection?

Mr. VOGEL. Well, there are several ways in which I would like to answer that.

In the first place, under the general contract authority of the AEC, it is not real clear that the Commission has authority to provide indemnity outside the United States. And I think contractors have felt this to be so all along with respect to indemnity both within and without the United States.

If you recall, the Du Pont contract for the Savannah River plant provided indemnity to the Du Pont Co., and the Du Pont Co. insisted that the Commission's authority was far from being precise, and the Commission finally went to the President for action under the First War Powers Act.

Secondly, because of certain restrictions that apply with respect to general contract authority, the clauses are always made subject to the availability of funds or subject to the availability of appropriations. You can never be certain that the appropriations will be available, and thus the protection is lessened.

Third, there seems to be a tendency on the part of those who negotiate indemnity agreements to look upon them as some beast to be avoided and to attempt to restrict coverage. Experience has shown that it is not easy to negotiate a general indemnity clause in a contract under the general contract authority.

Finally, we run into situations such as the case of the McMurdo Sound reactor. There the plant is to be operated for the benefit of the Navy, and our indemnity is subject not only to the availability of appropriations to the Navy, but also to a transfer of funds from the Navy to the Commission.

I think it would be a lot cleaner, neater, and simpler if we were afforded indemnity through specific authority such as I have suggested.

Representative PRICE. Did you sit through the first 2 days of the hearing?

Mr. VOGEL. No, sir; I did not.

Representative PRICE. Well, yesterday it was suggested that some of the testimony in connection with your proposed amendment to section 170d be amended. It was suggested it be amended to make it mandatory for the Commission to provide financial protection to cover contractors. Your language says "may." And the suggested amendment is that the "may" be changed to "shall."

Mr. VOGEL. I would be all in favor of that. I left it "may," because I think the word "may" is in the present act, and in drafting my proposal I tried to maintain the language of the present Price-Anderson amendments as much as I could.

I think we would feel a lot better about making it mandatory, than discretionary.

(A letter from Mr. Vogel, clarifying the above discussion, follows:)

THE MARTIN CO.,
Baltimore, Md., July 24, 1961.

Hon. MELVIN PRICE,
Chairman, Subcommittee on Research and Radiation, Joint Committee on Atomic Energy, Capitol Building, Washington, D.C.

MY DEAR MR. PRICE: During the course of my recent testimony before the Subcommittee on Research and Radiation concerning operations under the

indemnity provisions of the Atomic Energy Act of 1954, you referred to previous testimony which suggested making mandatory the Commission's authority to require contractors to provide financial protection covering public liability arising out of contractual activity abroad. Actually, the question was stated as follows: "It was suggested it (sec. 170 d. of the act) be amended to make it mandatory *for the Commission to provide* financial protection to cover contractors." I answered as I did because of the words *underscored* above and my assumption that the reference was to making contractual indemnity mandatory.

Having now had an opportunity to review the previous testimony I realize I was in error, and that what you had in mind was compulsory insurance and not contractual indemnity. This changes my answer completely.

On the point at issue, I am in full agreement with the views of Mr. Arthur W. Murphy, whose testimony followed mine. I would appreciate it, therefore, if this letter could be included with my testimony in the official record of the hearings.

Sincerely yours,

CLARK C. VOGEL,
Assistant General Counsel.

Mr. NEWMAN. Mr. Vogel, I have a letter here from the Comptroller General to the chairman of the Senate Armed Services Committee. A similar type legislation is pending before that committee. And the Comptroller, in commenting on the provision that would allow the Department of Defense to indemnify contractors outside the United States, says:

Whether the law of the jurisdiction of the place where the incident occurred would apply, or whether the courts would apply by analogy the Federal Tort Claims Act, is open to question. If the contractor or subcontractor is otherwise amenable to suit in foreign courts and the suit is successful, the ultimate liability of the United States might have arisen from legal principles repugnant to our jurisprudence. While the draft would limit the authority of the draft to indemnify to $500 million for each incident, this limitation in no wise limits what a foreign court might award for an incident. We believe that it would be in the best interests of the United States to restrict its indemnification liability to incidents within the United States until these problems are resolved either by express legislation or by treaty.

Would you comment on this criticism? This is a standard objection that has been voiced about this type of legislation.

Mr. VOGEL. I am aware of this, and I think it has come up in connection with the proposed conventions in Europe—the "recourse" problem and others. But I am afraid that if we accepted the principle that Government contractors operating outside the United States should receive protection, we are going to have to accept the possibility that a foreign court may apply principles which are foreign to our jurisprudence.

I do not know whether legislation can clarify this. I have some doubt on that. I doubt whether U.S. legislation could change the jurisprudence of a foreign country.

Mr. NEWMAN. What effect would your proposed amendment have on these pending international conventions on nuclear liability? Would it impede their final acceptance by the nations concerned?

Mr. VOGEL. Oh, I do not think so, no. My proposed legislation limits indemnity to a person in privity with the Government work involved, and does not afford the broad coverage that the proposed conventions would. I do not think it would impede it a bit.

Representative PRICE. Is that all you have, Mr. Vogel?

Mr. VOGEL. Yes, sir.

Representative PRICE. Thank you very much.

Senator AIKEN. Mr. Chairman, is there any proposal to charge a fee for insurance under these projects to the contractors?

Representative PRICE. The indemnification begins, of course, above the amount set by the Commission as to the insurance that the contractor must carry.

Senator AIKEN. Is there a reserve accumulated for the purpose of paying damages? The reason I am asking that: I have got to leave in a few minutes for the mutual security markup and we do insure American investments overseas. But there is a charge of one-half of 1 percent for doing it.

Representative PRICE. Mr. Vogel might be able to talk to you on the problem that exists overseas in indemnification.

Senator AIKEN. I suppose any accumulation of a reserve for payment of damages would probably be pretty small, if there was a real catastrophe that occurred.

Mr. VOGEL. The liability of the Government to indemnify goes up to $500 million.

Representative PRICE. But they have to get appropriations to do that. There is no pool or anything for that $500 million. This was just set as a principle, that the Government accepts indemnification up to $500 million in the case of a catastrophic incident. But this begins only after the private insurance that is available in a pool that a large group of insurers have set up, to insure these types of projects.

The next witness will be Mr. Maurice Axelrad, of the New York State Office of Atomic Development.

STATEMENT OF MAURICE AXELRAD, NEW YORK STATE OFFICE OF ATOMIC DEVELOPMENT

Mr. AXELRAD. My name is Maurice Axelrad. I am counsel for the New York State Office of Atomic Development.

The New York State Office of Atomic Development appreciates this opportunity to bring to the attention of the Joint Committee several existing problems with respect to the transportation of radioactive maerials through certain facilities in the State of New York. Although we have been primarily concerned with these problems insofar as they may impede the successful growth of the atomic energy industry within the State, it is evident that their potential impact is nationwide, and we believe that the Joint Committee will be deeply interested in assuring that they are satisfactorily resolved.

Last year, when this Office became aware that several agencies within the State had promulgated, or were considering, regulations pertaining to the control of radioactive shipments, a meeting was held to explore the problems associated with such regulations and the possibility of a uniform approach.

Represented at a meeting in New York City on November 16, 1960, were the New York City Department of Health, New York State Department of Health, State Public Service Commission, U.S. Atomic Energy Commission, Port of New York Authority, State Thruway Authority, Triborough Bridge and Tunnel Authority, Bureau of Explosives of the American Association of Railroads (representing also the ICC), and this office.

It was decided at that meeting that a small committee comprised of those agencies most directly concerned be established to work on mutual problems. The State Committee on Transportation of Radioactive Materials was subsequently constituted and consists of representatives of the New York City Department of Health, the State Department of Health, the New York State Thruway Authority, the Triborough Bridge and Tunnel Authority, the Port of New York Authority, a bistate authority of New Jersey and New York, and this office.

One of the most pressing problems facing the Transportation Committee was the apparent unavailability to the public authorities of adequate "first person" property damage and "loss of revenue" insurance coverage for nuclear incidents occurring in the course of transportation of radioactive materials which may damage, destroy or impair the use of the facilities.

These authorities were becoming increasingly concerned over the exclusion of nuclear losses inserted in their all-risk policies beginning in 1959. Partly because of this problem, the Triborough Bridge and Tunnel Authority had banned all radioactive shipments from its facilities except for very small quantities; the Port of New York Authority had banned virtually all such shipments from its tunnels, and imposed restrictions on certain types of such shipments over its bridges; and the New York State Thruway Authority was in the process of preparing regulations affecting radioactive shipments.

The particular problems encountered by these agencies, and their views thereon, are detailed in letters to the Director of this Office from the Port of New York Authority, dated June 30, 1961; from the Triborough Bridge and Tunnel Authority, dated July 13, 1961; and from the New York State Thruway Authority, dated July 14, 1961.

I would appreciate having these letters included in the record of this hearing.

Representative PRICE. Without objection, they will be included.

(The letters referred to follow:)

THE PORT OF NEW YORK AUTHORITY,
PORT DEVELOPMENT DEPARTMENT,
New York, N.Y., June 30, 1961.

MR. OLIVER TOWNSEND,
Director, Office of Atomic Development,
State of New York, Albany, N.Y.

DEAR MR. TOWNSEND: In response to your request, I have set forth the following review of our consideration of the important problem of maintaining financial protection against the risk of nuclear reaction, nuclear radiation, and radioactive contamination at facilities of the Port of New York Authority.

As the bistate agency of New York and New Jersey, we have considered this problem in cooperation with other agencies of these States. In our close liaison with the New York State Office of Atomic Development, we have given this problem careful attention in connection with the overall necessity for the proper operation of port facilities to keep pace with the use of nuclear energy for peaceful purposes. With your encouragement and support, we have invited and repeat our invitation that the NS *Savannah* utilize our newly built Brooklyn-port authority piers.

The facilities for which the Port of New York Authority is responsible include: 6 interstate bridges and tunnels between New York and New Jersey; namely, the George Washington Bridge, the Holland Tunnel and the Lincoln Tunnel connecting Manhattan Island with New Jersey, and the Goethals Bridge, the Bayonne Bridge and the Outerbridge Crossing linking Staten Island and New Jersey; the 4 metropolitan airports; namely, New York International, La

Guardia, Newark, and Teterboro; many of the pier facilities in the New York-New Jersey Harbor; a union bus terminal; 2 truck terminals; Union Inland Freight Station No. 1 in Manhattan; and 2 heliports, one on the West Side and one on the East Side of Manhattan Island.

Until port authority bridge and tunnel property damage and toll revenue insurance policies were renewed on February 20, 1959, these facilities were insured against virtually all risks of physical injury which might result in property damage or loss of revenues. After that time, the bridge and tunnel policies could no longer truly be called all-risk policies since they now contain the following exclusion:

"This company shall not be liable for loss by nuclear reaction or nuclear radiation or radioactive contamination, all whether controlled or uncontrolled, and whether such loss be direct or indirect, proximate or remote or be in whole or in part caused by, contributed to, or aggravated by the peril(s) insured against in this policy; however, subject to the foregoing, and all provisions of this policy, direct loss by fire resulting from nuclear reaction or nuclear radiation or radioactive contamination is insured against by this policy."

Thus, the six bridges and tunnels connecting Metropolitan New York with northern New Jersey are without financial protection in the event of an incident involving radioactive materials. Other port authority facilities are insured by a fire and extended coverage insurance policy. This is a named perils policy which generally does not cover losses caused by nuclear reaction, nuclear radiation or radioactive contamination.

The port authority is not supported by the tax revenues of either New York or New Jersey, nor can it pledge the credit of either State. More than $1 billion has been raised to build the terminal and transportation facilities for which the authority is responsible, through the issuance of bonds backed solely by the revenues derived from these facilities. The bonds are amortized, and the facilities maintained and developed through charges to users. Clearly, the authority cannot be expected to take the risk that one of its essential public facilities be put out of commission or otherwise seriously damaged by an incident against which the authority is not insured.

After your office contacted us in August 1959, members of the port authority staff met with your counsel to discuss our mutual concern over problems affecting the shipment of radioactive materials in the port of New York district. We came to the conclusion, after an examination of the relevant legislation in this field, that no statutory or other replacement now exists for the insurance coverage eliminated by the nuclear exclusion which has been engrafted on the port authority bridge and tunnel property damage and toll revenue insurance policies.

You and your staff have assured us and the Atomic Energy Commission has reassured us that the possibility of an incident is remote. Of course, even more remote contingencies are covered by our existing insurance. Therefore, as a public agency responsible for these terminal and transportation facilities, and in view of the expansion of the nuclear industry in the United States and the attendant rise in shipments of radioactive materials, we deemed it advisable to ascertain the possibility of again obtaining insurance to cover the hazards to port authority bridges and tunnels involved in shipments of radioactive materials as well as the possibility of obtaining such insurance for the first time to cover other port authority facilites. Your assistance has been vital in this endeavor. However, despite our best efforts and the efforts of other public agencies throughout the country to obtain coverage against radiation hazards, we were not successful in 1959 or 1960 or the first 5 months of this year.

It may be of interest to note at this point that notwithstanding the lack of financial protection, shipments of radioactive materials across port authority bridges is generally permitted under specific rules and regulations. Because of the almost impossible decontamination problems which would result from an incident in a tunnel, port authority tunnels are virtually closed to such shipment. But the increasing use of our facilities for shipments of radioactive materials makes it increasingly important that financial protection against damage to these facilities from such shipments be obtained.

In conjunction with your office and representatives of the State of New Jersey, we have been in close contact with the Atomic Energy Commission on this matter. After a series of meetings which is still continuing, we are sure that the AEC is fully cognizant of the needs of such public agencies as ours.

Our meetings with the Atomic Energy Commission resulted from the Commission's desire to ship irradiated fuel elements from European countries to the United States through pier facilities in the port of New York. The story of

these shipments, which have not yet taken place, is detailed in somewhat abbreviated form in the correspondence which I have attached to this letter: a letter I sent to Mr. Algie A. Wells, Director of the Division of International Affairs of the Atomic Energy Commission, dated April 29, 1960; the reply by Mr. Wells' Deputy, Mr. Myron B. Kratzer, dated September 30, 1960; Mr. Kratzer's further letter, dated May 3, 1961, and my reply, dated June 16, 1961.

The entire problem of financial protection was thoroughly examined at the meeting last month at which you were cochairman with Mr. Robert A. Kaye, Chief of the Atomic Energy Commission's Traffic Management Section. The meeting was well attended by AEC representatives and by representatives of various terminal and transportation authorities concerned with this problem.[1] At that time, we were advised by the AEC that under present law, this problem could be met only by the insurance industry or by remedial legislation.

Less than 2 weeks ago, largely due to your effective work in cooperation with other representatives of New York and New Jersey agencies, the Inland Marine Insurance Bureau advised us that some modification of its previously adamant position against insuring these risks may be possible. It has, in fact, forwarded to us a form of endorsement which would modify its stringent bridge and tunnel policy nuclear exclusion clause. This endorsement was presented by the insurance companies with no prior consultation with us as to the form of endorsement which would be satisfactory. The form of endorsement is not satisfactory and does not solve the problem. It is however, a very real step forward and there is every reason to be believe that if the insurance industry would consider the needs of the terminal and transportation authorities, a satisfactory form of endorsement may be reached without protracted difficulty or delay.

The insurance industry has not yet advised us as to the cost of such coverage nor the amount of damages which they are willing to assume. The monetary limits on liability and the amount of the premium were left blank and are still blank on the forms we received. These hurdles may be even more substantial than the form of the endorsement. Whether or not they can be solved is up to the insurance industry and its evaluation of the risks it is asked to assume. The problem of carrying forward the principle of such coverage from authority bridges and tunnels to other authority terminal and transportation properties, however, does not seem to us to be at all difficult and is likewise largely up to the insurance industry.

In all frankness, we have been giving extremely serious thought to joining with you and other agencies affected in presenting the problem of financial protection to the Congress and seeking the assistance of the Congress in the solution of this problem. We believe that we are confronted with a situation which is every bit as serious as that which faced manufacturers who desired to enter the field of peacetime nuclear industrial development prior to the passage of the Price-Anderson Act. Even with the possibility of substantial profit some time in the future, they could not risk entering this field.

We have no prospect of any financial gain at all. We have no wish for any gain from the handling of shipments of radioactive materials. We are more than willing to be of assistance in the development of the nuclear industry. But we do not believe that it is right that this public agency of the States of New York and New Jersey and other similar agencies throughout the United States be asked, in return for their assistance, to run risks of substantial damage to property, loss of revenue and liability to others without financial protection.

Measured against the revenues which are derived or which conceivably may be derived in the future from such shipments, the risk assumes its true pro-

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[1] Representatives at this meeting included: John A. Derry, Director, Division of Construction and Supply, AEC; P. M. Lum, Chief, Property and Supply Management Branch, C. & S., AEC; V. I. Gruber, Traffic Management, C. & S., AEC; Murray Chais, Traffic Management, C. & S., AEC; W. J. Satterfield, Jr., Chief, Insurance Section, FIN. AEC; Leslie F. Spalding, Chief, Claims, Insurance Section, FIN. AEC; W. J. Minsch, Jr., Counsel, Production, C. & S., OCC, AEC; L. M. Trosten, OCC, AEC; Charles F. Eason, Counsel, Federal-States Relations, OCC, AEC; Eber R. Price, Assistant Director, L. & R., AEC; Lester R. Rogers, Assistant Director, L. & R., AEC; G. W. Morgan, Federal-State Relations Branch, M. & S., AEC; Charles R. Coughman, Federal-State Relations Branch, M. & S., AEC; T. J. King, Program and Fiscal Branch, RD, AEC; Maurice Axelrad, counsel, New York State Office of Atomic Development; Milton D. Stewart, New York State Thruway Authority; John P. MacArthur, New York State Thruway Authority; Meyer Scheps, assistant general counsel, Triborough Bridge and Tunnel Authority; Michael S. Zarin, attorney, the Port of New York Authority; and Lawrence S. Friedman, assistant insurance manager, the Port of New York Authority.

portions. Tolls or fees, even at a doubled rate, are insignificant compared with the extra costs involved in accepting such shipments. Therefore, to measure such revenue against possible risk of damage is, of course, completely unrealistic.

Other agencies, similar to the port authority, have decided that they will not accept such shipments. We are advised that the Triborough Bridge & Tunnel Authority, whose facilities include the Triborough Bridge, the Bronx Whitestone Bridge, the Throgs Neck Bridge, the Brooklyn-Battery Tunnel and the Queens-Midtown Tunnel, prohibits the shipment of radioactive materials, that the Massachusetts Turnpike Authority prohibits the shipment of radioactive materials and that there are other terminal and transportation authorities in various parts of the country which currently prohibit or which are thinking seriously of prohibiting such shipments on the ground that, at the present time, they are unable to secure adequate insurance or other financial protection.

Be that as it may, we agree with you that in view of the recent expression of interest on the part of the insurance industry in assuming responsibilities in this field, the industry should be given every opportunity to do so and a request for direct congressional assistance may be premature. We also think it well and concur in your belief that the Joint Congressional Committee on Atomic Energy should be apprised of the problems of the terminal and transportation authorities in this area so that the committee, as well as the insurance industry, and the Atomic Energy Commission, may be informed. If you wish, you may feel free to use this letter for that purpose.

On the strength of the new and most welcome attitude of the insurance industry, I believe that it will prove most productive to devote the next several months to an attempt to work out the problems in the area with insurance company representatives. We shall be pleased to continue to cooperate with you and representatives of other agencies in these efforts. The failure of these efforts will inevitably result in the constriction of desirable transportation routes for shipments of radioactive materials; and then congressional action may prove to be the only way to relieve the problem. The success of these efforts will be a landmark of the development of atomic energy for peaceful purposes.

Sincerely yours,

ROGER H. GILMAN,
Director of Port Development.

THE PORT OF NEW YORK AUTHORITY,
PORT DEVELOPMENT DEPARTMENT,
New York, N.Y., April 29, 1960.

Mr. ALGIE A. WELLS,
Director, Division of International Affairs,
Atomic Energy Commission, Washington, D.C.

DEAR MR. WELLS: During recent weeks, port authority representatives and representatives from the States of New York and New Jersey have been meeting with Mr. Robert Berte of your Division and a number of other members of the staff of the Atomic Energy Commission, including attorneys of the Office of General Counsel in reference to the AEC's proposal to ship irradiated fuel elements from European countries through pier facilities at the port of New York.

One of the primary problems the Port of New York Authority is still considering in regard to these shipments through its own marine terminals is the problem of financial protection in the event of an accident. At this time we do not know the attitude of the owners of other piers at the port. As we see it, this problem has two parts. First, the necessity for protection from claims against the port authoriy. Second, the necessity for protection against losses due to property damage at port authority facilities. This problem arises principally from the atomic incident exclusions in our standing insurance.

We were advised at our meeting in Washington on April 11 that it is possible for the port authority to be fully protected against claims resulting from mishaps in the course of these shipments. We have been assured that such protection could be made available by carefully tailoring the relevant indemnity agreements so as to take advantage of the benefits which the Price-Anderson Act makes available. It was suggested that we write to you in order to receive confirmation of this advice and assurance that such protection will be provided.

It was also suggested that we address to you our concern in regard to the second part of the problem; the lack of a firm guarantee of financial protection for the port authority from losses due to physical damage at port authority facilities. We are not insistent on the form such protection might take, but we are sure that you will agree that the port authority should not be called upon to bear the cost of the results of any accident due to the shipment of these irradiated fuel elements. Some members of the AEC staff have expressed the belief that it might be possible for the guarantee to be made by contract with the port authority. As a possible alternative to this suggestion, perhaps the AEC could purchase insurance to cover what we understand to be the remote possibility of such losses. If insurance were provided, it might be logical for the cost to be borne by the foreign governments from which the fuel elements are shipped.

While we are considering the need for financial protection in terms of protection for the port authority, we believe that any prudent terminal operator who is made aware of the complexities of this problem will also carefully review the problem of receiving these shipments without the assurances we ask. Of course, if you are precluded by law from providing the full protection we seek, we will not necessarily reject any proposal that the fuel elements move through port authority facilities, but we will carefully consider the proper course of action for us to take in regard to these shipments.

We would be happy to discuss this matter further with you or members of the AEC staff at any time.

Sincerely yours,

ROGER H. GILMAN,
Director of Port Development.

THE PORT OF NEW YORK AUTHORITY,
PORT DEVELOPMENT DEPARTMENT,
New York, N.Y., June 16, 1961.

Mr. MYRON B. KRATZER,
Deputy Director, Division of International Affairs,
U.S. Atomic Energy Commission, Washington, D.C.

DEAR MR. KRATZER: In response to your letter of May 3, 1961, we have carefully considered the possibility of making New York International Airport available for the shipment of irradiated reactor fuels from the Netherlands.

We are unable to come to any final conclusion on this matter until the problems relating to financial protection in the event of an accident involving such shipments are resolved. As you know, these problems were discussed in our letter dated April 29, 1960, to Mr. Algie A. Wells, Director of the Division of International Affairs of the Atomic Energy Commission. While that letter related to pier facilities through which it was then proposed by the AEC that such cargoes be shipped, it applies at least equally to airport facilities.

Therefore, we request that the use of port authority facilities for the shipment in question and any similar shipments be deferred until these problems are resolved.

We welcome and rely upon your statement that the AEC will keep the port authority advised in advance of all air and surface shipments of irradiated fuels through the port of New York. I am sure that you plan to keep other interested State and city agencies similarly advised.

Please let us know if we can be of any assistance in solving the problems presented by the proposed shipments.

Sincerely yours,

ROGER H. GILMAN,
Director of Port Development.

P.S.—Further discussions in regard to this particular shipment are taking place between AEC and port authority representatives. On the AEC's assurance that the shipment poses virtually no hazard even in the event of the most serious accident that might ensue, there is every prospect that a mutually agreeable solution will be arrived at. However, no satisfactory solution can be developed in regard to shipments of greater hazard, without full financial protection.

ATOMIC ENERGY COMMISSION,
Washington, D.C., May 3, 1961.

Mr. ROGER H. GILMAN,
Director, Port Development Department,
New York Port Authority, New York, N.Y.

DEAR MR. GILMAN: Since your letter of September 30, 1960, we have continued to study the problems relating to reprocessing of irradiated reactor fuels from abroad.

The only fuel to be returned to the United States during the next 2 or 3 months, is the Netherlands fuel, which we discussed with you at meetings, both here in Washington and in New York. This fuel was used for only a few weeks at very low power, at an exhibition in Amsterdam during the summer of 1957, and is only slightly radioactive. We have asked the Netherlands Government to return the fuel elements in a steel container designed for this purpose and acceptable to the AEC. Shipment will probably be made by air to Idlewild International Airport and transferred to a private domestic licensee of the AEC for processing.

Since the fuel elements involved are only slightly radioactive, it is presently contemplated that they can be processed in a private facility normally employed in the processing and recovery of unirradiated scrap material of similar composition. Technical reviews indicate that such a facility can process this material without modifications in equipment or procedure. If this course of action is followed, Price-Anderson coverage will not apply to the material, since the cold processing facility which would be employed is not covered by a Price-Anderson arrangement with the AEC.

Since the port authority's interests include Idlewild Airport, we will keep you advised in advance of all air and surface shipments of irradiated fuels through the port of New York. We will also be pleased to discuss with you any problems or details relating to the shipments.

Sincerely yours,

MYRON B. KRATZER,
Deputy Director, Division of International Affairs.

ATOMIC ENERGY COMMISSION,
Washington, D.C., September 30, 1960.

Mr. ROGER H. GILMAN,
Director of Port Development,
Port Development Department, New York, N.Y.

DEAR MR. GILMAN: I am writing to confirm our telephone conversation of September 21, 1960, concerning our proposal to ship irradiated fuel through the port of New York.

We wish to confirm that the Price-Anderson Act coverage for third party liability can be extended to cover the transportation of irradiated fuel through the port of New York to our chemical reprocessing facilities.

We are examining the various types of contractual and other arrangements that need be made for the transportation of irradiated fuels to the United States and will be pleased to discuss them with you, along with other questions raised in your letter of April 29, 1960, as soon as we have a more definitive position on this matter.

Sincerely yours,

MYRON B. KRATZER,
Deputy Director, Division of International Affairs.

P.S.—As I told you, there are no impending shipments of irradiated fuel through the port of New York. The earliest shipments we foresee are about January 1961.

M. KRATZER.

TRIBOROUGH BRIDGE & TUNNEL AUTHORITY,
New York, N.Y., July 13, 1961.

MR. OLIVER TOWNSEND,
Director, Office of Atomic Development,
Albany, N.Y.

DEAR SIR: At your request we submit the following statement relative to the transportation of radioactive materials over the facilities of Triborough Bridge & Tunnel Authority with particular emphasis on the question of adequate insurance coverage for property damage and loss of revenues. It is our understanding that you intend to use this letter as an addendum to a communication you are addressing to the chairman of the Joint Committee on Atomic Energy of the Congress of the United States.

Triborough Bridge & Tunnel Authority is a public benefit corporation created in 1946 by the Legislature of the State of New York. It has under its control and jurisdiction certain toll bridges and tunnels within the geographical confines of the city of New York, certain of which are open to use for commercial vehicles. These are Triborough Bridge (connecting the Borroughs of Manhattan, the Bronx, and Queens), Bronx-Whitestone Bridge (connecting the Boroughs of the Bronx and Queens), Throgs Neck Bridge, opened January 1961 (connecting the Boroughs of Brooklyn and Queens), Marine Parkway Bridge (connecting the Boroughs of Brooklyn and Queens), Cross Bay Bridge (across Jamaica Bay in the Borough of Queens), Queens Midtown Tunnel (connecting the Bouroughs of Manhattan and Queens) and Brooklyn-Battery Tunnel (connecting the Boroughs of Manhattan and Brooklyn). The total number of vehicles using the mentioned facilities in 1960, except the Throgs Neck Bridge, was 133,025,644. In addition, the authority is in the process of constructing the Verrazano-Narrows Bridge across New York Harbor (connecting the Boroughs of Brooklyn and Richmond) which will also be open to use by commercial vehicles.

The authority's operations are financed by private investment and its only source of revenue is from the collection of tolls. Payment of its bonded indebtedness is not guaranteed by the State of New York or the city of New York. The authority has no taxing power.

The rules and regulations adopted by the authority and now in effect exclude all vehicles transporting weapons of war employing atomic fission or radioactive force and radioactive materials from all bridges and tunnels.

Prior to 1961 and at no additional premium the authority was covered by multirisk and use and occupancy insurance policies for loss or damage to its facilities and loss of toll revenues resulting from nuclear or radioactive incidents where the incidents took place on, adjacent to or at a distance from any facility. The only exclusion related to weapons of war containing nuclear or radioactive materials. Consequently, the authority's rules and regulations then in force prohibited the use of its facilities by vehicles transporting such weapons of war but made no reference to exclusion of vehicles carrying radioactive materials.

However, upon the expiration of these policies in 1961, when the authority was informed that it would no longer be protected against loss or damage to its property and loss of revenues resulting from nuclear or radioactive incidents, the authority was constrained to amend its rules and regulations to exclude the transportation of any radioactive materials, as above stated.

In response to the urging of the New York State Office of Atomic Development and several of the authorities created by the legislature, including Triborough Bridge & Tunnel Authority, the insurance industry has prepared an endorsement to property damage policies affording limited coverage for occurrences resulting from sudden and accidental nuclear and radioactive causes. No rate has yet been established nor has any limit of liability been determined by the insurance community. The endorsement only affords partial coverage for the risks formerly fully covered in our policies. All that we would be protected against would be damage to our facilities to the extent of the limit of liability in the event of an occurrence involving nuclear reaction or radioactive material on the facility. No coverage is afforded under the endorsement for loss or damage should the occurrence take place above, below, or at a distance from the facility.

Furthermore, a use and occupancy endorsement, which we formerly had in our policies, has not as yet been formulated. It is obvious that were an incident involving radioactive materials to occur on one of our facilities it could be closed down entirely for many days thereby causing a substantial loss of revenue. In

addition, the new policies afford no coverage for loss or damage resulting from occurrences involving weapons of war containing atomic warheads or fissionable material.

In view of this action by the insurance industry this authority would have to pay what undoubtedly will be a very substantial premium for a form of protection which is inadequate and which previously, in a broader character, was furnished at no extra cost. It must be apparent that the transportation of radioactive materials across our facilities is of no direct benefit to the authority and creates safety and financial hazards far out of proportion to the small amount of tolls to be collected. Commensurate with its responsibility to its bondholders and the toll-paying patrons of our facilities, the authority has had no choice but to completely prohibit the movement of nuclear and radioactive materials.

On several occasions representatives of the Department of Defense and the Atomic Energy Commission have stated that the movement of radioactive materials is of public concern. It would, therefore, appear that the Federal Government should make provision for insurance protection of facilities, such as ours. In summary, we will continue to prohibit this type of transportation unless and until there is afforded adequate and acceptable insurance from whatever source to protect the considerable investment of the authority's bondholders and its revenues.

Very truly yours,

ARTHUR S. HODGKISS, *Assistant General Manager.*

NEW YORK STATE THRUWAY AUTHORITY,
Elsmere, N.Y., July 14, 1961.

NEW YORK STATE OFFICE OF ATOMIC DEVELOPMENT,
State Office Building, Albany, N.Y.
(Attention of Mr. Oliver Townsend.)

DEAR MR. TOWNSEND: The Thruway Authority has received a copy of the statement which you propose to submit to the Joint Congressional Committee on Atomic Energy on behalf of the Committee on Transportation of Radioactive Materials, as well as a copy of the letter mentioned therein from the Port of New York Authority, and we subscribe to the views expressed in both of these. We would also like to add a few additional comments, which seem to us to be particularly relevant to this authority.

This authority is, like the Port of New York Authority, privately financed. All of the funds which went into the construction of these portions of the Thruway for which a toll is collected, which constitute over 90 percent of the entire system, were obtained through the sale of bonds to private investors; neither the State of New York, nor the Federal Government, nor any other public entity contributed a penny to the construction of those portions of the road. Under the terms of the general revenue bond agreement, the bondholders are to be repaid out of income derived from the tolls collected.

Because the number of interchanges on the thruway system is limited, the traffic cannot easily shift off of and back on to the thruway to avoid an obstruction; the authority's financial position would be imperiled if any portion of the thruway were rendered unusable for any length of time at all.

For this reason, the authority has attempted to protect itself and its bondholders by purchasing insurance against those contingencies which would appear to involve the most severe financial consequences should they occur. This insurance, which actually consists of a number of different policies, may be considered for present purposes as falling within one or the other of two categories—third party liability insurance or first party property damage and loss of revenue insurance.

Under the terms of our third party liability insurance program, the authority is protected against suits by travelers on the thruway, neighboring land owners, and essentially all other third parties, in varying amounts. Under the authority's first party insurance program, we are protected both from damage to our property and from any loss of tolls or other revenue. All of the major structures on the entire thruway system are insured in varying amounts according to their replacement values, ranging from $70 million coverage for the Tappan Zee Bridge across the Hudson River to $2½ million coverage for various bridges across roads and minor streams. The authority is also insured for any loss

of revenue which may result from damage to these or any other of the many hundreds of structures along the road, for a period of 24 months.

As you know, the nuclear liability exclusion clause mentioned in your statement and the Port of New York Authority's letter renders all of the policies providing these kinds of protection useless in connection with an accident involving radioactive material. We also wish to emphasize the fact that these policies, within their monetary limits, provide what is essentially complete indemnity for this authority from any damages resulting from any other kind of accident whatever—questions of whether the authority may or may not be solely or contributorily negligent are irrelevant to a full recovery.

It therefore appears that if a convoy of explosives carriers were to explode in the middle of our longest bridge, the financial position of the authority would not be seriously impaired. However, if a single package of radioactive material were to fall off of a truck traveling along the thruway, the resulting financial detriment to the authority could be serious indeed.

The insurance which may become available to us, and which is mentioned in your statement, will, therefore, not completely solve all of our problems, even assuming that the various questions concerning this coverage which are mentioned in your statement and the letter of the Port of New York Authority are satisfactorily resolved. Although such coverage would constitute a major step forward, what this authority ultimately requires is an indemnity coverage of the same order as that which applies to atomic facilities, as well as property damage coverage for our structures and roadway, and protection against loss of revenue. We are not aware that satisfying this need is in any way inconsistent with any national policies concerning radioactive materials; rather, it seems to us that national interest would best be served by encouraging the use of superhighways for the transportation of radioactive materials.

Of all of the various entities which deal in any way with such materials, the thruway and other similar transportation and terminal facilities are the only ones which realize no benefit from them whatever, since the tolls themselves do not begin to cover the costs and expenses peculiarly incident to such shipments, and yet these facilities are almost unique in being subject to a very serious potential financial detriment. Manufacturers, shippers and the users of such materials, even hospitals and universities, are protected by the indemnity provisions of the Atomic Energy Act of 1954, as amended, and insurance is freely available to them; indeed, in most cases, they can charge back the premiums for such insurance to some other entity, private or governmental. The toll and terminal facilities enjoy none of these protections.

After a very long period of forbearance, the Nation's toll and terminal facilities have been forced to promulgate a significant and steadily increasing number of local regulations, ranging from minor restrictions to an absolute prohibition of traffic in such materials; the thruway has presently under consideration a number of such rules.

If such traffic is to be allowed to continue, we will have to consider such steps as purchasing monitoring devices, training personnel to deal with accidents involving such materials, and limiting the days and times of day when such shipments as are not totally barred from using the thruway may be made. We have already exchanged quantities of information on these subjects with other toll facilities, and we have conferred with almost every local, State and national body which deals in such matters. Fundamental to the question of what can be allowed to travel on the thruway is the question of what insurance and indemnity protection we may achieve from the risks involved therein, a question which we hope will be considered by the Joint Committee.

We have been, and continue to be, very grateful to the Office of Atomic Development for its aid in the effort to solve some of the many problems with which we are confronted, and to the Atomic Energy Commission, the other members of the Transportation of Radioactive Materials Committee, and the large number of scientists, manufacturers, carriers, and other persons acquainted with radioactive materials, all of whom have contributed generously of their time and experience. All of these persons and entities, however, while they help to define our problems, are not in a position to solve them; it is our earnest hope that, perhaps through the efforts of the Office of Atomic Development, and with the help of the Joint Committee, a solution will emerge before the fore-

seeable plethora of local regulations on the subject makes the transportation of radioactive materials a near impossibility on toll facilities throughout the country.

Very truly yours,

THEODORE H. KLINE, *Acting Counsel.*

Mr. AXELRAD. That these problems were not of only local importance is, of course, reflected by the recent action of the Massachusetts Turnpike Authority in prohibiting radioactive shipments.

The transportation committee decided to pursue with the insurance industry the question of the extent to which "first person" property damage and "loss of revenue" insurance coverage might be made available to the authorities within the State. Such insurance coverage would be issued to the authorities as named insureds, and would be available independently of protection afforded either by the Price-Anderson amendments to the Atomic Energy Act of 1954, as amended, or under insurance coverage issued to amend insureds other than the authorities.

When a meeting with representatives of the insurance industry was prevented by inclement weather, letters of inquiry on the above subjects were sent to the Inland Marine Underwriters Association, Mutual Atomic Energy Reinsurance Pool, and Nuclear Energy Property Insurance Association on January 30, 1961.

Preliminary replies from these associations indicated that property loss or damage insurance which could be made available to the authorities would not include coverage for loss or damage resulting from the presence on the premises of (1) a nuclear reactor or (2) any new or used nuclear fuel element(s) or (3) any radioactive material of any kind exceeding 500 millicuries.

However, subsequent correspondence with the insurance industry indicated that consideration was being given to the possibility of providing the coverage desired, and, on June 16, 1961, the Inland Marine Insurance Bureau informed this Office that the Executive Committee of the Bureau had approved an endorsement for use in providing limited nuclear damage coverage on toll bridge and tunnel facilities and in conjunction with use and occupancy and debris removal insurance. I would appreciate having that letter and the proposed endorsement included in the record of this hearing.

Representative PRICE. Without objection they will be included.

(The letter and endorsement referred to follow:)

INLAND MARINE INSURANCE BUREAU,
New York, N.Y., June 16, 1961.

Mr. OLIVER TOWNSEND,
Director, Office of Atomic Development,
Albany, N.Y.

DEAR MR. TOWNSEND: Referring to our several telephone conversations and your correspondence with the Inland Marine Underwriters Association, I am pleased to advise you that at a meeting of the executive committee of this bureau held on Wednesday of this week, there was approved an endorsement as attached for use in providing limited nuclear damage coverage on toll bridge and tunnel facilities. Similar endorsements will be prepared for use in conjunction with use and occupancy and debris removal insurance.

Producers representing the Port of New York Authority and the Triborough Bridge Authority have been made aware of the availability of this coverage and others will be advised in due course.

This bureau will collaborate with the Nuclear Insurance Rating Bureau in the rating of risks as and when requests are received from our companies.

Yours sincerely,

H. L. WAYNE, *General Manager.*

LIMITED NUCLEAR DAMAGE ASSUMPTION ENDORSEMENT (PROPERTY DAMAGE FORM)

The limit of liability under this endorsement is $————, which is part of, and not in addition to, the amount of the policy to which this endorsement is attached.

In consideration of an additional premium of $————, and effective ————at noon, standard time at location of the property, the insurance afforded by this policy is modified in the following, and in no other respect:

The exclusion of loss by nuclear reaction or nuclear radiation or radioactive contamination contained in clause 1(e) of the policy shall not be applicable to direct physical loss or damage caused by sudden and accidental nuclear reaction, sudden and accidental nuclear radiation, nor sudden and accidental radioactive contamination including resultant radiation damage to the property covered, if the nuclear reaction, nuclear radiation, or radioactive contamination causing such loss or damage originates in, or emanates from, nuclear or radioactive materials whils such materials are in the course of actual transportation upon the bridge properties or through the tunnel properties covered by this policy.

Within the "limit of liability" set forth above, the liability of the company for loss or damage under this endorsement is for the same percentage interest as is assumed by the company under the policy to which this endorsement is attached.

All other terms and conditions of the policy shall remain unchanged.

(NOTE.—Where more than one structure is insured under the same policy, a separate limit of liability shall be shown for each and the following wording added: "The foregoing conditions shall apply separately to each item covered by this policy.")

Mr. AXELRAD. As indicated in the previously mentioned letters to this office from the Port of New York Authority, the State Thruway Authority, and the Triborough Bridge and Tunnel Authority, the extent to which the proposed endorsement will resolve the problems of the authorities has not yet been determined.

The prospective insureds were not consulted in connection with the drafting of the endorsement, and it is their belief that some changes in the newly proposed coverage will be necessary in order to adequately meet the problem. In addition, it is not known to what extent the proposed coverage will be offered for such vital facilities, other than bridges and tunnels, as the roadways of the thruway authority and the piers and other terminal facilities of the Port of New York Authority.

Moreover, the all-important questions of amount of coverage to be afforded, and the cost thereof, remain to be resolved. In any event, the transportation committee is pleased that the insurance industry has taken the step of offering to reinstate certain insurance coverage for shipments of radioactive materials.

It may be pointed out, however, that the problem is not simply whether the insurance industry will offer, and the authorities will purchase, adequate insurance coverage. Our basic premise has been that the transportation of radioactive materials through the facilities of the authorities is probably the safest and most efficient route for many shipments, and that enabling such route to be utilized is therefore in the best interests of the public. Still, it is not clear at this time which segment of the public should pay for the increased coverage necessary, since it may well be that the revenues from radioactive shipments will not be commensurate with the cost of any insurance.

For example, the total revenue for radioactive shipments over the George Washington Bridge for the period January 21 to June 30, 1961 (151 shipments), was approximately $375. Some consideration has been given to requiring that insurance be obtained directly by

the shippers, and such an alternative may have to be further discussed in the future.

Simultaneously, with the correspondence with the insurance industry, the State transportation committee has discussed with the U.S. Atomic Energy Commission the possibility that the Commission might enter into indemnity and hold-harmless agreements with the authorities under either the Price-Anderson amendments or any other appropriate authority the Commission may possess, which would furnish financial protection to the authorities against property damage, loss of revenue, and public liability due to nuclear incidents.

At a meeting on May 2, 1961, representatives of the Commission informally advised us that there appeared to be no existing statutory authority under which the Commission might be able to enter into such agreements.

To some extent the problem of public liability may be alleviated by the coverage of the most hazardous shipments under a Price-Anderson agreement executed by the shipping or recipient nuclear facility and by existing insurance protection. However, shipments of many types of radioactive materials may not provide Price-Anderson coverage, and thus may not adequately protect the authorities against potential liability. We plan to explore the possibility that available commercial insurance protection may be an adequate solution to this problem as well as to the problems engendered by possible damage to properties of these agencies.

We are sincerely hopeful that these problems may be resolved without the need for any remedial legislation, and we will be pleased to keep the Joint Committee informed of any further developments.

Representative PRICE. Mr. Axelrad, on page 3 of your statement, you say:

> The Inland Marine Insurance Bureau informed this office that the executive committee of the bureau had approved an endorsement for use in providing limited nuclear damage coverage.

This is apparently not satisfactory to the port authority. In what way is this coverage limited? Does it cover the loss of use of property?

Mr. AXELRAD. Well, we have obtained this proposed endorsement from the Inland Marine Insurance Bureau only several weeks ago, and the various authorities have not completed their review of the adequacy or inadequacy of the particular coverage offered.

I may point out, however, that basically this additional endorsement is an addition partly removing an exclusion which had been previously inserted in the policies. The particular language of the exclusion which had been previously put in the policies is contained in the attached letter from the Port of New York Authority.

If you look at page 2 of the letter from the Port of New York Authority to the Director of this Office, the specific exclusion is set forth there. The language of the endorsement that is now being offered does not strictly follow the language of the exclusion which had been previously inserted.

For example, in the coverage which is now offered, the phrase "sudden and accidental nuclear reaction" is used. It is not clear what the term "sudden and accidental" is meant to cover.

The exclusion in the policy talks about losses which are direct or indirect, proximate or remote, et cetera. The language now proposed to be inserted talks only of direct physical loss or damage.

To what extent problems of this kind will turn out to be serious problems, we are not yet aware. We had discussed with the insurance companies about a year ago possible language to be inserted in the policies. At that time they did not indicate approval of such language.

The form of the policy that they are now offering to the authorities had not previously been discussed with them, and it is possible that we can resolve these problems in such discussions.

One additional problem, of course, is the limitation in the endorsement they are now offering, which would cover materials only in the course of actual transportation upon or through the bridge or tunnel facilities. Now, whether or not this would cover any losses resulting from an incident which might take place while the shipment is on the approaches to the facility is subject to possible debate.

We realize that the intent of this particular provision is presumably to assure that if an incident takes place in a nuclear facility which is remote from the bridge or tunnel, there would not be coverage under this policy. But the effect of wording the exclusion in this particular way might lead to a great number of problems when the incident occurs close to the facility and as a result of a shipment which would not be in proximity to the facility except for the fact that it is headed for transportation in the facility. That generally is a type of problem that we intend to discuss with the insurance industry in the next several months.

Senator PASTORE. You say, on page 5:

> At a meeting on May 2, 1961, representatives of the Commission informally advised us that there appeared to be no existing statutory authority under which the Commission might be able to enter into such agreements.

Could you elaborate on that? Do you have anything in writing on that?

Mr. AXELRAD. No; we have nothing in writing. The people who were present at this meeting are listed on page 4 of the attached letter from the Port of New York Authority. Those included are Mr. Derry, Director, Division of Construction and Supply; Mr. Satterfield, Chief of the Insurance Section, Division of Finance, in the AEC; Mr. Minsch and Mr. Eason from the Office of the General Cousel, and some people from the Regulatory Branch.

Senator PASTORE. What kind of radioactive material would go through a tunnel?

Mr. AXELRAD. You mean what kind of shipments have been proposed?

Senator PASTORE. Yes. What are we actually talking about, here?

Mr. AXELRAD. This would be almost any type of shipment. I would presume there would be certain large shipments. Anything which could be transported in a motor vehicle could conceivably go through the facilities of these agencies.

Mr. RAMEY. Radioisotopes?

Mr. AXELRAD. Radioisotopes would be the most common type.

Mr. RAMEY. Fuel elements?

Mr. AXELRAD. Fuel elements.

If you would note the attachments to the Port of New York Authority letter, one of the shipments being discussed now is a shipment of fuel elements which have been used in a reactor in the Netherlands, which are being returned to the United States for reprocessing, and which the AEC wishes to have transported through the Idlewild Airport. Then I presume it will have to get from Idlewild to New Jersey in some manner, and it will undoubtedly have to go through one of the toll facilities.

Representative PRICE. What type of an accident are you thinking about that involves these types of materials? What kind of damage are you thinking of?

Mr. AXELRAD. Well, again, with respect to fuel elements, for example, there could be almost any type of incident. The Price-Anderson coverage now extends to fuel elements and various other materials in the course of transportation.

I assume that "in the course of transportation" has been included under Price-Anderson coverage, because substantial incidents could take place in the course of such shipments.

Mr. RAMEY. I suppose you could have a wreck or a trailer could pile up in rush-hour traffic, and that would result in a fair amount of contamination.

Mr. AXELRAD. Almost any normal traffic accident which might take place in any facility could have quite serious repercussions if it took place either in a tunnel or on a bridge facility. Even if there were no substantial amount of damage done to the facility itself, just tying up two or three lanes for 6 hours in the middle of rush traffic would be very awkward for the public and might be very expensive for the facilities involved. This is aside from the possibility that you might get substantial damage to the facility, substantial damage to other patrons of the facility or substantial damage to the neighboring property.

Senator PASTORE. Do you know if high explosives are transported over the George Washington Bridge?

Mr. AXELRAD. I think the answer to your question is "Yes."

Senator PASTORE. Do you know what agreements they have with reference to that?

Mr. AXELRAD. I believe that there is adequate insurance coverage and that the only items which are transported over the George Washington Bridge for which no insurance is presently in effect are radioactive materials.

Senator PASTORE. Well, this seems to be rather important.

Mr. AXELRAD. I think this is the type of problem which is becoming more important as it is coming to the attention of more facilities. I guess that in the past people were not unduly concerned. But of course, prior to 1959 the facilities had adequate coverage, because they had all-risk policies, and there were no exclusions. The addition of the exclusion to the policies, and the increase of radioactive shipments in recent years, have both combined to make this a problem of very serious concern to all facilities of this kind.

Senator PASTORE. What you are up against on an open bridge is no different from what you are up against on an open road, I suppose. If you have an incident, you have an incident. If you had an incident close to where people live on an open road——

Mr. AXELRAD. I think there is one possible distinction. If you have an incident on a city street, you could normally detour traffic around it, and people would still be able to get from one place to another. If you have to close off a lane or several lanes on the New York Thruway, or if you have to close down the Triborough Bridge or George Washington Bridge, that is a substantial amount of traffic that will not be able to get to where it wants to get, because the detouring problems are somewhat different.

Senator PASTORE. Of course, the effect of carrying insurance is not going to help you out on that.

Mr. AXELRAD. That is certainly true.

Senator PASTORE. The point here is that we ought to enact a law which would empower the AEC to enter agreements with the authorities that supervise these bridges and tunnels.

Mr. AXELRAD. We are not proposing any particular legislation at this time. We are still hopeful that these problems can be resolved with the insurance industry.

Our primary purpose in being here today is simply to bring this problem to the attention of the Joint Committee. I believe this is a problem the committee would be interested in. The first step has been taken. The insurance companies have offered to reinstate coverage to some extent. If this coverage can be reinstated to an adequate extent and the cost of such coverage is reasonable, it is possible that the problem will be resolved without any need for legislation or any other action.

But the problem of extent of coverage and type of coverage and the cost thereof are important problems which have yet to be discussed. At least the insurance companies are willing to offer some coverage now. Prior to June, the thought was that they would not offer coverage.

Representative PRICE. Mr. Eason, I wonder if you are in a position to advise us how the Commission looks at this problem.

STATEMENT OF CHARLES EASON, COUNSEL FOR FEDERAL-STATE RELATIONS FOR THE ATOMIC ENERGY COMMISSION

Mr. EASON. Mr. Price, that is somewhat of a difficult question to answer at this time. We appreciate the seriousness of the transportation problem generally. We, too, are hopeful that the answers will be in the realm of adequate insurance. And if that does not come to pass, then we do have a problem as to how best to assure that the transportation of radioactive materials, either at contractor plants or licensed plants, is flowing in such a way as not to impede what we think is the whole responsibility we have to further the peaceful use of the atom. And this is one part of it—the transportation of the materials.

So when you ask me, "What is the attitude of the Commission"—the Commission has not really expressed itself formally. At the staff level, we do appreciate the many problems that are now coming to our attention.

I might just for the record mention a few, if you will permit me.

We do have the problem with the toll roads. They are not permitted to pass these materials over these roads. The Pennsylvania

Turnpike stopped a shipment last month, and while they permitted the shipment to go through, we were advised later that we were not hereafter to travel the Pennsylvania Turnpike.

As for the airports, Idlewild, for example, still has not formally indicated that it would permit the Netherlands shipment referred to a little earlier this morning to come to rest at Idlewild Airport en route to Newark, N.J.

Senator PASTORE. That is wholly disconnected from the problem of insurance. This is safety that you are talking about now.

Mr. EASON. Well, I think it is interrelated, Senator.

Senator PASTORE. Did they raise that?

Mr. EASON. Oh, yes.

Senator PASTORE. You were notified by the Pennsylvania Turnpike that hereafter you cannot do it. Did they give you any reasons?

Mr. EASON. Yes. Their attitude at that time, coming from their safety people, was that the shipment was against their regulations. Now, it is my impression, from talking to the authority people, that one reason for the regulations is the absence of the first-party insurance, and that if first-party insurance was obtained, there may be some modification of the present regulations. It all relates back, really, to the insurance problem.

Senator PASTORE. That is what I wanted to know.

Mr. EASON. Yes. We also have local regulations in some of the cities. New York City, for example, has a regulation which requires advance notice of shipment of radioactive materials and a number of other procedural steps that one must take. Other cities throughout the country are doing the same thing.

Various port authorities have adopted regulations that actually restrict the flow of materials coming into the port.

All of these things are adding up to what we believe is a serious problem. How best we can get at it is one of the things that we are worrying about, and I suspect that the presence of Mr. Axelrad here this morning is to inform the Joint Committee that they, too, have a problem.

Mr. RAMEY. Has the Commission been in touch with the insurance companies and tried to encourage them to settle this matter, to get this matter taken care of?

Mr. EASON. Yes, we have, Mr. Ramey. We have, as a matter of fact, talked to the Marine Inland group after our meeting of May 2, which Mr. Axelrad referred to, when the port authority people and others came down to see the Commission. And they were pretty well along at that time, when we spoke to them, with respect to writing back the nuclear hazard into these policies, that they had extracted it from earlier.

They told us, at the meeting we had with them, that within 30 days they would have an endorsement. I think it was 30 days to the day when they did furnish the New York people in Mr. Axelrad's office with a copy of the proposed endorsement.

Mr. RAMEY. On some of these shipments, the parties would be covered under the Price-Anderson Act?

Mr. EASON. That is right, Mr. Ramey. As a matter of fact, under Price-Anderson, where you have that coverage, your shipments to and from the facility would be covered.

Mr. RAMEY. What would that consist of? That would be, say, fuel elements of a reactor that is licensed?

Mr. EASON. It would consist of anything moving that would have the Price-Anderson umbrella, but from what I understand, that is not really the problem that the port people and others are concerned with.

They appreciate that there is third-party coverage. But they do not, again if I understand it correctly, want to wait around to see who is going to be liable. They want to move in, if an accident occurs in the morning, with insurance money in the afternoon, to repair whatever damage has occurred. So they want the first-party liability insurance, which is the property insurance.

Mr. AXELRAD. I may just elaborate slightly on that. It is not just a problem of getting the insurance money right away, but that under Price-Anderson coverage you do have to find somebody who is liable before you collect. It is possible in some situations that Price-Anderson coverage will not apply.

The toll facilities have always had first-person insurance coverage, which applies regardless of who is liable and who is not liable. This is the same type of coverage they would want for these types of shipments.

Representative PRICE. Any further questions?

Thank you very much, Mr. Axelrad. We appreciate having you with us.

Mr. AXELRAD. Thank you.

Representative PRICE. The next witness will be Mr. MacArthur, representing the American Bridge, Tunnel & Turnpike Association.

I understand that Mr. MacArthur will present the statement of Mr. Milton D. Stewart of the American Bridge, Tunnel, & Turnpike Association, Inc.

Mr. MacArthur, we are glad to have you here.

I would like to say, though, that one of the rules of the committee is that all statements shall be submitted 24 hours in advance. And the purpose of that is to give the committee staff an opportunity to examine them, to bring out important points during the course of the hearing. We would appreciate it if in the future your organization would comply with that rule.

STATEMENT OF JOHN P. MacARTHUR, ASSISTANT COUNSEL, NEW YORK STATE THRUWAY AUTHORITY

Mr. MACARTHUR. I certainly hope to.

I have two apologies to make. One is along those lines. I realize we are some 24 hours late with the statement on behalf of the American Bridge, Tunnel & Turnpike Association, and I must make my most sincere apologies to the Joint Committee for that.

I have really not much of an excuse, except to just mention that our board of directors is scattered about through the various States, and that we did want to make sure that this was an expression of the entire association. And getting in touch with them proved to be a little bit difficult, and that is one of the things that held us up a little bit. Some of them seemed to be in remote places on vacation.

Representative PRICE. Your explanation is accepted.

Mr. MACARTHUR. Another apology I would like to express is on behalf of Mr. Stewart, to express his deep regret he was not able to be here today, after a series of professional commitments. And I am really only a stand-in for him. He is the counsel to this association, the American Bridge, Tunnel, & Turnpike Association.

And I can only say that I will do my best to answer whatever questions the subcommittee may have, having, I think, protected myself to some extent by making it a little difficult for you to have any questions, by not submitting the statement.

Now, this statement goes on for quite a little bit. The most frightening part of it is a series of appendixes, which are somewhat voluminous. I wonder if I could have the permission of the chairman not to read the statement, and not read the appendixes, but to skip once over lightly over what I thought to be the most important points in the statement. And I thought it might be only sporting for me to ask myself some of the embarrassing questions you and your staff might have asked, and attempt to answer them.

Representative PRICE. You may make your presentation in any manner you like.

Without objection, the complete statement will be included in the record, with the appendix.

(The prepared statement of Milton D. Stewart follows:)

STATEMENT OF MILTON D. STEWART, GENERAL COUNSEL, AMERICAN BRIDGE, TUNNEL & TURNPIKE ASSOCIATION, INC.

It is a matter of deep regret to me that a series of imperative professional duties makes it impossible for me to appear before the subcommittee in person at the scheduled time. This subject is of great concern to the American toll facility industry, and as I have explained to the subcommittee staff, we are most appreciative of the opportunity to be heard. Mr. John P. MacArthur, assistant counsel to the New York State Thruway Authority, has actively assisted our consideration of this problem, and I am confident that he can elaborate on these notes in any particular which may be of interest to the subcommittee.

The American Bridge, Tunnel & Turnpike Association is a nonprofit membership organization dedicated to serving the needs of a $10 billion industry—the Nation's toll-supported automotive terminal and transport system. Over 90 percent of the national private investment in such facilities is represented in its membership (attached list, appendix 1). More than 3,000 of the most heavily traveled miles of the Interstate and Defense Highway System is managed by members of the association, along with numerous bridges, tunnels, and other ancillary facilities.

Our needs with respect to the transportation of radioactive materials are summarized in the attached statement of objectives (app. 2), which was adopted by the board of directors of the association in a resolution dated May 15, 1961 (app. 3).

Several additional considerations impel us to present our view of these questions to the committee. First, we are convinced that this is, or will very quickly become, an urgent problem, and that the committee ought properly to be alerted to its existence. Second, we are convinced that the committee should be kept informed about the ability of the Federal and private agencies charged with responsibilities in this field to anticipate problems, and to cope with them speedily when they are called to their attention. Third, in the event that we do not succeed in achieving a satisfactory administrative and regulatory disposition of the matters raised here, we shall have no choice but to seek remedial legislation; if it is not forthcoming, we shall have to adopt our own regulatory measures, a step which we are reluctant to take since it will certainly further inhibit the transportation of radioactive materials.

Let me emphasize that in such preliminary discussions of this matter as have taken place, we have been treated with unfailing courtesy. On the other hand, it must also be noted that we have not come away from these discussions with the conviction that the matters discussed would be resolved with all deliberate speed. It is, above all, in the hope that we may encourage such deliberate speed that we here record what seem to us to be facts: that the present regulations governing the transportation of radioactive materials are not designed for the kind of transportation now taking place with increasing regularity; that the adequacy of enforcement of those regulations requires some fresh review; and that financial protection against the hazards of such transportation is not now available to us on terms, in forms, and in amounts equivalent to those which obtain in the transportation of other dangerous substances.

Because we appreciate fully that these are not simple matters, we have not presumed to come before this committee armed with specific proposals. Our purpose is rather to record for the benefit of the committee and others some of the considerations regarding toll facilities and the transportation of radioactive materials which seem important to us.

At the root of our approach lie our two basic legal battles—to make our facilities as safe as possible for the traveling public, and to make them as economically successful as possible in the interest of the investing public which has financed their construction. Although the specific statutes under which the various toll agencies are organized vary in many details, they uniformly impose these as unequivocal mandates. Many of them also give the toll facilities legislative authority to draft regulations of their own, especially with respect to matters involving safety, where general State law may be, in the judgment of toll facility management, not adequate.

Our immediate objective with regard to regulation is clearly outlined in the statement which we have adopted. We earnestly desire regulations which are definitively based on the best scientific information available, which apply clear-cut, realistic standards which are relevant to automotive transport, and which are as uniform as possible.

Ideally, we should like nothing better than to have available an adequate set of Federal regulations, which would in themselves apply to all interstate shipments of radioactive materials and which we could incorporate in our own regulations or in the State statutes which govern us to control local shipments. Up to the present time our association has not been persuaded that it could rely upon the existing Interstate Commerce Commission regulations in this manner. For one thing, these regulations specify packaging requirements designed to protect the traveling public from radiation only while shipments are in normal transit. Effective though they may be for this purpose, we do not consider this an adequate standard. We find the regulations recommended to member nations by the international Atomic Energy Commission much closer to the mark, when they speak in terms of a maximum credible accident.

Our facilities are justly proud of their safety records. Generally speaking, the incidence of accidents on toll facilities is about half of that on other routes and facilities. Nevertheless, we must recognize that accidents do happen; to fail to regulate packaging and quantities in terms of the possibility of accidents happening to shipments of radioactive materials is to fail to perform a necessary function.

Along the same lines, we would like to see far greater precision in the classification of radioactive materials. Here again, the recommended regulations of the International Atomic Energy Commission make an important beginning toward classifying materials according to degree of hazard. If the Federal regulations did this in an authoritative fashion, we might then be able to follow up with reasonable standards related to the toxicity of the shipments.

Perhaps 90 percent of the shipments could then be exempted from regulation of any kind. Some small proportion of more hazardous shipments could be required to be shipped only after notice, so that restrictions might be imposed on the time of day, speed or weather conditions under which such a shipment might be made, in order to minimize hazard. A still smaller proportion could be required to be transported only by specially licensed or qualified carriers, perhaps with escorts; and an outright ban could be imposed only upon the smallest proportion of excessively hazardous materials.

This would constitute a step toward filling one of our greatest needs—regulations which do not require extensive technical interpretation and a constant exercise of judgment by the carriers, the shippers, or the toll facilities, none of whom are sufficiently qualified along these lines. A second major advance would

be the provision of some sort of inspection system, which is presently altogether lacking, which would guarantee compliance with the regulations. It is apparently impossible for Atomic Energy Commission licensees to exercise adequate self-regulation once the materials have left their facilities. Some of them have told us of occasions on which shipments were broken up or diverted, contrary to the strictest, most explicit instructions given to the carrier by the shipper.

It should also be recognized that regulation of highway shipment must be much different from, for example, regulation of shipment by rail. Rail shipment takes place under far more restricted traffic control conditions; a modern superhighway, bridge, or port is open to a multitude of vehicles, which are not controllable by the facility management. Rail carriers are comparatively few in number, and can be held accountable for compliance with standards far more readily than can a mass of common and contract carriers, which utilize operators of every kind and level of competence and responsibility.

In our view, safety regulation and financial protection are inseparable. Obviously, we must have adequate protection for damage to our facilities or injury to the public if we are to continue to permit this traffic. Whether this takes the form of insurance or indemnity coverage, whoever is to bear the risk of loss should be assured that adequate, effective regulation minimizes that risk. It must, moreover, be kept in mind that our tolls are established on the basis of thoroughly detailed cost and revenue studies. What a toll facility spends must be justified in a most stringent, businesslike way.

It is difficult to imagine that toll revenues from the shipment of radioactive materials will ever justify the expenditure of substantial sums for the administration of special enforcement procedures, or the purchase of costly insurance. Since the number of shippers and shipments involved is relatively limited, it might well be fair and prudent to consider whether specific "trip" insurance might not be more appropriate than blanket coverage of all traffic.

Toll facilities now require specific levels of shipperborne or carrierborne special insurance for other kinds of traffic. A special radioactive hauling permit might require, as one of the conditions for its issuance, special protection for the facility and the public for the duration of the trip, in a specified amount. Loss beyond policy limits, or in the event that an applicant for such a permit wrongfully neglected to procure such insurance, might well be compensated by Government indemnity. Perhaps the ultimate solution along these lines is to be found in a combination of blanket coverage and trip coverage, with an indemnity to be applied if the policy limits are exhausted.

Another aspect of the financial protection problem is the standard by which legal liability is to be imposed upon whomever is to be ultimately liable. In this connection, we submit for the committee's information the sixth tentative draft of a proposed "Uniform Nuclear Facilities Liability Act," prepared by the National Conference of Commissioners on Uniform State Laws (app. 4). Among other interesting aspects of the act is the imposition of absolute liability, without proof of fault, on the operator of a nuclear facility.

As proposed, this liability would extend only to "transportation of source, special nuclear or byproduct material to or from the facility," and would apply only when the facility was covered by an indemnification agreement with the Atomic Energy Commission under section 170 of the Atomic Energy Act of 1954, as amended; all persons other than the operator of the nuclear facility would be held harmless. We are constrained to suggest that this coverage would not be sufficiently inclusive; primary emphasis belongs on the protection aspects of the act, not upon such questions as to whether or not the material in question is in transit from a nuclear facility or some other kind of facility, nor upon whether or not the facility has entered into the appropriate agreement with the Atomic Energy Commission.

The proposed uniform law points up yet another urgent reason for a speedy reconsideration at the Federal level of both the regulation and the financial protection aspects relative to radioactive shipments. It is now national policy to delegate many atomic energy regulatory responsibilities to the States. The existence of varied regulatory, liability or financial protection standards in many jurisdictions throughout the country would create some unfortunate consequences. It seems reasonable to expect that a stronger, more realistic and more responsive Federal leadership would help us all to avoid that condition.

Our association looks forward to active cooperation with the three Cabinet departments, two independent regulatory agencies, and two interagency bodies which apparently share the responsibility for that leadership. We are confident that we will benefit from their advice and guidance.

APPENDIX 1

MEMBERSHIP LIST, AMERICAN BRIDGE, TUNNEL & TURNPIKE ASSOCIATION, INC., AND INTERNATIONAL DIVISION

ACTIVE MEMBERS

Addresses—Bridges and principal officers

Baltimore County Revenue Authority, County Office Building, Towson, Md.: Mr. Robert G. Merrick, chairman; Mr. Arthur C. Jensen, executive secretary.

Brunswick-St. Simons Bridge and Causeway, Courthouse, Brunswick, Ga.; Mr. Howard J. Sears, county administrator, office of commissioner of roads and revenue.

Buffalo & Fort Erie Public Bridge Authority, Foot of Vermont Street, Buffalo N.Y.: Mr. J. George Johnston, chairman; Col. George Weir, secretary-treasurer.

Burlington County Bridge Commission, 3 West Broad Street, Palmyra, N.J.: Mr. Grover C. Richman, Jr., chairman; Mr. Palmer L. Adams, vice chairman.

California Toll Bridge Authority, Post Office Box 1079, Sacramento, Calif.: Mr. Robert B. Bradford, director of public works; Mr. J. C. Womack, State highway engineer.

Cameron County International Toll Bridge, Post Office Box 109, Brownsville, Tex.: Judge O. C. Dancy, chairman; Mr. Henry W. Hickford, general manager.

Cape May County Bridge Commission, Box 37, Cape May Courthouse, N.J.: Mr. Robert J. Campbell, chairman; Mr. Benjamin F. Lee, general manager.

Chicago Skyway Toll Bridge, 8801 South Anthony Avenue, Chicago, Ill.: Mr. James J. McDonough, manager; Mr. John Duba, administrative officer.

City of Clinton Bridge Commission, Post Office Box 564, Clinton, Iowa: Mr. Mark N. Morris, chairman; Mr. W. E. Ellwanger, general manager.

City of Eagle Pass, Eagle Pass International Toll Bridge, Post Office Box 984, Eagle Pass, Tex.: Mr. William Hollis Fitch, chairman, board of trustees; Mr. Edward P. Rodrigues, manager.

Coastal Highway District of Columbia, Savannah, Ga.: Mr. Raymond M. Kuhr, chairman; Mr. John J. Bouhan, secretary.

Davenport Bridge Commission, 802 Davenport Bank Building, Davenport, Iowa: Mr. Don A. Petruccelli, mayor; Mr. H. G. Lohmiller, secretary-treasurer.

The Delaware Interstate Highway Department, Post Office Box 71, New Castle, Del.: J. H. Tyler McConnell, chairman; Leroy F. Hawke, associate director.

Delaware River Port Authority, Administration Building, Benjamin Franklin Bridge Plaza, Post Office Box 1949, Camden 1, N.J.: Ralph Cornell, chairman; James H. J. Tate, vice chairman.

Detroit International Bridge Co., 1227 21st Street, Detroit 16, Mich.: C. Clinton Campbell, president; Harry P. Schaub, Sr.

Georgia State Toll Bridge Authority, Highway Department, 2 Capitol Square, Atlanta, Ga.: Kenneth W. Dunwody, chairman; Nathan A. Brown, superintendent.

Golden Gate Bridge and Highway District, Box 9000, Presidio Station, San Francisco, Calif.: M. A. Graham, president; James Adam, general manager.

International Bridge Authority of Michigan, Box 317, Sault-Ste. Marie, Mich.: James E. Brophy, chairman; David W. Ripley, secretary-treasurer.

Interstate Bridge Co., 611 First National Bank Building, Bellaire, Ohio: W. J. McGraw, president; A. F. Groom, secretary and general manager.

Kansas City, Mo., city of (Broadway Bridge), City Hall Building, Kansas City Mo.: R. Milton James, commissioner of property and insurance; Clarence B. Hoff, manager.

Keokuk Bridge Commission, 600½ Main Street, Keokuk, Iowa: W. A. Logan, chairman; W. J. Ingram, secretary-treasurer and general superintendent.

Laredo Bridge System, Post Office Box 518, Laredo, Tex.: Woodie Y. Bunn, Jr., chairman; Leopoldo P. Botello, vice chairman.

Leavenworth Centennial Bridge Commission, 207 Third Avenue, Leavenworth, Kans.: E. Bert Collard chairman; Walter B. Jennings, manager.

Louise & Fort Gay Bridge Co., Inc., Louisa, Ky.: R. L. Vinson, president; M. S. Rice, secretary-treasurer.

Mackinac Bridge Authority, Post Office Box 217, St. Ignace, Mich.: Prentiss M. Brown, chairman; Lawrence A. Rubin, executive secretary.

Massachusetts Port Authority, 14–17 Court Square, Boston 8, Mass.: Ephraim A. Brest, chairman; William C. Carolan, secretary-treasurer.

Michigan State Bridge Commission, 1410 Elmwood Street, Port Huron, Mich.: Marshall E. Campbell, chairman; Charles H. Rosetta, secretary.
City of McAllen, McAllen's Hidalgo-Reynosa International Bridge, Post Office Box 220, McAllen, Tex.: Horace Etchison, chairman; William L. Schupp, general manager.
Mississippi River Bridge Authority, Post Office Box 141, New Orleans 3, La.: Neville Levy, chairman; Frank X. Armiger, executive director.
Mount Hope Bridge Authority, Elmwood Station, Providence 7, R.I.: Raymond H. Trott, chairman; R. F. Haffenreffer III, general manager.
Muscatine Bridge Commission, Post Office Box 236, Muscatine, Iowa: L. R. McKee, chairman; C. A. Rehwaldt, vice chairman.
Nassau County Bridge Authority, Post Office Box 61, Lawrence, N.Y.: Lt. Gen. Cornelius W. Wickersham, chairman; Frank X. Hegarty, manager.
New York State Bridge Authority, Post Office Box 590, Poughkeepsie, N.Y.: Dr. John L. Edwards, chairman; Edward J. Burns, administrative officer.
State Bridge Commission of Ohio, Post Office Box 239, Columbus 16, Ohio: G. Andrews Espy, chairman; J. William Shultz, secretary-treasurer.
Oldtown Toll Bridge Co., Oldtown, Md.: M. R. Carpenter, owner.
Rock Island Centennial Bridge Commission, 201 15th Street, Rock Island, Ill.: Morris E. Muhleman, mayor; W. E. Downing, superintendent.
Roma-San Pedro Bridge, Commissioner Court, Rio Grande City, Tex.: Jesus Trevino, company auditor.
Savanna-Sabula Bridge Co., 46 Jefferson Street, Savanna, Ill.: Mrs. Clarabel F. McCall, secretary-treasurer; Isak Helseth, president.
Thousand Islands Bridge Authority, Collins Landing, Alexandria Bay, N.Y.: Sidney S. McCumber, chairman; William S. Gould, vice chairman.
Vicksburg Bridge Commission, Post Office Box 908, Vicksburg, Miss.: M. B. Emmich, chairman; R. J. Henley, superintendent.
Virginia Department of Highways, Post Office Box 3447, Phoebus, Va.: H. H. Harris, chairman; E. H. Orange, director.
White County Bridge Commission, Carmi, Ill.: J. Madison Pomeroy, chairman; Roy Clippinger, assistant treasurer and business manager.

Addresses—Bridges and tunnels and principal officers

Chesapeake Bridge & Tunnel District, Post Office Box 120, Norfolk, Va.: Lucius J. Kellam, chairman; J. C. Morris, executive secretary.
Elizabeth River Tunnel Commission, Post Office Box 155, Churchland, Va.: H. H. Harris, chairman; I. H. Haywood, vice chairman.
The Port of New York Authority, 111 Eighth Avenue, New York 11, N.Y.: Charles H. Taylor, director; August Z. Schneider, department director.

Addresses—Toll roads and principal officers

Connecticut State Highway Department, State Office Building, Hartford, Conn.: Brig. Gen. Howard S. Ives, commissioner; Floyd E. Hogh, director.
East Hudson Parkway Authority, County Office Building, White Plains, N.Y.: Charles W. Merritt, chairman; Ernest T. Perkins, executive director.
Florida State Turnpike Authority, 226 South Boulevard, Tampa 6, Fla.: Hon. John M. Hammer, chairman; Raymond Barnes, vice chairman.
Greater New Orleans Expressway Commission, Post Office Box 9203, Metairie, La.: Ben Abadie, chairman and secretary; Fred Mizell, vice chairman.
Illinois State Toll Highway Commission, East West Tollway and Midwest Road, Hinsdale, Ill.: Charles M. Burgess, chairman; Charles L. Dearing, executive director.
Indiana Toll Road Commission, 309 West Washington Street, Indianapolis 4, Ind.: Jack Reich, chairman; Judge John A. Kendall, vice chairman; Lionell Roll, acting general manager.
Kansas Turnpike Authority, Box 3002, Southeast Station, Wichita 18, Kans.: John E. Kirchner, general manager; Louis Stroup.
Kentucky Department of Highways, Frankfort, Ky.: Henry Ward, commissioner; D. H. Bray, State highway engineer.
State Roads Commission of Maryland, 300 West Preston Street, Post Office Box 717, Baltimore 3, Md.: John B. Funk, chairman; Louis J. O'Donnel, chief administrative officer.
Maine Turnpike Authority, Post Office Box 839, Portland, Me.: Paul C. Thurston, chairman; W. B. Getchell, Jr., executive director.

Massachusetts Turnpike Authority, 80 Boylston Street, Boston 16, Mass.: William F. Callahan, chairman; Lee J. Schnackenberg, secretary-treasurer.

New Jersey Highway Authority, 12 Broad Street, Red Bank, N.J.: Mrs. K. E. White, chairman; D. Louis Tonti, executive director.

New Jersey Turnpike Authority, Administration Building, New Brunswick, N.J.: Hon. Joseph Morecroft, Jr., chairman; Gen. W. W. Wanamaker, executive director.

New York State Thruway Authority (also bridge), Post Office Box 189, Albany 1, N.Y.: R. Burdell Bixby, secretary-treasurer; Holden A. Evans, Jr., general manager.

Oklahoma Turnpike Authority, Post Office Box 3246, Oklahoma City, Okla.: Marvin Millard, chairman; W. D. Hoback, chief engineer and manager.

Pennsylvania Turnpike Commission, Post Office Box 531, Harrisburg, Pa.: Hon. Joseph J. Lawler, chairman; Franklin V. Summers, director of operations.

The Richmond-Petersburg Turnpike Authority, Post Office Box 1–R, Richmond 2, Va.: Albert Suttle, chairman; John Pershing, general manager.

Texas Turnpike Authority, Post Office Box 126, Arlington, Tex.: Armistead D. Rust, chairman; J. H. Davis, engineer-manager.

West Virginia Turnpike Commission, Post Office Box 1469, Charleston, W. Va.: W. G. Stathers, chairman; W. Earnest Stahl, general manager.

INTERNATIONAL DIVISION

Addresses—Bridges, and principal officers

Halifax-Dartmouth Bridge Commission, Post Office Box 40, Dartmouth, N.S., Canada: Mr. A. M. MacKay, chairman; Mr. L. J. Burke, general manager.

National Harbours Board, Montreal Harbour, 357 Common Street, Montreal, Canada: Brigadier M. Archer, chairman; Mr. L. R. Stratton, chief engineer.

Niagara Falls Bridge Commission, care of Rainbow Bridge, Niagara Falls, Ontario, Canada: Mr. Walter S. Johnson, chairman; Mr. C. Ellison Kaumeyer, secretary-treasurer.

Caminos Y Puentes Federales Del Ingresos, Avenida Insurgentes Sur No. 214, 2o. Piso Mexico 7, D. F.: Sr. Hugo Cervantes del Rio, director general; Ernesto Patino, H.C.P.T., subdirector Enc. Operacion.

Auckland Harbour Bridge Authority, Toll Plaza, Tennyson Street, Northcote Auckland, New Zealand: Sr. John Allum, C.B.E.; Mr. B. P. Stevenson, department chairman.

Addresses—Tunnels and principal officers

Societa Italiana Per Azioni Per Il Traforo Del Monte Bianco, Via Boncompagni 12, Rome, Italy: Hon. Dr. Pado Alfonso Farinet, president; Ing. Giancarlo Andelmetti.

Addresses—Toll roads and principal officers

British Columbia Department of Highways, Parliament Building, Victoria, British Columbia, Canada: Hon. W. A. C. Bennett, Premier of British Columbia; Hon. P. A. Gaglardi, Minister of Highways.

Montreal-Laurentian Autoroute Board, 561 Cremazie Boulevard East, Montreal, Quebec, Canada: Mr. Ernest Gohier, P.E., chairman; Mr. Olier Mathieu, P. E., chief engineer.

Department of Highways, Province of Ontario, Queen's Park, Toronto 2, Ontario, Canada: Hon. F. M. Cass, Q.C., Minister; Mr. W. J. Fulton, Deputy Minister.

Societe Concessioni e Construzioni Autostrade P.A., Via Antonio Nibby N. 8, Roma, Italia: Dr. Ing. Fedele Cova, general manager; Dr. Ing. Sergio De Amicus, vice general manager.

APPENDIX 2

STATEMENT OF OBJECTIVE OF THE AMERICAN BRIDGE, TUNNEL & TURNPIKE ASSOCIATION, INC., ON TRANSPORTATION OF RADIOACTIVE MATERIALS

1. A forthright statement by national civilian and military leadership as to whether and under what circumstances the national interest requires the transportation of some or all radioactive materials over toll facilities.

2. If the national interest does require such transportation in some or all cases, action by the appropriate Federal and State officials and the insurance industry recognizing the special needs and problems of toll facilities.

3. A draft model regulation for the consideration of all American Bridge, Tunnel & Turnpike Association members which will be simple, self-administering, and as uniform as the varying powers and needs of member facilities permit. Such a model regulation should—

(*a*) Classify shipments of radioactive materials into—

(1) Those which may move over toll facilities without notice, without permit, without escort;

(2) Those which may move over toll facilities only after notice to the facility management, so that compliance with applicable regulations may be specifically determined;

(3) Those which may move only with escort, with restrictions based on speed, weather conditions, or time of movement;

(4) Those which may not move at all on toll facilities;

(*b*) Be based on the best scientific information available to the responsible public agencies;

(*c*) Be applicable to the shipments of both licensed and unlicensed shippers, and to both interstate and intrastate truckers;

(*d*) Be satisfactory to, and consistent with applicable laws and regulations of, the Atomic Energy Commission, the Interstate Commerce Commission, the Department of Defense, the U.S. Public Health Service, State and local transportation and health authorities, and, if necessary, international agencies;

(*e*) Minimize the administrative burden on toll facilities, shippers, truckers, and law enforcement officials;

(*f*) Provide for as much mutual recogniiton of special permits and certificates as possible, with a central information source usable by all toll facilities.

4. An effective procedure for dealing with incidents or disasters involving radioactive materials, based on adequately trained personnel.

5. All-inclusive financial protection of toll facilities through insurance or indemnification, covering any nuclear incident arising from any source on a toll facility, and adequate in amount to compensate all persons involved for injury, including death resulting from injury; all damage to property, including the costs of the loss of its use or interruption of business. Such financial protection should be provided at minimum cost, which should be borne by the shipper or trucker. The standard of coverage presently included in both the Price-Anderson amendment and private policies should be changed to discard the present requirement of "legal liability."

APPENDIX 3

RESOLUTION: TRANSPORTATION OF RADIOACTIVE MATERIALS, ADOPTED BY THE BOARD OF DIRECTORS, AMERICAN BRIDGE, TUNNEL & TURNPIKE ASSOCIATION, INC., MEETING OF MAY 15, 1961

Whereas the board of directors of the American Bridge, Tunnel & Turnpike Association has reviewed and approved the attached statement of objectives for the transportation of radioactive materials; and

Whereas the special committee on law of the association has reported to the board of directors the results of a survey of member facilities on this subject; and

Whereas counsel to the association has reported to the board of directors the inconclusive results of preliminary discussions of the problems posed for toll facilities by the increasing use of trucks to transport radioactive materials; and

Whereas several toll facilities have already taken action to ban or limit the transportation of radioactive materials within their jurisdiction, and others may follow suit, creating grave policy and legal problems for all toll facilities: Now, therefore, be it

Resolved—

1. That the special committee on law, with the assistance of counsel, continue to pursue diligently their efforts to resolve the legal, administrative, and insurance problems posed in the statement of objectives;

2. That the general concurrence of the member facilities in the statement of objectives be communicated to the appropriate public and private agencies and officials;

3. That counsel, on behalf of the special committee on law, specifically request the energetic assistance in resolving these matters of the Atomic Energy Commission, the Interstate Commerce Commission, the Department of Defense, the American Trucking Association, the Nuclear Energy Property Insurance Association, the Nuclear Energy Liability Insurance Association, the Mutual Atomic Energy Reinsurance Pool, the Mutual Atomic Energy Liability Underwriters, the Nuclear Insurance Association of Canada, the National Association of Public Utility Commissioners, the Institute for Nuclear Materials Management, the Joint Congressional Committee on Atomic Energy, and the State offices of atomic development;

4. That the special committee on law, with the assistance of counsel, submit to the board of directors before the next annual meeting of the association a report on their efforts, so that the board of directors may review the matter and make appropriate recommendations to the membership;

5. That the special committee on law, with the assistance of counsel, continue to inform member facilities of interim actions taken by toll facilities.

APPENDIX 4—SIXTH TENTATIVE DRAFT UNIFORM NUCLEAR FACILITIES LIABILITY ACT [1]

(Prepared by National Conference of Commissioners on Uniform State Laws Meeting in Its 17th Year, St. Louis, Mo., July 31–Aug. 5, 1961)

SECTION 1. [DEFINITIONS.] As used in this Act, unless the context otherwise requires—

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

(b) "injury" means any harm to person or property for which damages may be recovered under the law of this State.

(c) "nuclear facility" means:

(1) any nuclear reactor;

(2) any equipment or device designed or used for (A) separating the isotopes of uranium or plutonium, (B) processing or utilizing spent fuel, or (C) handling, processing, or packaging waste;

(3) any equipment or device used for processing, fabricating, or alloying special nuclear material if at any time the total amount of such material at the site where such equipment or device is located consists of or contains more than 25 grams of plutonium or uranium 233, or any combination thereof, or more than 250 grams of uranium 235; and

(4) any structure, basin, excavation, premise, or place prepared and used for the storage or disposal of waste, other than facilities utilized exclusively in connection with the transportation of such material;

including the site on which any of the above is located, all operations conducted on such site, and the premises used for such operations.

(d) "nuclear incident" means any occurrence or series of occurrences causing, elsewhere than at the nuclear facility, bodily injury, sickness, disease, or death, or loss of or damage to property, or loss of use of property, arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear, or byproduct material.

(e) "nuclear reactor" means any appartus designed or used to sustain nuclear fission in a self-supporting chain reaction or to contain a critical mass of special nuclear material.

(f) "operator" means the person with whom the United States Atomic Energy Commisison has executed an indemnification agreement in accordance with section 170 of the Atomic Energy Act of 1954, as amended.

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

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[1] See app. 5, p. 176, for text of Model Nuclear Facilities Liability Act, as approved by the Commissioners on Uniform State Laws.

(h) "source material" means (1) uranium, thorium, or any other material which has been determined by the United States Atomic Energy Commission to be source material, or (2) ores containing one or more of the foregoing materials, in such concentration as the United States Atomic Energy Commission has determined by regulation.

(i) "special nuclear material" means (1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the United States Atomic Energy Commission has determined to be special nuclear material, but does not include source material or (2) any material artificially enriched by any of the foregoing, but does not include source material.

(j) "spent fuel" means any fuel element or fuel component, solid or liquid, which has been used or exposed to radiation in any nuclear reactor.

(k) "waste" means any waste material (1) containing byproduct material and (2) resulting from the operation of a nuclear facility.

SEC. 2. [LIABILITY; NUCLEAR FACILITIES.] The operator of a nuclear facility is liable, without proof of fault, for any injury (other than (1) any injury, compensable under a State or Federal workmen's compensation act of any employee employed at the sit of and in connection with the nuclear facility, or (2) any injury to the nuclear facility or to property located at the site of and used in connection with the nuclear facility), arising out of or resulting from a nuclear incident which was caused for any reason other than an act of war, and which occurred either at the facility or in the course of transportation of source, special nuclear or byproduct material to or from the facility if an indemnification agreement exists between the United States Atomic Energy Commission and the operator in accordance with section 170 of the Atomic Energy Act of 1954, as amended, with respect to the nuclear incident.

SEC. 3. [APPLICATION OF ACT.] The provisions of this Act apply to (1) any injury suffered in this State arising out of or resulting from a nuclear incident either within or without this State and (2) any injury suffered outside this State arising out of or resulting from a nuclear incident within this State.

SEC. 4. [EXCLUSIVE LIABILITY.] If the provisions of section 2 are applicable and if jurisdiction can be obtained over the operator in this State, the operator shall be exclusively liable and no action shall be brought against any other person with respect to the injury.

SEC. 5. [LIMITATIONS.] No action shall be brought under this Act in any court of this state more than three years after manifestation of the injury if the person suffering or incurring the injury knows, or reasonably could have knowledge of, the cause of the injury or more than ten years after the date of the last occurrence to which the injury is attributed, whichever first occurs.

SEC. 6. [EFFECT OF OTHER LAWS.] The provisions of this Act do not affect, amend, or repeal (1) any other rule or provision of law governing immunity to suit, the conditions and effect of any waiver of immunity, or the effect of the purchase of insurance upon the insurer or the insured, (2) any other provisions of law governing liability for injuries not covered by this Act, limiting the amount of recovery for injuries covered by this Act, or governing the kinds of injuries for which damages may be awarded, or (3) unless otherwise provided by this Act, any other provisions of law relating to the establishment and proof of legal liability.

SEC. 7. [UNIFORMITY OF INTERPRETATION.] This Act shall be so construed as to effectuate its general purpose to make uniform the law of those States which enact it.

SEC. 8. [SHORT TITLE.] This Act may be cited as the Uniform Nuclear Facilities Liability Act.

SEC. 9. [REPEAL.] [The following acts and parts of acts are hereby repealed:

[(a) * * *

[(b) * * *

[(c) * * *.]

SEC. 10. [TIME OF TAKING EFFECT.] This Act shall take effect * * *.

Mr. MACARTHUR. That is very nice of you.

Then let me just say this. The American Bridge, Tunnel, and Turnpike Association is a nonprofit membership organization. It represents a large proportion of the toll roads, toll bridges, tunnels, various superhighways, and appurtenant facilities, throughout the United States, and, indeed, in other portions of the world.

We have at least two major problems in connection with the matters which are being considered today by the subcommittee. One of them you have already heard something about. It is the problem of insurance and indemnity coverage.

The other one, which has not been dealt with yet today, is the question of appropriate regulations on the subject of the transportation of radioactive materials.

I think perhaps I would like to deal first with this question of insurance and indemnity coverage, and address myself to some extent to some of the questions that have already been asked this morning.

The various insurance policies of the various toll facilities acquired a nuclear damage exclusion clause a year or so ago, which essentially made it impossible to recover under those policies for any damages which were caused by radiation, nuclear peril of any sort. And it was this that originally caused our various kinds of insurance problems.

And the insurance that we are primarily interested in are the three kinds already mentioned this morning. The first of them has to do with liability insurance.

What we need as individual facilities is protection against suits by other patrons, by the contiguous property owners, people downstream from the road when the road passes waterways, and generally speaking, all other persons who could sue the road or the bridge or the port or whatever facility it is that is involved for an incident arising out of some trouble with radioactive materials.

The second kind of coverage is straight property damage coverage. If a bridge goes up in smoke or becomes contaminated, or is in some way unusable, or must be repaired, it is this that we would like covered in some fashion by insurance. And, in fact, most of our facilities have on all of their structures insurance of this kind, which covers any kind of peril you can think of, except nuclear peril, peril having to do with radioactive materials.

We could right now, for example, have a whole convoy of explosive-laden trucks explode in the middle of the longest bridge on any road, or the only bridge on some of our roads, and this would cause us really not too much ultimate loss, because with certain minor exceptions we are covered for this kind of thing under our regular insurance policies.

However, when it comes to a matter of radioactive shipments, all that has to happen is to have a little box fall off of the back of a truck with labels on it saying radioactive materials, and we are in trouble.

And I will try to elaborate a little further on that. But first I want to say the third kind of coverage we are interested in having is coverage for loss of revenues while the particular facilities are being fixed up.

In this particular case, I could mention such things as bridges across the Hudson River and bridges across the Mississippi River, and tunnels. These are the ones that suffer more than long stretches of roadway. But if one of these things becomes unusable, if one of these transportatoin facilities becomes unusable, especially if it becomes unusuable at its period of peak use, for example the middle of the summer, and stays unusable for several months, or even several days, this creates a very serious financial problem for the facility involved.

The reason for this is that most of these facilities, or at least a number of them, are privately financed. They have to make payment on their bonds. The payment that they make on their bonds comes from toll revenues. And very often these facilities are the largest producers of toll revenues for the entire authority, commission, or whoever it is that is operating the facility.

We very often run close enough to the wire so that even a couple of days of cessation of traffic over an important portion of the road or bridge makes quite a good deal of financial difference.

Now, there has been some testimony this morning as to the good offices of the insurance companies here today. They have kindly presented us with a thing called a "limited nuclear damage assumption endorsement."

What we have in all our insurance policies is a rather broad exclusion. What is excluded is coverage for anything having to do with nuclear materials.

Now, what the insurance companies propose to do is to cut down that exclusion by sort of adding another exclusion on top of it.

And if I may, I would like to read into the record a paragraph which I understand constitutes the present exclusion from the exclusion, which has been offered to one of our facilities. And it reads as follows. I will leave out some of the blanks for premiums and amounts of coverage, but the essential part of it is this:

> The exclusion of loss by nuclear reaction or nuclear radiation or radioactive contamination contained in clause 1(a) of the policy shall not be applicable to direct physical loss or damage caused by sudden and accidental nuclear reaction, sudden and accidental nuclear radiation, or sudden and accidental radioactive contamination, including resultant radiation damage to the property covered, if the nuclear reaction, nuclear radiation, or radioactive contamination causing such loss or damage originates in or emanates from nuclear or radioactive materials, while such materials are in the course of actual transportation upon the bridge properties or through the tunnel properties covered by this policy.

Well, now, this is not very good news to us, because we do not know what "sudden and accidental" is all about, and neither do the courts. And we do not know what "actual transportation" is all about and neither do the courts. And there are quite a number of other things we do not know about this exclusion.

And I have a feeling that this little paragraph may constitute only a polite gesture toward removing the present radioactive exclusion from our policies.

What we want, here, is simply to have the insurance companies say, "You know that exclusion that we wrote on your policy? Forget about it. Take off the exclusion."

It is not that we want to include anything more in the policy. We just want to include what we already have there now. And instead of that, they are going about this business by tossing an exclusion on top of an exclusion.

And really, if we buy this policy, we buy ourselves a hatful of lawsuits. It would take considerable legal talent to even arrive at an appropriate guess as to what this may mean.

Mr. RAMEY. Perhaps they are bargaining with you.

Mr. MACARTHUR. Well, maybe this is like a negligence case, and they come in with a zero offer, and maybe our hundred-million-dollar offer is a suggestion that they just remove their present exclusion.

But if they are just bargaining with us, I wonder if we could not maybe speed up the bargaining process just a little bit before our $10 billion worth of facilities become uninhabitable.

Mr. RAMEY. Perhaps if the Government offered an indemnity, this might help.

Mr. MACARTHUR. I was hoping someone would say that before I had to, because it certainly would help a great deal. In fact, it would almost constitute a solution to our problems in some cases.

But of course, this in itself is not enough if we are talking about Price-Anderson coverage, because of what Mr. Axelrad was talking about just a little while ago. What you need here in order to get Price-Anderson coverage is a finding of liability.

First of all, we are afraid that we may be found liable. Who knows what the courts are going to do with this one? Supposing, for example, that I operate a toll road and one of the shoulders of the road is an inch and a half low, and because it is an inch and a half low, there is a scramble of cars because some driver goes to sleep and gets off the shoulder and cannot get back on, and he slows down, and there is an awful collision and some radioactive material spills out over the road. Who is liable? Maybe a court would say the toll road is contributorally negligent, let us say, because the shoulder should only have been an inch lower and not an inch and a half. Or maybe a half inch is all right, but an inch is not so good.

So maybe that bars recovery if what we are looking for is freedom from liability on the part of the recoverer. Or if what we are looking for is liability on the part of the truck, and the truck was not liable because it did not do anything; it was forced into this unhappy position because of the liability of other persons.

This is our first problem in connection with Price-Anderson coverage. And of course we in our private conversations do think about the time when something so awful happens that there just are no witnesses left in pieces larger than atoms to tell us what did happen, and the final liability might be a little difficult to determine under those circumstances.

It is possible now to ship full scale reactors, really. We have lots of ships that run this way. You can probably do this by truck, now, at least technically speaking. You could ship reactors along the road.

Incidentally, the question was asked before: "What can go by road?" And I am holding in my hand a list of some seven pages of just elements alone. These do not include mixtures. These are just radioactive elements, which I somehow came into the possession of, and which appear in a draft of transportation regulations which were done by the International Atomic Energy Agency.

These are the things that they list. And since they are talking about transportation in their regulations, I presume that all these are transportable.

I might add that this, as I say, consists of single elements, radioactive elements or isotopes thereof. And we are not even talking about mixtures of them. And the forms that these things can take are legion.

Our facilities may be used for the transportation of liquids, solids, sludges, gases. There is no form of matter, practically, this cannot take. And what we are afraid of is that some of these things that are

a little hard to hang on to are going to fall off the back of a truck, and there will be an awful mess.

Can you imagine what would happen if a large box full of radioactive powder fell off into a road and split open and there was a slight wind? The powder gets up in the air, and everybody who goes to try and see what is going on dies, because they breathe a little of this stuff. It does not take much.

And curiously enough, the present regulations of the Interstate Commerce Commission allow this stuff to be carried right now in packages no stronger than cardboard boxes, in such quantity that if one of those boxes did go and fall on the road and a car ran over it—and a car could do a wonderful thing to a cardboard box—and a little powder blew around about, you could kill people for miles around.

Mr. RAMEY. That is not very likely. What kind of powder are you talking about now? They certainly would not die from radioactivity.

Mr. MACARTHUR. Yes, they would. But in a way that we are not too familiar with. When you ingest this stuff—well, let me backtrack a bit. You are probably familiar with the so-called radium watch dial cases. These were the ladies in New Jersey.

Mr. RAMEY. We have had extensive hearings on that.

Mr. MACARTHUR. I am sure you did, yes. Well, you will remember that one of them, for example, had as little as—let's see—something like a millionth of a curie of radium. And that is not very much. That is not enough for you to see. And she died in great anguish and agony after some 20 years of a series of rather complicated conditions, none of which are very pleasant to talk about. But that little, tiny amount was sufficient, because it was inside.

Mr. RAMEY. I was under the impression that in most of these cases—I do not know about this one case—the victims had been licking their brushes for a period of time and had ingested relatively large amounts of material.

Mr. MACARTHUR. They had, yes, but——

Mr. RAMEY. The reason I am asking is this: One of the obligations the AEC has is to keep the Joint Committee fully and currently informed. And they always report all of their accidents of cars on roads when they are transporting things between installations. It has been my general impression that they have had these accidents, but that the damage has not been extensive.

Mr. MACARTHUR. Well, this is true.

Mr. RAMEY. Have you had many reported?

Mr. MACARTHUR. I think what you say is quite true. There have been accidents. So far, the damage has not been extensive, if we are talking about accidents in connection with the transportation of these things. But our experience is similar with dynamite. We have had pretty good luck with dynamite on our facilities. We have never lost a bridge through dynamite. But we still insure against it. And we do not really want to wait until we have killed off everybody in sight and destroyed all our facilities before we solve this little problem.

This is something we must anticipate and guard against. We have never lost a bridge from TNT. We have never allowed a whole res-

taurant area to be poisoned with poisonous gas. But curiously enough, we insure against these things.

Representative PRICE. But there have been some serious accidents with high explosives on highways?

Mr. MACARTHUR. On highways. But look at the quantities of high explosives that are transported. We send dozens of truckloads over the throughways. And this field is in its infancy. We do not bother about those quite as much as we do about radioactive materials, because there is not a thing that can happen that insurance cannot be had for. Liability, loss of toll revenue—coverage is all there, ready and waiting. It is just a question of premium.

Incidentally, in connection with premium, I just want to mention once again that that exclusion to the exclusion clause that I mentioned that came from the insurance companies does not say anything about top limits, and does not say anything about premium.

Representative PRICE. Everything is excluded except the premiums.

Mr. MACARTHUR. Yes. They excluded that.

Now if this insurance cost us nothing, we would be very happy about that, because the Port of New York Authority, for example, gross maybe $600 a year, and maybe net minus $3,000 a year from this traffic. And the reason for these minus net figures is that these things are a terrible pain in the neck. People call up and want to know what to do. And we come down and have meetings with people like the AEC and the ICC and the Joint Committee.

Representative PRICE. That goes into overhead?

Mr. MACARTHUR. Yes, it does. It will if we are successful. If we are not, perhaps it goes into a straight radioactive problem. But anyway we do spend time on this, and we run around asking each other questions, and we have a very difficult problem in connection with these radioactive shipments.

The traffic in this is somewhat limited. As a matter of fact, we asked the question of the Atomic Energy Commission a short time ago whether they really needed the toll roads and toll bridges and superhighways for this stuff, or whether they could not just as easily run on local facilities, and whether they could not really avoid all the facilities of the American Bridge, Tunnel, and Turnpike Association.

And we kind of expected they would say, "Oh, we need you boys"; but they did not say a thing—which shook us up considerably. They did not say, "No, you are a vital link in the defense system of the Nation, a vital link in transportation." There was a long period of silence while we were wondering which way they were going to jump. Maybe they thought it would be nice to ship this stuff through other roads.

But I was glad to hear Mr. Eason say they were going to continue shipping this stuff on the turnpikes. On the Massachusetts Turnpike you cannot travel with a radioactive dial watch.

Representative PRICE. You were reading all the items a minute ago that you could ship on highways.

Mr. MACARTHUR. Let me give you a page, just for starters.

Representative PRICE. Does the list include any limitation on the amount?

Mr. MacArthur. This is a very interesting thing about the international regulations. What they have done is to take every nuclide they can think of and classify it as a class 1, class 2, or class 3 substance, and then the regulations which follow this define the amounts of each class of substance that you can carry, and the packaging that has to occur incident to that, and various other things. They have attempted to divide them, I should say, also, in terms of their toxicity in general, not simply their radiotoxicity.

For example, if something is radioactively not very active, but biologically poisonous, they put that in as a high class product, so that they are worrying about the biological effect of the substance.

And we were going to say that what we also need in addition to this insurance and indemnity business is some decent regulations for the transportation of radioactive materials, and maybe that would be a good place to begin, because we are not at all happy with the present ICC regulations.

I am not sure that we are entirely happy with the international regulations, either. And I have not got them here. What I do have here is simply those pages from them that classify the materials, and I would be glad to read you a couple of those as a sample of what they do here.

For example, they begin with actinium 227. This they put into group 1. Then we get actinium 228 and that is a group 3. Then we get americium 241 and that is a group 1. And we get americium 243 and that is a group 1. And then we go on into the antimonies, and there are three of those, and into the argons, and there are two of those, and into the arsenics and there are four of those, into astatine and then barium, and then berkelium and then beryllium, and then bismuth about four times.

I am not sure whether the worst group is 3 or the worst group is 1, but the various nuclides seem to jump around between 1 and 3. Let's see.

Representative Price. What sort of an agency within your association do you have to advise your association on the hazards involved in these particular matters?

Mr. MacArthur. Within the association we have a number of special committees. One of them is our special committee on law, which meets at all the quarterly and annual meetings of the association to consider these problems. And Mr. Stewart, in whose place I am today, is, in addition to being general counsel to the association, also chairman of the special committee on law. And we have begun in that committee to start worrying about the legal apsects of the thing.

But then there are other committees that are associated with this problem, too. For example, there is a safety group which meets from the various organizations. And the management people have their own little meeting to decide on questions like tolls and things like that.

But basically, the major impetus has come from the Special Committee on Law, in which are lawyers from all of these member facilities, at least as many as care to be on it. And that seems to be our starting place at the moment.

We have, incidentally, come up with a draft, a series of drafts, of regulations, which we thought might be appropriate for our own use, as a sort of a desperation measure. We had hoped that we could get

some Federal regulations on the subject, and then individually we could adopt those and incorporate them by reference or otherwise in our local State statutes and our local authority statutes, Commission regulations, or what have you. There would then be a nice uniformity of regulations throughout the country, so that you could ship these fuel elements or these waste materials or whatever it is you are shipping from, say, California to New York, or Maine to Texas, without having to worry about a vast jungle of conflicting regulations, that range all over the map up to a total barring of the use of the facility for those products.

And we discussed this to a large extent among ourselves before we went into anything else; but we were hoping that this would not eventuate, that adequate Federal regulations would be promulgated, because we are otherwise forced into a peculiar position. We are individually going to have to make a series of decisions about regulating for our own roads, to protect our patrons, to protect our bondholders, to protect ourselves as operating entities. We are going to have to make a series of decisions along the lines that Massachusetts has already made, and Pennsylvania has already made.

It is perfectly simple. They say, "No insurance, no passage." Now, this seems harsh, and I do not think we need to go that far, necessarily. But we do need to have somebody take a little interest in our problem.

We are, as toll facilities, the only people, as far as I know, connected with radioactive materials in any way who stand not to profit at all from their involvement with these radioactive materials and actually stand to lose everything.

The only people that are totally unprotected are those that are getting nothing out of this traffic. Users, suppliers, manufacturers, everybody is learning something or gaining some benefit from their involvement with these radioactive materials. They have Price-Anderson coverage. They have insurance. They have all kinds of wonderful benefits. And here are those poor toll facilities who would rather not take them at all, but who get all of the risks and none of the benefits. It seems a little unjust. And I am sure the bondholders feel this is a little unjust, too.

Mr. RAMEY. Have you discussed your proposed regulations at all with the Interstate Commerce Commission or the Atomic Energy Commission?

Mr. MACARTHUR. Not formally. We have had informal meetings only with both of these organizations, and members thereof, on a staff level. These are still going on. The regulations that I was speaking about are still only in the form of, really, drafts of drafts. We are not in possession of anything that would would all be prepared to adopt immediately.

And, in fact, some of our facilities are in the unfortunate position of being unable to adopt regulations, because they depend upon their State legislatures for the rules and regulations by which they run. So they cannot adopt anything, anyway.

But we have had discussions only at the staff level, so far.

Mr. RAMEY. What people in AEC have you discussed this with.

Mr. MACARTHUR. Well, in the letter which was submitted by Mr. Axelrad, or the statement, I should say, there is mention made of a

letter, and in that letter somewhere is a footnote, and in the footnote is a list, which includes almost everybody at the AEC that we have had discussions with on the subject.

Mr. RAMEY. That was that conference?

Mr. MACARTHUR. That was that conference. But in addition to that conference, I would like to say also that we have had a great deal of help and encouragement from some others, Mr. Warren Donnelly of the New York office, for example, who has been very helpful. And I think most of the rest of the people have been helpful to us. Perhaps Mr. Finan's name is not on that, but everybody else is included in that footnote.

Representative PRICE. I think Mr. Axelrad made the point in his statement that at a meeting held in New York City on November 16, 1960, there was discussion of some approach to this.

Mr. MACARTHUR. I know we have gone further than that. Mr. Stewart has had most of these discussions with the ICC. I have not. I have been present at these other discussions, however. But we have had other discussions with members of the ICC, and I am afraid I cannot provide their names at the moment, because I do not know them. But I do know that these have not come to a screeching halt. It is a continuing matter. We have been trading information back and forth.

On the other hand, we do not see that anybody is doing much of anything in connection with these regulations, although we were unofficially informed that they were giving this matter scrutiny and had intended, sometime within the next year or two, to do something about this. Of course, we do not know what they are going to do about it that is going to be, to our way of thinking, satisfactory.

Mr. RAMEY. I was wondering if Mr. Eason has any comment on this.

Does the Commission have any jurisdiction over shipments? Has it established any regulations?

Mr. EASON. Mr. Ramey, as you may know, we do not have any transportation regulations as such. We rely on regulations of the ICC, the Coast Guard, the Post Office, and so forth.

Mr. RAMEY. Do they give you those regulations, and does the Commission approve them, or concur in their adequacy? How about this transportation in cardboard boxes?

Mr. EASON. The Commission has a representative on the Inter-Agency Transportation Committee, composed of all the agencies involved in transportation. Our comments on regulations are fed to these agencies on that basis.

Now, there are certain areas, in the intrastate field, where, again, there are no regulations, and the ICC regulations do not always prevail. There, where we have licensees moving shipments from one point to another intrastate, we ordinarily control the shipment by conditions to the terms of the license.

I want to make one comment, here. While I cannot correct the witness' statement that there have been conferences with the Commission on regulations, I am not aware personally of any meetings on port authority draft regulations, and I also would like to state for the record that on behalf of the Commission we would be most happy to work with the group in reviewing and assisting the drafting of regulations.

One of the things we plan to do in the immediate future is to promulgate or work out a draft of transportation regulations for the various States to use in their intrastate activities under the agreements that we are authorized to enter into under Public Law 86–373.

These all tie in, and again I would hope the port authority people would permit us to work with them in working out regulations that might be acceptable.

Representative PRICE. I think this is a very important subject, and evidently it has been hanging on for a long time without coming to a resolution. I believe this committee should explore this further with the Commission and other interested agencies and try to bring it to a solution.

Mr. MACARTHUR. When I spoke of the Commission, I was speaking not of the Atomic Energy Commission but of the Interstate Commerce Commission, when I spoke of meetings in connection with regulations. We have had meetings with the Atomic Energy Commission also on a number of other grounds. But my comments as to transportation regulations were meant to refer not to the Atomic Energy Commission but to the Interstate Commerce Commission.

Representative PRICE. You can be assured that this committee will give further attention to this matter.

Mr. MACARTHUR. We would be very grateful for it.

Representative PRICE. I notice that Mr. Murphy has arrived.

The next witness will be Mr. Arthur Murphy, of the law firm of Baer, Marks, Friedman, & Berliner.

You may proceed.

STATEMENT OF ARTHUR W. MURPHY, LAW FIRM OF BAER, MARKS, FRIEDMAN & BERLINER, NEW YORK

Mr. MURPHY. Thank you very much, Mr. Chairman.

My name is Arthur W. Murphy, and I am a practicing lawyer in New York.

My interest in the subject of indemnity stems from my work as director of a study by the legislative drafting research fund of Columbia University on behalf of the Atomic Industrial Forum, Inc. That study culminated in preliminary and final reports entitled "Financial Protection Against Atomic Hazards," and a number of the recommendations made in those reports were adopted in the Price-Anderson Act.

I have been asked by members of the staff to comment on four separate items under consideration by the committee. In view of the brief time permitted for prepared statements, my comments are necessarily brief. However, I will be pleased to answer, to the extent I can, any questions which the committee or the staff might care to ask.

The four items dealt with in my prepared statement are, in the order in which I will discuss them, first, the extent of coverage now afforded by the act against liability for damage done outside the United States as a result of a nuclear incident at an indemnified installation within the United States; second the two bills—S. 1144 and H.R. 5215 which would impose strict liability on the United States for damages caused by underground nuclear installations—however, I understand I am a little out of date on my nomenclature.

Representative PRICE. Yes. There is a substitute bill for those two bills. Have you been informed as to the nature of the substitute?

Mr. MURPHY. I have not seen the bills. I understand, however, that the remarks which I directed to the earlier ones are at least in large part pertinent to the substitute.

Mr. NEWMAN. To the extent that we are still interested in the application of strict liability under the Price-Anderson Act, they are still applicable. The substitute bill does not establish a rule of liability. It removes certain defenses that might otherwise be available to the contractor.

Mr. MURPHY. Third, the proposal to extend the coverage of the act to contract installations outside the United States; and lastly, the proposal of the Atomic Energy Commission to define the term "public liability" as used in the act to exclude, at least in some cases, coverage against liability for damage to so-called onsite property.

Before discussing those items, I think it would be useful to spend a minute or two in recalling the spirit in which the Price-Anderson Act was passed. We at Columbia urged strongly, and, I believe, this committee concurred, that both the nature of the problem and the course of future development of atomic energy were sufficiently obscure that no attempt should be made to enact a program good for all time; rather, it was felt that the program should be tailored to the problem as then seen, with the understanding that it would be amended to take care of changing circumstances.

At the time, our primary concern was with the emerging domestic nuclear power program under which, for the first time, substantial nuclear installations would be operated under Commission license and, to a somewhat lesser extent, with domestic nuclear facilities operated by the Commission through private contractors.

As a result, the program adopted was designed to achieve, as simply as possible, two major objectives within the context of the domestic program as it then existed. One objective was to assure protection of the public against damages which would be caused in the unlikely event of a catastrophic accident. The second was to remove a possible roadblock to private participation in the emerging atomic energy program posed by the threat of ruinous liability.

It should be noted, however, that although the program was oriented almost exclusively to domestic facilities, it did have two incidental effects upon what might be called the international problem. The first was that foreign suppliers to domestic installations received the same indemnity protection that domestic suppliers received. I do not think there can be any question on that score.

The second, which is pertinent to the first of the items I would like to discuss today, is that, in my opinion, the legislation does afford protection against liability for damage caused abroad as the result of an incident at a domestically based installation.

It seems to me that that conclusion is inescapable from the definition of public liability as including "any legal liability." The only reason for doubt is occasioned by a statement in the report which is inconsistent with the flat coverage of "any legal liability" and must, I believe, be disregarded. Accordingly, I am in complete agreement with the opinion of Commissioner Olson, when he was General Counsel of the Commission, on this point. My own feeling, then, is that

legislative clarification on this point is unnecessary, but I do not see that it could cause any harm.

Turning to the second item on my list, the suggestion that the United States assume strict liability on account of damages caused by the underground explosion of nuclear devices seems to me to be eminently sound.

Could I interject and ask: Is there any proposal for assumption of strict liability by the United States?

Mr. NEWMAN. No, there is not.

Mr. RAMEY. But there may be later.

Mr. MURPHY. Well, I think there should be; so why do I not proceed with my statement?

In the Columbia report we pointed out that the restrictions of the Federal Tort Claims Act could pose a substantial obstacle to recovery where the United States itself, rather than a contractor, carried on nuclear activities, and that although the impact on the public might not be severe so long as few activities were carried on directly by the Government, consideration should be given to removing those restrictions at an appropriate time. It seems to me that now that time has arrived.

My only questions are, first, whether the bill goes far enough, and, second, whether this provision should not be part of an amendment to the Federal Tort Claims Act rather than an amendment of the Price-Anderson Act.

Mr. NEWMAN. I might say that the Justice Department shares that exact view.

Mr. MURPHY. There are a number of other nuclear activities which are now carried on directly by the Government, for example the operation of nuclear submarines, for which the Federal Tort Claims Act might be the only avenue of compensation open to the public. On the question of whether such legislation is properly a part of the Price-Anderson Act, or should be accomplished by amending the Tort Claims Act, I have mixed feelings. On the one hand, I would like to see the question of strict liability resolved more broadly; on the other hand, there is something to be said for tying this legislation to the overall limits of this act.

To depart a moment from the prepared statement, I think that one of the objectives ought to be to put all nuclear activities on substantially the same plane, so far as injured people are concerned. And for that reason I would think that to the extent the Government does take over direct operation, the same considerations which led to an imposition of an overall limit on the liability of contractors and licensees should apply in the case of the Government as well.

I should say that I did not think it was a good idea to put the overall limit on liability in to begin with, but once it is in, I think everything ought to be treated pretty much the same.

Representative PRICE. The reason it was put in there was because we wanted an act.

Mr. RAMEY. This uniform State law—would it provide some form of absolute liability? (See app. 5, p. 176.)

Mr. MURPHY. Well, the last draft which I saw would provide absolute liability, but only to the extent that a Price-Anderson indemnity was in existence. Presumably, in the case of this kind of activities

carried on directly by the Government, there would be no indemnity.

Mr. RAMEY. You have AEC contractors operating in the case of these intentional underground explosions, in New Mexico and California.

Mr. MURPHY. To the extent that there is a contractor involved, you may not have the problem of the Tort Claims Act. My recollection is that under the Tort Claims Act, a Government contractor is explicitly defined as not being an agent of the Government for purposes of imposition of liability.

I think, however, that when you get something as completely a Government function as a bomb test, you might run into some problems in the courts of deciding whether this was or was not a Government operation.

Mr. RAMEY. This involved the testing of a nuclear device?

Mr. MURPHY. A nuclear device, yes.

Turning to the proposal to provide protection to contractors at installations outside the United States, it seems to me again that, although coverage of this kind of activity was properly excluded at the time of the enactment of Price-Anderson, the time has now come for extending the protection to such contractors.

It is true that as to incidents at locations outside the United States one of the major policy objectives of the Price-Anderson Act, the protection of the U.S. public against uncompensated injuries, is not present. Nevertheless, it seems to me that there is ample reason for providing the protection of Price-Anderson in these cases.

It should be remembered that we are talking now solely about Government installations. A major step accomplished by the Price-Anderson Act in the contract program was a clear-cut acceptance by the Government of the fact that existing indemnity arrangements with contractors were haphazard, arbitrary, and in some cases misleading. This committee accepted, I believe, the proposition that the protection of contractors against otherwise uninsurable liability was not a proper subject for negotiation.

If, as must be assumed, Government policy requires the building of nuclear installations, whether within or within the United States, it is irrational for the Government to insist that a contractor take on the burden of possibly ruinous liability which may be imposed without regard to the fault of the contractor. The exposure to liability may be particularly sever because of the possibility that no recourse may be had against the Government by the public.

This particular proposal, it seems to me, ties in very closely to my own thoughts about the Federal Tort Claims Act. It seems to me that through the decision to operate programs through the medium of contractors rather than directly by the Government, the essential responsibility of the Government for damage to the public should not be gotten around in any way. Consequently, my own feeling is that where the activity is carried on by the Government, the Government should make itself open to suit to the same extent as it would if it were a contractor, and where the contractors are involved, the Government ought to assume through indemnity liability for the kind of catastrophic accident that we are talking about here, which is uninsurable by the contractor.

In this connection, it should be noted that the need for protection exists not only for contractors with the Commission, but also for con-

tractors to other Government agencies which may operate nuclear facilities outside the United States.

As pointed out in the letter of the Martin Co. to the Joint Committee, the extent to which the protection afforded under its proposal covers all installations which ought to be covered depends to some extent on the interpretation of section 170 d. The letter from the Martin Co. raised a question as to the scope of the authority of the Commission to indemnify contractors of other Government agencies where joint projects with the Commission are involved.

I have always interpreted the authority granted in section 170 d. as being quite broad, in the belief that this committee intended to extend the protection of indemnification to all nuclear projects as to which the Commission had an interest, and to exclude only those as to which the Commission had no connection which would justify a Commission indemnity.

Accordingly, I believe that where a reactor, as for example a submarine reactor, is originally constructed as part of a joint Defense Department-AEC project, or is licensed by the Commission, the Commission indemnity extends to anyone who may be liable for a nuclear incident at that reactor, regardless of whether the reactor has been installed in a submarine wholly under the control of the Navy.

If this interpretation is a correct one, then it would seem to me there would be no need to revise section 170 d. as proposed by the Martin Co., although the amendment might have to be broadened to include nuclear installations outside the United States operated by other Government agencies under Commission license.

Finally, I would like to advert to the problem of onsite property. The question originally arose because of an interpretation by the Commission that the term "public liability" includes a supplier's liability for damage to the reactor installation and associated property. At the time that this interpretation was made, I expressed the belief, to which I still adhere, that the Commission's interpretation was contrary to the intent of Congress in the Price-Anderson Act. However, although I am convinced of the correctness of that position, it must be recognized that the language of the act in this respect was not a model of clarity and that as a matter of statutory construction the conclusion of the Commission is not unreasonable.

In any event, although the Commission has interpreted the act as covering liability for onsite property, it has, on a number of occasions and again this year, requested an amendment to the statute which would exclude such coverage. I find myself in the somewhat anomalous position that, although I believe the Commission's interpretation was wrong to begin with, I am no longer sure that the result which they achieved is wholly bad.

Liability for onsite property was excluded from the intended coverage of Price-Anderson because of the belief at that time that such liability could adequately be provided for within the framework of private insurance. At the present time I am not convinced that such liability is adequately provided for, so that in the spirit of reexamining the legislation in terms of changing circumstances, it seems to me that the committee might well consider anew the question of how best to handle the problem. Although it is true that the inclusion of such liability within the indemnity will dilute to some extent the protection

available for the general public, I do not feel that the Joint Committee should recommend to Congress the adoption of the proposed amendment without a reconsideration of the whole subject of liability for damage to onsite property.

Representative PRICE. On that, Mr. Murphy, you say at the present time you are not convinced that such liability is adequately provided for. Would you expand a little more in this area? Because this subject has been one that has been cropping up all through these present hearings.

Mr. MURPHY. The problem has changed to some extent from the beginning, but basically, the problem which exists for the supplier is that of finding some method of assuring himself that if he supplies something to a reactor he will not be subject to the burden, this enormous burden, of liability.

The industry has suggested on a number of occasions to the insurers a number of different methods by which this might be accomplished.

One method, which provides a partial solution to the problem, is a provision by the insurers that they will consent to a waiver of subrogation in the physical damage policy. This is all right, provided that somebody takes out insurance to begin with. It is all right to the extent that the physical damage policy covers the kind of liability as to which the supplier might be subjected. It would not cover, at least as I understand the latest policy, damages for loss of use, for example; although sometimes this may be brought in.

I have not gone into this subject in a couple of years, but it seems to me there is at least a possibility in some States that the owner might be able to proceed against the supplier. I guess in all States he could, if he chose, proceed against the supplier rather than the insurers, and in some States he might even be able to proceed in two directions.

We have always thought that it ought to be possible to devise an insurance policy for physical damage coverage which provides the same kind of multiperson insurance that the liability coverage did.

I think that you will recall that at the time the Price-Anderson Act was passed, we went through a long period of time in which we argued with the insurers that we simply did not understand why they could not write a liability coverage policy which would cover, as the then proposed indemnity under the act would cover, all persons who might be liable.

I can remember that the last time I appeared——

Mr. RAMEY. They came around to that?

Mr. MURPHY. Yes. We had a long discussion. I think it was Mr. Cole, before he took up the international atom, and I, who had a long discussion on this particular question and the conclusion to which we both came was that we could not understand why they did not do it. Subsequently, just before the legislation was introduced, they did come through with a policy, or at least they indicated that they then saw their way clear to come through with a policy, which would do this.

Now, I admit that there may be problems in writing physical damage coverage which are different from the coverage problems which liability insurers have, but I honestly do not see any reason, at least in theory, why you could not, in a single policy, cover the interests of all suppliers.

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Mr. RAMEY. Were there not some assurances along this line as they were discussing this problem?

Mr. MURPHY. Well, there were discussions of this, and I was under the impression that they had indicated to this committee that such protection could be afforded; however, I have not followed it as closely as I did a couple of years ago and that the latest word from the physical damage insurers is that although the waiver of subrogation is perfectly all right, the suggestions which have been made to write this kind of multiple coverage are not feasible.

So that you do have a problem.

Mr. RAMEY. What is your thought on the waiver of subrogation? That is where the insurance company waives its right to sue the supplier?

Mr. MURPHY. Actually, the insurance company permits the insured to waive his rights of subrogation against a third party. The insurance company has no rights against the supplier, for example, if the insured waives his rights against the supplier.

But the problem which the suppliers have, and it is the problem which caused us so much trouble in the public liability situation, was that we tried to develop a system under which, as a matter of law, everybody would know, from the time he got involved in this business, that his public liability would be taken care of. It seems to me that ultimately this is what the supplier needs with respect to liability for damage to the reactor.

Although, as I say, I felt very strongly at the time that the interpretation of the Commission was an erroneous one, I do not think the problem has been adequately solved in the intervening 4 years, and I think maybe we should not be too hasty in deciding how to go about it.

There are a number of ways of going about it which would accomplish what we are after. Actually, the way that the Commission has done it, in its regulations with respect to people buying pool insurance, which requires them to waive liability against the supplier, is a feasible method of doing this within the framework of the act.

Representative PRICE. Do you think the proposed amendment would have any adverse effect on investments in the reactor business?

Mr. MURPHY. I just do not think I can answer that.

Mr. RAMEY. I would like to comment that I agree with Mr. Murphy's interpretation on this onsite property question.

Representative PRICE. Mr. Murphy, as you know, the Commission has not to date required financial protection of its contractors. However, during the course of the hearings, it has been suggested that the Price-Anderson Act be amended to make it mandatory for the Commission to require such financial protection.

Would you recommend this? What would you recommend?

Mr. MURPHY. I would not recommend it. I think that the question of whether the Government decides it will take all of the burden in such cases or will insure part of the burden is a question which the

Commission ought to decide in terms of its own budget and how they want to operate.

I think that from the point of view of the Government, this is a question of budgetary or financial policy.

I can see reasons, from the point of view of the insurance industry, why they would like to get more risks covered under their policies than they presently have, but I do not think it would be a wise idea to hamstring the Commission in this regard.

Representative PRICE. Does the staff have any further questions?

Thank you very much, Mr. Murphy.

This will conclude the open hearings on this subject.

The committee will stand adjourned subject to the call of the Chair.

(Whereupon, at 11:52 a.m., Thursday, July 20, 1961, the subcommittee was adjourned, to reconvene upon the call of the Chair.)

APPENDIXES

APPENDIX 1

CONSUMERS POWER CO.,
Jackson, Mich., May 10, 1961.

HON. CHET HOLIFIELD,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States, Washington, D. C.

DEAR MR. HOLIFIELD: I wish to renew the suggestion which I made last June, in the course of the hearing by the Subcommittee on Legislation on our Big Rock Point project, that the Joint Committee consider a clarifying amendment to the Price-Anderson Act. The purpose of the amendment would be to make clear that the law provides indemnity protection for damages caused outside the United States as a result of nuclear incidents occurring within this country.

We believe that such protection is intended by the existing law and we are proceeding with the Big Rock Point project on this basis and in reliance on the "Opinion of General Counsel" published last May by the Commission confirming our understanding of the law. At the same time, a clarifying amendment would put to rest doubts which have been expressed elsewhere about the intent and effect of the present law and which grow out of the wording of the Joint Committee report that accompanied the Price-Anderson indemnity legislation.

By letter of June 14, 1960, I submitted to the counsel of the Joint Committee, as requested by the Subcommittee on Legislation, a draft of clarifying amendment, which I repeat below for your convenience. Our proposed amendment would revise the definition of "nuclear incident" contained in section 1 o. of the Atomic Energy Act of an 1954 as follows:

"o. The term 'nuclear incident' means any occurrence within the United States causing (*within or outside of the United States*) 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 byproduct material: *Provided, however,* That as the term is used in subsection 170 l., it shall mean any such occurrence outside of the Unted States rather than within the United States" (material italicized has been added to present law).

We have recently reexamined our proposal in the light of the amendments drafted by Mr. Clark Vogel at the request of the Joint Committee, dealing with indemnity protection of AEC contractors for nuclear incidents occurring outside the United States. The changes submitted by Mr. Vogel are intended, of course, to serve a quite different purpose from our own proposal, but are entirely compatible from the standpoint of legislative drafting with the changes we suggest.

Yours very truly,

JAMES H. CAMPBELL.

APPENDIX 2

STATEMENT OF THE BABCOCK & WILCOX CO. ON NUCLEAR HAZARD LIABILITY INDEMNIFICATION

In general, we have been pleased with the performance of the Atomic Energy Commission in implementing section 170 of the Atomic Energy Act. We feel that the Commission's policies regarding nuclear indemnification are sound and that, within the discretion permitted, Commission personnel have been fair and equitable in their determinations regarding inclusion of nuclear indemnification provisions in contracts with Commission contractors.

It is our opinion, however, that the growth of the atomic energy industry both in the United States and abroad has created potential liabilities for the

industry which could not have been foreseen at the time of enactment of the Price-Anderson amendment to the act. Specifically, the matters that concern us arise out of the continuing participation by the U.S. Government and by American industry in areas of endeavor in atomic energy which are excluded from entitlement to indemnification by either specific provisions of the Atomic Energy Act or by the legislative history of the Price-Anderson amendment. In our judgment, there exists a need for—

(*a*) Indemnification of persons resident or domiciled in the United States with respect to nuclear incidents occurring outside the continental limits of the United States and arising out of the use or operation of production or utilization facilities designed, manufactured, and/or produced within the United States and (i) owned by or operated by or for the Government of the United States, or (ii) constructed and/or operated under a license issued by the Atomic Energy Commisssion.

(*b*) Inclusion of damage to Government property clearly within the definition of public liability as defined in section 11(u) of the act, whether such property is covered under the terms of the required financial protection or not.

(*c*) Indemnification with respect to nuclear incidents involving special parts or equipment capable of creating or contributing to a nuclear incident while such parts or equipment are in storage awaiting use or in transit from place to place. An example of this type of item is spare reactor cores, which currently are indemnified while in storage before use at the reactor site of a construction permitholder, but presumably not under other circumstances.

(*d*) Indemnification with respect to nuclear incidents occurring in processing and/or fabrication facilities. We understand that the Commission has this matter currently under consideration.

(*e*) Execution of agreements of indemnification between the Commission and other Government agencies, particularly the Department of Defense, so that contractors for these agencies may have the protection now available generally to Commission contractors. The Commission has such an agreement with the Maritime Administration covering the NS *Savannah* and the existence of this agreement has solved a great many problems that could otherwise have caused difficulties in the *Savannah* project.

(*f*) Indemnification with respect to nuclear incidents arising out of space activities.

We belive that the insurance industry in the United States is prepared within reasonable limits to underwrite portions of the risks involved in the atomic energy business, and we are quite willing to utilize the available insurance as basic protection. Accordingly, we are not asking the Joint Committee to recommend more than supplementing available indemnification.

L. M. CURRIE, *Vice President.*

APPENDIX 3

HARVARD UNIVERSITY,
DEPARTMENT OF GEOLOGY AND GEOGRAPHY,
Harvard, Mass., July 21, 1961.

Hon. CHET HOLIFIELD,
Chairman, Joint Committee on Atomic Energy,
Washington, D.C.

DEAR SIR: I have read the testimony of Dr. Roland F. Beers before a subcommittee of the Joint Committee on Atomic Energy on July 18, 1961. I have also read the "discussion of the testimony of Lewis B. Browder and L. Don Leet in support of S. 1144 and H.R. 5215," which he submitted for the record at the same time.

Dr. Beers states that three principal factors must be considered (1.0 to 1.3) but makes it clear that no adequate observational data are available on these for the GNOME area. Compounding of theoretical discussions does not change this. He says that "it is interesting to note the possible channeling of seismic waves in the salt beds * * * [which may produce] anomalously large amplitudes for their distance from the source." But he mentions no investigation of this possibility by experiment. He criticizes the application of scaling laws by other AEC consultants on this same problem, as we did. But he still adds no new experimental data. And in his paragraph 6.0 he sums up perfectly our

position in this matter: *"The discrepancies among the results given in these exhibits show that judgment cannot be based upon them as to the probability of damage by the GNOME shot."* [Italic supplied.]

In view of this, it is difficult to see how he can make the statement he did in his testimony: "There is no chance of any damage to the properties of the potash mines," unless he has resorted to a procedure for which he criticizes others in his paragraph 4.0: "We are likely to be led by our 'commonsense' into a feeling for effects."

I feel that the opinion of Dr. Beers is in the nature of another vote in a "popularity" contest. As an expression of his "commonsense" judgment it should be respected. But I see nothing in his "Discussion" to warrant changing the Browder-Leet conclusion: "We are firmly convinced that the data derived from the Nevada and pre-GNOME tests are much too meager to support the positive prediction that there will be no seismic damage to our mining properties."

I request that these remarks regarding the testimony and "Discussion" of Dr. Beers be inserted in the record, if you feel this is appropriate.

Very truly yours,

L. DON LEET.

U.S. ATOMIC ENERGY COMMISSION

WASHINGTON 25, D. C.

REPORT TO THE JOINT COMMITTEE ON ATOMIC ENERGY ON OPERATIONS UNDER SECTION 170 OF THE ATOMIC ENERGY ACT OF 1954, AS AMENDED

March 31, 1961

The Atomic Energy Commission submits herewith its fourth annual report to the Joint Committee on Atomic Energy on operations under Section 170 of the Atomic Energy Act of 1954, as amended. The report covers indemnification of activities conducted under license by the Commission, indemnification of activities conducted under contract with the Commission, and international and maritime indemnity. There is also included a summary of the operations of the Advisory Committee on Reactor Safeguards.

PART I. INDEMNIFICATION OF LICENSEES

Since submission of its 1960 report on indemnity operations, the Commission has progressed further toward completion of the basic framework of regulations necessary to fulfill the objectives of the Price-Anderson Act.

Amendments to 10 CFR 140 ("Financial Protection Requirements and Indemnity Agreements") were completed early in 1960 revising the amounts of financial protection to be required of reactor licensees and approving the furnishing of proof of financial protection in the form of nuclear energy liability insurance available from the Nuclear Energy Liability Insurance Association (NELIA) and Mutual Atomic Energy Liability Underwriters (MAELU). The amendments, which became effective April 7, 1960, were described in the Commission's 1960 report to the Joint Committee. In addition to these two basic amendments, the Commission has taken the following further actions:

a. adopted definitive forms of indemnity agreement to be entered into by the Commission with reactor licensees who are subject to the financial protection requirements of Part 140.

b. approved for publication for public comments of two additional forms of indemnity agreements, one to be entered into with licensees operating reactors for educational purposes and found by the Commission to be nonprofit educational institutions; the second for execution with licensees who are agencies of the Federal government.

c. completed a comprehensive review of its financial protection requirements and, as a result thereof, issued in February 1961 an amendment to 10 CFR Part 140.

The amendment requires somewhat higher financial protection with respect to reactor projects located in the more densely populated areas.

d. invited public comment on the question whether the Commission should exercise its discretionary authority, under Section 170 of the 1954 Act, to require financial protection of and indemnify organizations licensed to use unirradiated enriched uranium in quantities sufficient to form a critical mass.

Re-Evaluation of Financial Protection Requirements

In January 1960, the Commission received from NELIA and MAELU a proposal that the Commission adopt a financial protection formula differing in important respects from the formula then under consideration by the Commission. The effect of the insurers' proposal would have been to require substantially higher amounts of financial protection for those reactors subject to the formula. When it announced a comprehensive revision of the financial protection requirements in Part 140 in March 1960, the Commission stated its intention to re-evaluate, by the end of 1960, the provisions of Sections 140.11 (regarding minimum amounts of financial protection) and 140.12 (setting forth the financial protection formula) of Part 140. The re-evaluation study included consideration of the recommendations of the two nuclear pools, comments received in connection with those recommendations, and suggestions and views expressed at an AEC industry advisory conference held October 11, 1960 with representatives of the reactor and insurance industries.

As a result of its study, the Commission issued an amendment* to Part 140, to become effective April 18, 1961, which extended the range specified in the location (population) factor in the financial protection formula from 1 to 1.5 to a range of from 1 to 2. No change was made in the "base amount" of the formula - $150 per thermal kilowatt nor in the minimum amounts of financial protection required of reactors having relatively lower power levels.

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*Published in Federal Register of February 17, 1961 (26 F.R., 1396, Feb. 17, 1961).

Revision of Forms and Indemnity Agreements

In March 1961 the Commission adopted two effective and two proposed amendments to Part 140 which would prescribe the forms of indemnity agreements to be entered into with reactor owners.**

The two effective amendments establish the forms of indemnity agreement which the Commission will execute with licensees furnishing financial protection in the form of nuclear energy liability insurance and those who furnish financial protection in the form of their own resources. Earlier versions had previously been published for public comment, the most recent being in April 1960. The Commission, in developing the agreement forms, received numerous comments and suggestions from interested members of the public and from participants in industry advisory conferences held to consider the agreements. These were carefully considered in the drafting process.

Principal features of the form of indemnity agreement to be executed with licensees who purchase nuclear energy liability insurance, include the following:

(a) The form includes a common occurrence provision which is similar to the common occurrence provisions in the NELIA and MAELU insurance policy forms. Inclusion of this revised provision in the indemnity agreement eliminates the gap in protection which might otherwise exist. The common occurrence provisions in the proposed indemnity agreement published for public comment in the Federal Register on April 7, 1960, 25 F.R. 2999, did not fully eliminate the gap in coverage which might result from a "common occurrence." This so-called gap was referred to in the statement of considerations published with the notice of proposed rule making as follows:

**These four amendments had not yet been published in the Federal Register at the time of publication of this report.

> "A remaining possible gap is due to the fact that, although the Commission's obligations under the common occurrence provisions begin at an amount equal to the sum of all applicable insurance required under the regulations or $60,000,000, whichever is lower, NELIA and MAELU limit their responsibility to the capacity of their respective pools; that is, if all of the insurance policies applicable to the common occurrence are issued by one of the syndicates, the obligation of the insurers would not exceed the capacity of the particular syndicate ($46,500,000 in the case of NELIA or $13,500,000 in the case of MAELU)."

The Commission requested NELIA and MAELU to consider the adoption of changes in their nuclear energy insurance policies (facility form) to eliminate this possible gap. For reasons given in their letter of December 22, 1960 (see Enclosure I), the pools concluded that they were unable to effect the necessary changes. The Commission has, therefore, modified the common occurrence provisions of its indemnity agreement to eliminate the potential gap.

(b) As pointed out in the 1960 report to the Joint Committee, licensees furnishing proof of financial protection in the form of their own resources are required "to indemnity and hold harmless all persons indemnified as their interest may appear from public liability ...." This obligation includes coverage of liability for damage to on-site property. Because the form of NELIA-MAELU policy does not cover such liability, the indemnity agreement requires licensees furnishing the policies as financial protection to indemnify any person against liability for damage to on-site property. As discussed later in this report, the Commission has recommended to the Congress that the indemnity provisions of the Atomic Energy Act of 1954 (Section 170) be amended to eliminate coverage of liability for damage to so-called "on-site" property. If such legislation is enacted, paragraph 2b., Article II, of the proposed indemnity agreement would be deleted and a corresponding change would be made in the provisions of Article III of the agreement.

(c) Under the Atomic Energy Act of 1954, as amended, the Commission is required to indemnify against damage to property of persons indemnified, provided that such property is covered under the terms of the financial protection and is not located at the site of, and used in connection with, the activity where the nuclear incident occurs. The financial protection provided by the NELIA-MAELU policy form covers damage to property of persons indemnified only if the property is away from the site. Accordingly, the form of indemnity agreement excludes coverage of damage to on-site property of persons liable for the nuclear incident.

(d) A provision is also included in the indemnity agreement under which the Commission fills a "gap" between the financial protection and the Commission's indemnity obligation resulting from payments made by the insurers under a nuclear energy liability insurance policy. The agreement does not include the provision, contained in the form published in April, 1960, establishing a $1,000,000 floor under the Commission's obligation. In the event that the licensee does not obtain reinstatement of the amount of financial protection within ninety days after the date of a payment under the policy, a provision is included under which the Commission may issue an order requiring the licensee to furnish financial protection in another form.

(e) A new article, Article VII, has also been added to the indemnity agreement defining the "term" of the indemnity agreement.

(f) Article IV of the agreement applies in cases where the Commission determines that the United States will probably be required to make indemnity payments under the provisions of the agreement. The Article provides, among other things, that the Commission "shall have the right (a) to require the prior approval of the Commission for the settlement or payment of any claim or action asserted against the licensee or other person indemnified ..." NELIA and MAELU have objected to this provision on the ground that it exceeds the Commission's statutory

authority and would interfere with prompt handling of claims. The Commission, however, believes it has authority under Sections 161 and 170 of the Atomic Energy Act of 1954, as amended, to adopt the provision in question; moreover, the provision does not require Commission approval, but only reserves to the Commission the right to require Commission approval. It is anticipated that this authority would be exercised only in special circumstances and in such manner as to avoid undesirable delay in the settlement and defense of claims and actions. Discussions have been held with both syndicates looking towards the adoption of an agreement between them and the AEC concerning claims, investigations and handling. In light of such arrangements as may be made as the result of those discussions, it may be desirable to reconsider the provisions of Article IV.

The two proposed amendments are intended to establish the form of indemnity agreement which the Commission will execute with Federal agencies and non-profit educational institutions subject to Part 140. Except for changes made because Federal agencies and non-profit educational institutions are not required to furnish financial protection, the forms of these proposed indemnity agreements are substantially similar to those adopted by the Commission for execution with licensees who furnish financial protection. Publication of these proposed indemnity agreements was deferred pending adoption of forms of indemnity agreements to be entered into with licensees who furnish financial protection. The forms of indemnity agreements which the Commission will execute with such licensees are set forth in a notice of proposed rule-making to be published in the Federal Register.

Damage to "On-Site" Property

By letter dated April 8, 1959, and again in a letter dated April 15, 1960, the Commission recommended to the Congress the adoption of an amendment to the indemnity provisions of the 1954 Act to eliminate coverage of liability for damage to property, which is at the site of, and used in connection with, the licensed activity. The proposed amendment would affect indemnity agreements which the Commission enters into with licensees, but would not affect indemnity agreements between the Commission and its

contractors. A copy of the amendment is attached as Enclosure II. The present text of the Price-Anderson Act seems clearly to require that the Commission's indemnity coverage include indemnity against any legal liability arising out of a nuclear incident, including liability for damage to on-site property. The relevant provision of the Price-Anderson Act is section 11 u. of the Atomic Energy Act of 1954, as amended. This subsection provides that:

> "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."

The first sentence clearly covers any legal liability arising out of a nuclear incident except for claims under Workmen's Compensation Acts of on-site employees, and claims arising out of an act of war. There is no exception for claims for damage to on-site property. In other words, where a person is legally liable for the nuclear incident and for damage to on-site property, such as the reactor, such person would be indemnified under this sentence against his liability for damage to on-site as well as other property.

The second sentence provides coverage for damage to the property of persons legally liable for the nuclear incident except "property which is located at the site of and used in connection with the activity where the nuclear incident occurs." Thus, the sentence provides coverage for property damage which would not otherwise be indemnified because a person cannot be liable to himself for damage to his own property. The exception contained in the second sentence does not appear to apply, however, to claims covered by the first sentence of the definition. The proposed amendment would add such an exception to the first sentence of the

definition, but limit the applicability of the exception to indemnity agreements entered into with licensees. The amendment, thus, would exclude from Price-Anderson agreements entered into with licensees coverage of "property which is located at the site of and used in connection with" the licensed activity.

The Commission continues to believe that enactment of this proposed amendment is desirable. Coverage of liability for damage to on-site property diminishes the $500 million indemnity protection available to the general public under the Commission's indemnity agreement. There does not appear to have been, nor does it appear likely that there will arise any need for, government coverage of on-site property. Commercial property insurance for such property is available at the present time up to at least $60 million. As we understand it, the basic purposes of the government indemnity afforded by the Price-Anderson Act were two-fold: (1) to protect the public in the event of a large scale accident and (2) to remove the deterrent of the entry of private companies in a business in which there is a large potential third-party liability. Extending government indemnity for the protection of the investment in the reactor plant does not appear to be needed for these purposes.

In proposing this amendment, the Commission recognizes that, if the amendment is enacted, there may be uninsurable risks, not covered by the Commission's indemnity, for liability for damage to licensed reactor facilities to the extent that the damage to the reactor exceeds the amount of nuclear energy property insurance available. From the standpoint of the industry in general, the problem of liability for damage to on-site property has been ameliorated by the inclusion of a provision in the NEPIA-MAERP nuclear energy property insurance policies waiving any right of subrogation against various classes of suppliers who might be liable for on-site property damage. On the other hand, indemnity of a supplier for damage to on-site property in excess of property insurance available would be uninsurable.

The elimination of coverage of on-site property will also be in keeping with what we believe to have been the Congressional intent with respect to licensed facilities of enactment of the Price-Anderson Act, namely, that the government indemnity not include damage to or destruction of the nuclear facility.

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The NELIA-MAELU liability insurance policies furnished by reactor licenses as financial protection do not cover liability of other persons for damage to on-site property. Accordingly, in order that the licensee furnish financial protection covering such liability, a provision has been incorporated in the proposed indemnity agreement which would require the licensee to indemnify other persons who may be liable for damage to on-site property up to the amount of financial protection. If the proposed amendment were to be enacted, this provision of the indemnity agreement would be eliminated.

Government coverage of liability for damage to on-site property introduces a number of additional complexities into the administration of the Price-Anderson Act. As provided in subsection 170 b. of the Act, the required amounts of financial protection have been determined generally in light of the amount of liability insurance available from private sources. Thus, in particular cases, the value of the licensed nuclear facility may considerably exceed the amount of financial protection required. Moreover, in a particular case it might be relatively easy for the licensee to claim against the government indemnity for damage to the nuclear facility by establishing that an employee of the licensee is "legally liable" for damage to the property.

Indemnification of Materials Licensees

Section 170 of the Atomic Energy Act of 1954, as amended, requires that each license issued by the Commission for a production or utilization facility shall have as a condition thereof a requirement that the licensee maintain financial protection of such type and in such amounts as the Commission shall require to cover public liability claims arising out of a nuclear incident. With respect to licenses for source, special nuclear and byproduct materials, however, the Act gives the Commission discretionary authority to require financial protection. The Act also requires that, with respect to licenses for which financial protection is required, the Commission indemnify the licensee and other persons indemnified from public liability, arising from nuclear incidents, which is in excess of the required level of financial protection.

The Commission has had under study the question whether it should exercise its authority to require proof of financial

protection of and to indemnify licensees, such as reactor fuel processors and fabricators who possess and use substantial quantities of unirradiated enriched uranium. In the course of this study, the Commission entered into a contract with the Convair Division of General Dynamics Corporation for the preparation of a report on the possible consequences of nuclear accidents in licensed plants which process unirradiated enriched uranium (NYO 2980, AEC Research and Development Report, "Safety Analysis of Enriched Uranium Processing," March 18, 1960).*

In addition to the Convair report, the Commission has examined applications on file for special nuclear materials licenses; evaluated data submitted by special nuclear material licensees, pursuant to Commission request, as to the nature and consequences of the maximum nuclear accident which they believe credible for their own particular operations; and held an industry advisory conference of representatives of special nuclear material licensees and of the two nuclear energy insurance pools.

On January 11, 1961, the Commission received a report on this subject prepared by a representative of the Atomic Industrial Forum and representatives of a number of members of the Forum. Essentially, this report recommends that the Commission extend the financial protection and indemnity requirements of Section 170 of the Act to licensed fuel element fabricators and processors; and that $10 million be specified as the amount of financial protection to be furnished by such licensees. The report proposes that the suggested level of financial protection become effective three years from the date the Commission decides to extend Price-Anderson indemnification to special nuclear material licensees; in the interim, present licensees would maintain amounts of insurance carried as of December 31, 1960, and new licensees would be subject to the $10 million financial protection requirement.

The Commission has also received letters from Nuclear Energy Liability Insurance Association and Mutual Atomic Energy Liability Underwriters commenting upon the report received from

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*Available from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., for $3.00 a copy.

the Atomic Industrial Forum group. The letter from MAELU states, in part, that:

> ". . . we submit it is not in the public interest for the Commission to bring within Price-Anderson indemnification every licensee who is processing enriched uranium or fabricating fuel. We do recognize that in an occasional case a licensee under Section 53, 63, or 81 may be engaged in operations the nature of which makes indemnification advisable."

Essentially similar views are expressed in the NELIA letter.

As an aid in completing its study, the Commission has concluded that it would be desirable to obtain public comments from the atomic energy industry, the nuclear energy insurance industry, and other interested persons and organizations concerning matters involved in the question whether the financial protection and indemnity requirements of Section 170 of the Act should be extended to licensees who use substantial quantities of unirradiated, enriched uranium. The notice inviting public comments, published in the Federal Register March 29, 1961,* relates only to the fabrication and processing of unirradiated uranium enriched in the isotope 235. The indemnification of users of plutonium, uranium 233, and of megacurie quantities of isotopes appear to present special problems which will require further analysis and study by the Commission.

Administration of Licensee Indemnity

By the end of February 1961, 51 reactor licensees were indemnified under the provisions of the Price-Anderson Act; included were 15 private organizations, 30 non-profit educational institutions, and 6 Federal agencies.

Of the 15 private organizations subject to the financial protection requirements in Part 140, all are furnishing proof of financial protection in the form of nuclear

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*Citation: (26 F.R., 2647, March 29, 1961)

liability insurance. The 30 non-profit educational institutions and 6 Federal agencies are, of course, exempt from the financial protection requirements. The insurance syndicates have informed the Commission, however, that 18 of the former have purchased nuclear liability insurance.

The Commission has received no claims under indemnity agreements with licensees. Indemnity fees charged by the Commission since the inception of the indemnity program, totalled $71,377 as of February 28, 1961. The pools have informed the Commission that no claims had been received as of February 28, 1961 under nuclear energy liability insurance policies.

PART II - INDEMNIFICATION OF ACTIVITIES UNDER CONTRACT WITH THE COMMISSION

As reported in previous years, under authority contained in Section 170 d. of the Atomic Energy Act of 1954, as amended by Public Law 85-256, 85th Congress, the Commission adopted a policy of entering into agreements of indemnification extending the statutory indemnity;

(a) to AEC contractors engaged in the operation of nuclear reactors;

(b) to AEC contractors engaged in operating production or utilization facilities;

(c) to AEC construction contractors whose work may place them under the risk of occurrence of a substantial nuclear incident; and

(d) subject to authorization by the General Manager, to any other AEC contractors, other than those specified in (a), (b) and (c), who engage in activities involving the risk of occurrence of a substantial nuclear incident.

In carrying out this policy the Commission has executed statutory indemnity agreements as to 46 contracts. These agreements cover all of the major AEC installations operated by

AEC contractors who are eligible under Commission policy for indemnity agreements.

The insurance industry has made its claims adjusting service available, if needed, in the area of statutory indemnity for either AEC licensees or AEC contractors.

To date, there have been no claims filed under the statutory indemnity and consequently no expenditure of money.

A nuclear incident occurred at the Low Power Stationary Reactor on January 3, 1961 at the National Reactor Testing Station in Idaho. Preliminary reports of this incident have been furnished to the Joint Committee. In accordance with the policy adopted by the Commission as reported to the Joint Committee in the annual Indemnity Report of March 28, 1958, Combustion Engineering, Incorporated, the operator of the SL-1 reactor has not been required to furnish any financial protection but does have the statutory indemnity article included in its contract with AEC.

A report of the causes and extent of damage in connection with this incident will be submitted to the Joint Committee.

PART III - MARITIME INDEMNITY PROBLEMS

N. S. SAVANNAH Foreign Acceptance Agreements

Designated foreign nuclear, maritime and public health officials of Belgium, Denmark, France, Germany, Greece, Italy, Norway, The Netherlands, Portugal, Spain, Sweden and the United Kingdom have met with Maritime Administration and AEC staff to work out acceptance agreements. In general, negotiations are progressing satisfactorily on matters related to general operating conditions, safety evaluation and inspection.

As reported in 1960, negotiations with the United Kingdom had reached the point at which it was necessary for the U.S. side to have authority (i) to submit to suit in U.K. courts without an assertion of sovereign immunity from suit and (ii) to agree not to assert the conventional ship-owner's limit of

liability. On April 15, 1960 a joint letter from the Secretary of Commerce and the Chairman of the AEC to the Attorney General requested such authorization and on November 30, 1960 the Attorney General agreed to the use of such provisions with a request that agreements be subject to review by his office.

For their part the U.K. negotiators had agreed to consider executive or legislative action to assure the application (in case of a nuclear incident involving the Savannah) of absolute liability, channeling of liability to the owner and an extention of the statutes of limitation to a minimum of ten years in lieu of maritime of one to three years. On April 25, 1960 the U.K. Foreign Office indicated that no attempt would be made to get legislation applicable to the Savannah. Several alternative actions to be taken by the U.S. were suggested by the U.K. Foreign Office but consideration of these alternatives has led the U.S. side to the conclusion that they are either not feasible or are undesirable at this time.

When we have made desired progress on agreements with European countries, it is anticipated that discussions with other countries will be initiated.

Private Insurance Protection for Nuclear Ships

The Maritime Administration has requested the General Agent who will operate the N.S. Savannah to seek conventional Protection and Indemnity insurance coverage for the Savannah. No conventional hull insurance will be sought at this time. No further interest, beyond that reported previously, has been expressed by private insurance groups in providing nuclear indemnity.

PART IV - PROBLEMS OF FOREIGN INDEMNITY

Developments during the past year have substantially advanced the United States objective of attaining adequate international standards governing civil liability for nuclear hazards. The Atomic Energy Commission has long recognized that the development of the peaceful uses of atomic energy, in which the United States has a worldwide interest, would be dependent

upon an equitable distribution of the financial risk associated with such development and use.

During 1960, the Commission, in cooperation with other US Government agencies actively encouraged several approaches to the problem of providing adequate protection to the public, the operators of nuclear facilities and the suppliers of nuclear equipment. The desirability of resolving this problem also has been recognized by a number of nations particularly in Western Europe and Japan where the problem is of most immediate interest. The most important development of the year was the conclusion and signature of an international convention by sixteen members of the OEEC. This convention will go into force upon ratification by five signatories. A convention drafted for the six EURATOM countries is in an advanced state of preparation. Other countries will be invited to become parties to it. Conventions of worldwide applicability both in respect to land-based facilities and to nuclear shipping were drafted. Lastly, six foreign governments enacted or introduced relevant legislation (United Kingdom, West Germany, Switzerland, Sweden, Italy, and Japan).

The Commission has reviewed the availability of third party liability protection with respect to its effect on current reactor projects which are underway overseas and which involve power or power demonstration reactors of U.S. design and manufacture. With one exception, actual physical progress of these projects is not being held up due to the lack of suitable third party liability protection in the other countries. In the case of the small Belgian power reactor BR-3, the transfer of the reactor core is being held up pending enactment by Belgium of authorizing legislation required to give effect to the contractual hold-harmless provision afforded the US supplier. In the case of most other projects, work is proceeding on the basis of contractual provisions which provide that the reactor will not be started up until satisfactory third party liability coverage is available.

The following is a brief summary of the status and some of the principal provisions of each of the international conventions and pieces of national legislation in this field:

Conventions Applicable to Land-Based Reactors

OEEC. During the period of this report, several difficult problems were resolved with respect to the OEEC convention and the convention was concluded and signed. Most important of these problems was the proposal, which was ultimately withdrawn, that operators have a right of recourse against suppliers in case of fault or negligence.

The convention was approved by the OEEC Council of Ministers and opened for signature on July 29, 1960. Denmark, Luxembourg, the Netherlands, Switzerland and the United Kingdom signed on that date, and subsequently, the following additional countries signed: Austria, Belgium, France, Germany, Greece, Italy, Norway, Portugal, Spain, Sweden and Turkey. Iceland and Ireland indicated that they did not intend to sign. This convention does not come into effect until the deposit of five instruments of ratification. No ratifications were accomplished during 1960, although it has been reported that at least five countries will ratify by mid-1961. The EURATOM member countries have informally indicated that they expect to bring this convention before their legislative bodies at the same time as the proposed EURATOM liability convention, which is still in process of preparation (see below).

France declared upon signing the convention that its ratification will be subject to the adoption of national legislation and to the conclusion of formal agreements with neighboring countries which would afford acceptable equivalent systems of governmental indemnification.

The OEEC convention channels absolute liability for a nuclear incident to the reactor operator and provides that his maximum liability shall be limited to 15 million dollars (with signatories having the right to raise or the right to reduce this ceiling, but not below 5 million dollars). Such liability must be covered by insurance or other satisfactory financial security maintained by the reactor operator. The operator's right of recourse against a supplier is limited to (1) any individual who intentionally causes a nuclear incident or (2) where so provided by contract. There is no fixed termination date to the convention, although upon giving 12 months notice, any party may

terminate the convention's application to itself at the end of a ten year period after the convention comes into force, or at the end of subsequent successive 5 year periods.

The convention is generally satisfactory from the US standpoint. One difficulty is that it does not specifically continue protection after termination to installations constructed while it is in force. However, the US believes that the parties are aware of this problem and that a satisfactory resolution will ultimately be realized.

EURATOM. The EURATOM convention presupposes the simultaneous or previous coming into effect of the OEEC convention. As soon as the latter was approved, experts serving in an advisory capacity to the EURATOM Council of Ministers studied the proposed EURATOM convention in detail and requested the EURATOM commission to prepare a redraft. In succeeding meetings, the experts and the Permanent Representatives reached general agreement on a convention built on the OEEC base and on an incorporation, in general, of OEEC principles. The EURATOM Council of Ministers considered the draft in February, 1961, and gave it a generally favorable reception. They referred it to the Permanent Representatives for further study of remaining policy issues, and are expected to consider it again in the immediate future. Following the Minister's approval at that time or some subsequent meeting, the convention will be referred formally for comment to the US and to countries who may wish to associate themselves with it. Following this step, which may or may not result in changes, the convention would be opened for signature. It is estimated that this should occur by the end of 1961, and that both OEEC and EURATOM conventions will come into effect in the EURATOM countries in 1962.

The primary purpose of the proposed convention is to provide from public funds compensation for damage which exceeds the limits prescribed in the OEEC convention. It is currently expected that such compensation would be available in the amount of about 120 million dollars. This compensation for nuclear damage would be provided in the first instance from the private financial security maintained by the operator in accordance with the OEEC convention. This would be supplemented by a second stage of unilateral state intervention up to a total of perhaps

seventy million dollars, and finally by collective coverage of the signatory governments from that level up to about one hundred and twenty million. The question of how the collective governmental responsibility should be shared has not been resolved.

The convention adopts the OEEC provisions concerning its term and termination, and would be in effect for at least 10 years. As in the case of the OEEC convention, one problem that remains is to afford, in event of termination, a protective system for existing installations. This problem is still under consideration.

IAEA. An attempt is being made to draft an international convention concerning civil liability for land-based reactors which would be both adequate and acceptable on a wider than regional basis. Difficult problems are inherent in such an attempt, in view of the wide divergencies that exist in the economic positions, the status of nuclear development and the legal systems of the various nations of the world.

The US has supported the preliminary work that has been done by IAEA in this field, and during the period of this report certain important accomplishments have resulted.

During 1959, a panel of experts from ten member states of IAEA including the US, serving in the capacity of private individuals, had considered the major problem areas and drafted a convention, which contained alternative provisions on several important issues and left others to be filled in by governmental representatives. During 1960, the expert's report was considered by the IAEA Board of Governors and subsequently by all member states. Detailed substantive comments, including those from the US, were considered by the Board and circulated to all member states for further review. The Board authorized a committee of governmental representatives to meet in May, 1961 to undertake the preparation of a new draft based on the draft prepared by the private experts and taking into consideration the comments of member states. This inter-governmental committee will consist of representatives of Brazil, Canada, Czechoslovakia, West Germany, Finland, France, India, Japan, Mexico, Poland,

USSR, United Arab Republic, United Kingdom and United States. In addition, the chairmen of the IAEA and OEEC expert panels were invited to participate in a personal capacity. After the panel meeting, a decision will be made concerning future courses of action.

In many respects the proposed IAEA convention is similar in approach to the OEEC convention although in certain areas it affords national options. Absolute liability is channeled to the operator and liability would be limited, although the amount is left for inter-governmental agreement. The convention would have an indefinite duration, but any party may withdraw upon giving 12 months notice.

In its comments, the US has urged that the convention be revised to (a) provide uniformly for the channeling of an exclusive liability for nuclear damage to the reactor operator; (b) establish a single monetary limit upon operator liability on a per-incident basis; (c) establish the principle that there would be governmental indemnification, and that it would supplement rather than supplant available private protection; (d) limit the operators rights of recourse against suppliers to liability expressly assumed by contract or willful damage done by an individual physical person; (e) deal with the question of enforcement of foreign judgments; (f) provide for continued application of the convention's standards during the life of a nuclear facility, and (g) adopt the definitions utilized in the OEEC convention the extent practicable.

Convention Applicable to Maritime Reactors

The Comite Maritime Internationale, an organization of maritime lawyers from leading maritime states including the United States, formulated a draft convention during 1959 and recommended that a diplomatic conference be convened in order to permit all governments with an interest in such a convention to reach agreement on its provisions. The CMI based its draft on the principles that had been developed by the OEEC and adoped most of those pertinent to nuclear ships.

This matter was further considered by an IAEA panel of experts, which met in March and August, 1960, under the former

chairman of the CMI panel. This panel, which included independent experts from the United States, discussed the major problems that would be involved in a maritime liability convention. Subsequently, the IAEA Secretariat prepared and circulated a draft convention and a report reflecting the experts' recommendations.

The Government of Belgium together with the IAEA has now invited the leading maritime states, including the United States, to participate in a conference to meet in Brussels from April 17 to 30, 1961 to formulate and open for signature a convention regulating the liability of operators of nuclear ships. The US has agreed to participate, and the Department of State has established an inter-departmental committee, including representatives of the Maritime Administration, the Atomic Energy Commission, the Department of Justice, the Department of State, the Navy Department and the Coast Guard, which has formulated proposed United States positions on the full range of issues that will arise. As soon as these positions receive departmental consideration, the Joint Committee will be informed of them.

National Legislation

The national legislation in effect in the United Kingdom and in the Federal Republic of Germany was described in last year's report.

The Swiss legislation, effective on July 1, 1960, channels absolute and exclusive liability to the operator and limits his liability to the amount of insurance or other private financial protection required for each installation (40 million Swiss francs or about $9,238,000). For major incidents, the government will consider paying grants for the damage not covered by the required financial protection. There is no limitation on the duration of this act.

National legislation applying to third party liability entered into effect in Sweden on July 1, 1960. Absolute and exclusive liability is channeled to the operator. This liability is limited to 25 million Swedish crowns (about $5,000,000) per nuclear incident and the operator is required to maintain insurance or other financial protection for this amount. The government undertakes to consider payments for damages above this

amount by special legislation. The act has no fixed duration, although discussion in the Swedish legislature showed an intention to supersede it with the OEEC convention.

A nuclear energy bill was submitted to the Italian Parliament in January, 1960. However, the third party liability sections of the bill have not as yet been acted upon. The report which accompanied the Bill at the time of its submission noted that the liability sections are designed to be consistent with the OEEC and EURATOM conventions.

A bill concerning nuclear damage indemnity was submitted to the Japanese National Diet late in 1960 and has not yet been acted upon. Absolute liability would be channeled to the operator of the nuclear facility, who would maintain financial protection not to exceed 5 billion yen (14 million dollars) per installation. If the aggregate claims exceed this amount, the government may provide the operator with additional aid to compensate injured third parties. The United States has raised several questions concerning this legislation, including the absence of an explicit provision for limitation of liability.

PART V - OPERATIONS OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

This part of the report summarizes the activities of the Advisory Committee on Reactor Safeguards during the year ended March 31, 1961. It includes a brief discussion of each of the reactor projects referred to the Committee during the year for review and advice. It also describes briefly reactor safety matters of broad significance and applicability on which the Committee has also rendered important assistance and advice to the Commission.

In addition to those reactors (power and testing) required by section 182 b. of the 1954 Act to be reviewed by the Committee, the Commission has continued the procedure of obtaining the Committee's advice on all major reactor projects built under contract with the Commission and on the major Department of Defense reactors reviewed by the Commission. The Committee is kept currently informed, however, on safety reviews

of the small research reactors as well as of other staff activities concerned with reactor safety.

Through March 31, 1961 the Advisory Committee held 12 meetings. In the course of its meetings, the Committee reviewed and advised the Commission concerning the safety aspects of 13 reactor projects subject to licensing, 2 Commission-owned reactor projects subject to parallel hearing procedures, and some 20 AEC and Department of Defense projects. Copies of the Committee's reports to the Commission on all of these cases have been forwarded to the Joint Committee. The current status of each of the projects is described below. Similar information on classified reactor projects is being submitted separately.

Reactors Subject to Licensing

Commonwealth Edison Company (Dresden Nuclear Power Station). Following its meeting in May 1960 the ACRS advised the Commission that it saw nothing in the reported operational experience of the Dresden Nuclear Power Plant up to half power (315 megawatts thermal) that would preclude continuing the approach to full power operation under carefully planned test and operational procedures which would assure a prompt shutdown of the reactor in the event of significant departures from expected performance of the reactor or its control equipment. The Committee commented on the possibility of additional difficulties with the control rod drive system and on the advisability of limiting the number of visitors to Dresden until there has been a substantial period of satisfactory operation at full power.

After a public hearing on the matter on May 4 and 6, 1960, the Hearing Examiner on May 16, 1960 issued his Second Supplemental Intermediate Decision authorizing operation of the Dresden reactor at power levels up to but not in excess of 630 megawatts thermal. At its September 1960 meeting, the ACRS made a further review of the operating experience of the Dresden Plant, and, on September 24, 1960 reaffirmed its previous conclusion that the project can be operated without undue risk to the health and safety of the public.

An amended license was issued to Commonwealth Edison on October 14, 1960, authorizing full power operation. This license

was effective immediately, subject to Commission review upon exceptions or upon its own motion within 45 days.

On November 15, 1960, Commonwealth informed the Commission of a malfunction of a control rod drive mechanism and further indicated that the reactor had been shut down and that an investigation of the matter was being undertaken.

On November 17, 1960 the AEC staff filed with the Commission a "Motion to Extend Period for Commission Review" until December 16, 1960, subject to such further extension as may be necessary, in order to permit investigation of the malfunction of the control rod mechanism. On December 7, 1960 and January 9, 1961 the Staff filed motions for further extension of the period for Commission review. The motions were granted and the period for Commission review was extended to March 1, 1961.

On January 30, 1961 Commonwealth submitted its report of the diagnosis of the control rod drive problem and outlined the modifications and design improvements incorporated in the control rod drives. Commonwealth requested the Commission's concurrence with the Company's plans to resume operation of the reactor upon successful completion of the test program described in the report. The matter was considered by the ACRS at its March 1961 meeting. The Committee reported that it believed that there is reasonable assurance that the modified control rod drives will operate satisfactorily for some time, and that the proposed operation at power with the fuel elements proposed to be used presents no hazard so long as the initial burnout ratio is no closer to burnout than a factor of two. The Committee also commented on the occurrence of cracks in the poison sections of the present control rods and noted that the proposed design changes should be reviewed berore this reactor resumes operation at power. A public hearing has been scheduled for March 28, 1961 to consider authorizing resumption of operation of the Dresden plant and amendments to License DPR-2.

Consolidated Edison Company. At its January and March 1961 meetings, the ACRS considered the design of the Consolidated Edison power reactor being built at Indian Point, New York. In particular, the Committee reviewed the design of the control rod

mechanisms and procedures for operating the reactor without in-core monitoring devices. The ACRS reported that it believes there is considerable assurance that the reactor, as designed, can operate at designed power, but withheld a conclusion on the need for in-core monitors until review of data to be obtained during initial operation at low power levels. It is anticipated that a public hearing on the matter of amending Consolidated Edison's construction permit to incorporate certain final design features will be scheduled in the near future.

Consumers Power Company - Big Rock Point, Michigan. At its March 1960 meeting the ACRS reviewed the proposed construction of a 156 megawatts (thermal) boiling water type reactor at Big Rock Point on upper Lake Michigan near the City of Charlevoix. On March 14, 1960 the ACRS advised the Commission of the Committee's view that a boiling water reactor of this general type and power level can be constructed at the proposed site with reasonable assurance that it may be operated without undue risk to the health and safety of the public. A public hearing in the matter was held March 29, 1960 and on May 6, 1960, the Hearing Examiner issued his Intermediate Decision authorizing issuance of a provisional construction permit for a reactor with an initial capacity of 50,000 electrical kilowatts and an ultimate design capacity of 75,000 electrical kilowatts. The decision became final on May 28, 1960 and the construction permit was issued May 31, 1960. On October 17, 1960 Consumers filed an application for amendment to its construction permit to add technical specifications for reactor containment, the general design for the control drive mechanisms and other matters. In November 1960 the ACRS reviewed the application for the amendment and on November 5, 1960 reaffirmed the advice given in its earlier report of March 14, 1960. A public hearing on the proposed amendment was convened on December 13, 1960 at which time the Hearing Examiner ordered that the applicant's motion for postponement of hearing because of the failure of a Dresden control drive mechanism similar in design to the Big Rock drive mechanisms be granted, and that a further hearing in the proceeding be convened at a time to be specified in a subsequent order to be issued.

General Electric Company - Vallecitos Boiling Water Reactor. On May 23, 1960, following review by the staff and the

ACRS of the licensee's proposal to make certain internal modifications to the reactor, a public hearing was held, and on June 14, 1960 the Hearing Examiner issued his Intermediate Decision, authorizing the operation of the Vallecitos Boiling Water Reactor with certain modifications. In the absence of exceptions, or Commission review on its own motion, the decision would have become final on July 6, 1960. However, as a result of the filing of exceptions to the Intermediate Decision and reconsideration by the Commission, the Commission, after hearing oral argument, issued a Memorandum and Order on November 2, 1960 which directed the issuance of a license amendment incorporating a change procedure which had been jointly proposed by Commission staff and the licensee. Under the amended license, the licensee has freedom to make changes within the limits of the technical specification, provided no unreviewed safety question, as defined in the license, is involved. Any change involving unreviewed safety questions and all changes in the technical specifications must be referred to the Commission. The Director, Division of Licensing and Regulation, may authorize such changes if they present no significant new hazards considerations. Otherwise, referral to the Advisory Committee on Reactor Safeguards and scheduling of a public hearing is required.

Lockheed Aircraft Corporation Radiation Effects Reactor. Lockheed filed an application dated September 23, 1960 for a license to operate the 10 Mwt Radiation Effects Reactor (RER) which is located at the Georgia Nuclear Laboratories, Air Force Plant No. 67 in Dawson County, Georgia. The RER, owned by the Department of the Air Force, was formerly managed and operated by Lockheed for Air Force. Since exclusive utilization of the reactor is not required for Air Force's purposes, Air Force has agreed to contract with Lockheed for operation of the reactor to provide services for other U. S. Government agencies. Effective upon issuance of a license to Lockheed, the Air Force will transfer to Lockheed and Lockheed will accept exclusive responsibility to safely manage, operate and control the reactor. In December 1960 the ACRS reviewed the Radiation Effects Reactor and advised the Commission that the Committee is of the opinion that continued operation of this reactor can be justified only for work essential to the National defense. At the Commission's request, the ACRS again reviewed the matter at its March 1961

meeting. Lockheed indicated that it was willing to operate the reactor under restricted conditions at less than the 10 megawatts power level. The Committee reported that there is reasonable assurance that the RER can be operated at one megawatt without undue risk to the public. Further action by the Commission in this matter is now pending.

National Aeronautics and Space Administration. At its March and July 1960 meetings the ACRS reviewed the design and proposed operation of the NASA Plum Brook Reactor Facility, and in letters of March 14, 1960 and July 25, 1960 concluded that operation, without in-pile experiments, would be acceptable. On August 22, 1960, NASA filed an amendment to its license application proposing minor changes and improvements to the facility. After reviewing this amendment the ACRS, on September 26, 1960 concluded that the proposed changes do not increase the previously appraised hazard to the health and safety of the public. At its November 1960 meeting, the Committee considered the applicant's proposal to operate the facility below 100 thermal kilowatts prior to the completion of some portions of the facility and concluded that these operations could be carried out without undue hazard. A public hearing to consider issuance of an operating license for the facility was held December 16, 1960. NASA indicated that, since construction of the facility was not complete, only a provisional operating license authorizing initial loading of fuel and low power operation to 100 kilowatts (thermal) was being sought, pursuant to Section 50.57 of the Commission's regulations. As of February 28, 1961 the Hearing Examiner had not issued his Intermediate Decision.

National Naval Medical Center. The National Naval Medical Center filed an application dated June 24, 1960, for a license to construct and operate a TRIGA tank-type nuclear research reactor at the National Naval Medical Center site in Bethesda, Maryland. The ACRS reviewed the project at its September 1960 meeting and advised the Commission that it believed that the site was suitable for the proposed reactor. The Committee recommended that pulses and power operations be limited to values somewhat less than those which have been repeatedly demonstrated elsewhere to be safe. A construction permit was issued on November 8, 1960.

Northern States Power Company. After a public hearing on February 15 and 16, 1960 to consider issuance of a provisional construction permit to Northern States, the Hearing Examiner, on April 21, 1960, issued his Intermediate Decision authorizing the issuance of a provisional construction permit for the 62 megawatt (thermal) "Pathfinder" reactor. The Decision became final and the construction permit was issued on May 12, 1960. Application for various amendments were subsequently filed by the applicant. Following its review of the proposed amendments the ACRS advised the Commission on November 5, 1960 that such amendments were acceptable from a safety point of view. Northern States Power Company has requested that a hearing on the amendments not be scheduled at this time.

Pacific Gas and Electric Company. In March 1960 the ACRS reviewed the proposed 200 Mw (thermal) boiling water reactor and vapor suppression containment for the Pacific Gas and Electric Company at Humboldt Bay, California. In its letter of March 14, 1960 the ACRS advised the Commission that the site was suitable for a 200 Mw (thermal) power reactor of the boiling water type with conventional containment but recommended further testing of the steam suppression system. The design of the reactor was reviewed at the June and July 1960 meetings and in its reports on June 27 and July 25, 1960 the ACRS indicated that it believed that a reactor of the design and features proposed can be adequately contained with the proposed pressure suppression system and that it may be constructed with reasonable assurance that it can be operated at the site selected without operating under hazard to the health and safety of the public. The Committee also indicated that there were several design features including the fuel element cladding and the control rod system, which were still being evaluated by the applicant. On August 24-26, 1960 a public hearing was held to consider the issuance of a construction permit for the proposed reactor. An intermediate decision by the Presiding Officer, ordering that a construction permit be issued, was issued on October 17, 1960, and became final on November 8, 1960. The construction permit was issued on November 9, 1960.

Philadelphia Electric Company. At its March 1960 meeting, the ACRS considered the site at Peach Bottom, in York County, Pennsylvania, proposed by the Philadelphia Electric

Company for construction of a 115 Mw (thermal), helium-cooled, graphite moderated, high temperature reactor. On March 14, 1960 the ACRS advised the Commission that the site was suitable for a reactor of the general design and power level proposed. An application for a construction permit was filed with the Commission by Philadelphia Electric on July 25, 1960. In December 1960 the ACRS reviewed the status of the research and development program on the advanced gas-cooled reactor as related to current design and construction plans for the Peach Bottom reactor. On December 10, 1960 the ACRS advised the Commission that the Committee continues to be optimistic that a reactor of the general type proposed in the advanced gas-cooled concept can be constructed and operated at the Peach Bottom site without undue risk to the health and safety of the public. However, the Committee also stated that there are many questions that remain to be answered by the research and development program which is still in its early stages; that several of these questions are in areas which could require major changes in the present design concepts and could conceivably change the early optimism of the ACRS. In view thereof, the Committee stated that it is not now prepared to go beyond its original conclusion given in its letter of March 14, 1960, that the Peach Bottom site is suitable for a reactor of this general design and power level. The Company plans to submit additional data as soon as it becomes available from the research and development program presently underway.

Saxton Nuclear Experimental Corporation. On February 11, 1960 a construction permit was issued to Saxton for a 20 megawatt (thermal) pressurized water reactor on a site southeast of Altoona, Pennsylvania. On March 11, 1960 Saxton submitted an application for amendment to the permit, pertaining to a change of design of the reactor pressure vessel. The ACRS reviewed the application amendment and on September 26, 1960 advised the Commission that the proposed change in the Saxton reactor pressure vessel design would not introduce any additional hazard to the health and safety of the public.

Westinghouse Testing Reactor (WTR). In April 1960 the the WTR experienced operating difficulty which resulted in the melting of the cladding of a fuel element. Following corrective

action to prevent recurrence of the difficulty, the Commission, in September 1960, authorized resumption of operation under more restrictive operating conditions. A report of the incident and of corrective action taken with respect thereto were furnished to the ACRS. As suggested by the Committee at its March 1961 meeting, a review of the design and method of operation of the WTR has been scheduled for the Committee's May 1961 meeting.

Yankee Atomic Electric Company. At its May 1960 meeting the Advisory Committee on Reactor Safeguards considered the safety aspects of Amendments No. 19 and 20 to Yankee Atomic Electric Company's license application. These amendments described certain changes in design and operating procedures which were not reflected in the final hazards summary report contained in the license application and subsequent amendments. In a report to the Commission on May 9, 1960 the ACRS reaffirmed the opinion, stated in its February 1, 1960 letter, that this reactor could be operated without undue risk to the health and safety of the public. On June 22, 1960 the ACRS reviewed Amendments No. 21 and 22, providing additional general and technical information to the license application, and on June 27, 1960 reaffirmed its previous opinions that the reactor could be operated without undue risk to the health and safety of the public. Public hearings to consider the issuance of the facility license were held in May, June, and July, 1960. The Hearing Examiner, on July 9, 1960, issued his Second Intermediate Decision which ordered the issuance of an interim license authorizing operation of the reactor at power levels not in excess of 5 Mw (thermal) solely for the purpose of initial fuel loading and low-power testing. The license was issued on July 14, 1960. On July 19, 1960 the Hearing Examiner issued the Third Intermediate Decision, which ordered the issuance of a license authorizing full power operations to 392 Mw (thermal). The decision is subject to a further hearing to be held on the question of full power operation for a 40-year term. An amendment to the license was issued on July 29, 1960, pursuant to the Third Intermediate Decision. On August 8, 1960, Yankee filed an "Exception to Third Intermediate Decision" regarding the requirement for public hearing on each amendment to Yankee's application. By Memorandum and Order dated August 18, 1960, the Commission denied the exception and remanded the docket to the Hearing Examiner for further proceedings and decision with respect to

the scope of the technical specifications in the license. The hearing was reconvened on December 12, 1960, and on December 30, 1960 the Hearing Examiner issued his Fourth Intermediate Decision ordering the issuance of an amendment to the license which amended the procedure for making changes in the reactor.

Reactors Subject to Parallel Procedures

Puerto Rico Water Resources Authority. At its March 1960 meeting the ACRS considered the proposed construction of a 16,300 Kw (electrical) Boiling Nuclear Superheater Power Station for the Puerto Rico Water Resources Authority in the vicinity of Rincon, Puerto Rico. The Committee subsequently advised the Commission that, with certain reservations, the proposed reactor could be constructed with reasonable assurance that it can be operated at the site selected without undue risk to the health and safety of the public. The reservations of the Committee were concerned with the long-term integrity of the superheater fuel elements and radioactive contamination of the turbine. Information on these matters will be furnished the ACRS for review prior to operation of the facility. A hearing on the construction of the reactor was held on April 27, 1960, and on June 28, 1960 the Hearing Examiner issued his Intermediate Decision which authorized construction of the facility. The decision became final on July 19, 1960.

23. Rural Cooperative Power Association Reactor (Elk River). At it November 1960 meeting the ACRS reviewed the proposed operation of the Elk River reactor. As a result of this review, the Committee reported to the Commission on November 5, 1960 that it believes that this reactor can be operated without undue hazard to the health and safety of the public. By notice dated November 17, 1960, a hearing on the operating authorization for the 22,000 Kw (electrical) facility was scheduled for December 20, 1960. However, because of fuel fabrication difficulties which delayed the startup schedule for the reactor, the applicant requested a postponement of the hearing. By order dated December 9, 1960 the Presiding Officer granted the applicant's request that the hearing be deferred until March 7, 1961. At its March 1961 meeting, the ACRS reviewed the changes that had been made in the final design and concluded that these changes do not effect the Committee's previous conclusion that the

reactor can be operated safely, subject to resolution of the question of the use of 17-4 PH stainless steel in the control rod drives. On March 7-9, 1961, the initial hearing to determine whether or not a provisional operating authorization should be issued was held at St. Paul, Minnesota. A subsequent hearing will be held to receive further testimony.

Other Commission-Owned Reactor Projects

Plutonium Recycle Test Reactor. Subsequent to its review of this project at the January 1960 meeting, the ACRS and Commission Staff made a further review in May 1960. The ACRS concluded at that time that most of the details considered in its earlier advice to the AEC on the reactor were being satisfactorily settled, and offered additional recommendations which were accommodated in the design and operational procedures for PRTR. This reactor is presently in the early phases of experimental operation.

Sodium Reactor Experiment (SRE). The SRE is a 20 Mw experimental sodium cooled reactor operated for the AEC by Atomics International at their Santa Susanna, California, facility. The reactor commenced operations in July 1957, but suffered considerable core damage in July 1959 as a result of failure of the fuel cladding. Following rehabilitation, and prior to continuance of operations, the ACRS reviewed the reactor for the purpose of ascertaining whether adequate steps had been taken in design and operating procedures to prevent recurrence of the incident. The Committee concluded that renewed operation of the SRE would not be hazardous to the public. The reactor was restarted in September 1960.

Nuclear Merchant Ship (N. S. SAVANNAH). The construction of the Savannah is essentially complete and the ship and nuclear power plant are undergoing precritical testing. After review by the ACRS of the final design and proposed testing program of the ship through sea trials, the Committee advised the Commission on December 13, 1960 that, subject to certain design questions to be resolved to the satisfaction of the AEC staff and with two restrictions relating to the testing program, the reactor could be operated without undue hazard to the health

and safety of the public. A public hearing in this case was held March 6-8, 1961 and recessed to reconvene on April 12, 1961.

New Production Reactor Confinement System (NPR). The New Production Reactor is being constructed near Richland, Washington. The salient feature of the design concept proposed for the confinement of fission products which might be released in the event of a serious incident is the use of a low-pressure building structure provided with steam vents rather than the more conventional containment sphere. The ACRS concluded that the proposed confinement structure, while not suitable for a less isolated location, will provide a higher degree of protection against the release of fission products than that afforded by the building structures around the other Hanford reactors, and therefore is acceptable on the basis that its use will not significantly increase the present hazards of the Hanford operations.

BORAX-V. The BORAX-V reactor, now under construction at NRTS is a 35.7 Mw (thermal) boiling water experimental facility designed with considerable flexibility. It will be used to obtain data for the purpose of advancing the development of boiling water reactors, including a demonstration of nuclear superheat. Following review of the project in September 1960, the ACRS and the Commission staff concluded that a facility of this general type could be constructed with reasonable assurance that it can be operated at the proposed location without undue risk to the health and safety of the public. Further review of this project is planned prior to its operation.

Modifications of the Shippingport Pressurized Water Reactor. The PWR has been operating successfully at Shippingport since 1957 at power levels up to 60 electrical megawatts. A new core and other modifications in this facility are planned which would increase the electrical output to 150 Mwe. The ACRS considered the proposed increase in power level at its meeting on December 7, 1960 and concluded that this change would not significantly affect the safety status. Suggestions of the Committee in regard to specific design features will be given careful consideration during the development of the detailed design of the PWR modifications.

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Brookhaven High Flux Beam Research Reactor (HFBRR). The HFBRR to be located at the Brookhaven National Laboratory, is a 40 megawatt heavy water moderated and cooled reactor designed to provide high flux neutron beams for physics research. The ACRS reviewed the design of this reactor at its September 1960 meeting and concluded that, with a high integrity leakproof containment building, a reactor of the general type proposed may be constructed at BNL with reasonable assurance that it will not create an undue hazard to the health and safety of the public.

Advanced Test Reactor (ATR). The AEC plans to construct a 250 Mw (thermal) test reactor at a site about 400 yards from the current MTR - ETR complex at the National Reactor Testing Station. The objectives of the proposed test program require a reactor with unusual features, including core arrangement, flux spectrum, reflector, and control. Operating characteristics are expected to be different from present reactors. The suitability of locating this new test reactor adjacent to the MTR-ETR was considered by the ACRS at its November 1960 meeting. The Committee concluded that the site proposed was suitable for the ATR. Construction is expected to start in the spring of 1961.

High Flux Isotope Reactor (HFIR). A 100 Mw high flux reactor will be constructed at ORNL for the purpose of supporting a research program in trans-plutonium isotopes. ACRS review of this reactor was concerned primarily with selection of an acceptable site. Following consideration at its May 1960 meeting, the Committee recommended that the initially proposed site would be suitable only if gas-tight containment were provided. An alternate, more remote site was presented to the Committee for consideration at the July 1960 meeting. The Committee concluded that this latter site was acceptable.

Experimental Organic Cooled Reactor (EOCR). The AEC is planning to construct a 30.4 Mwt experimental organic cooled reactor at the National Reactor Testing Station. This reactor is intended to serve as a facility for testing components of organic cooled power reactors. At its May 1960 meeting, the ACRS considered the suitability of site selected for this reactor and concluded that the site was acceptable. Construction

scheduled to commence in the spring of 1961.

Department of Defense Reactor Projects

Army Package Power Reactor - SM-1. The SM-1 is a 10 Mwt pressurized water reactor located at Fort Belvoir, Virginia. Initially, this plant was operated for three years under a Commission contract; however, in July 1960, responsibility for operation of the plant was assumed by the DOD. As a part of a current safety evaluation incident to the transfer, the project was reviewed by the ACRS. The Committee observed that the reactor has demonstrated a great degree of stability and self-protection; that the Army training program appeared to be well organized and effective; and that the research and development program to be carried out by the Army was conservative with respect to safety. The Committee also noted certain areas for corrective action. On the basis of the review by the ACRS and the staff, the AEC advised Army that the reactor can continue to be operated at a power level of 10 Mwt without endangering the public health and safety.

SM-1A. The SM-1A is a 20 Mwt pressurized water reactor located at Fort Greeley, Alaska, and is similar to the SM-1 prototype at Fort Belvoir, Virginia. The ACRS reviewed the design and proposed operation of the SM-1A during their November 1960 meeting, and concluded, subject to minor provisions, that the reactor can be operated at the power level proposed without undue risk to the health and safety of the public. Subsequent to this review by the Committee, several further questions arose concerning design and operation of the SM-1A. Although most of the problems represented by these questions have been resolved, certain of them are currently pending and may require further discussion with the Advisory Committee before a final recommendation is forwarded to the DOD.

Other Activities

Sites for Proposed Reactors. Prior to entering into cooperative agreements for construction, research and development

assistance, and operation of power reactor facilities, the Commission, whenever practicable, seeks the advice of the Advisory Committee on Reactor Safeguards on the suitability of sites proposed for these facilities. Since March 1960, the Committee has advised on sites proposed for four projects in these categories. The projects are the Small Pressurized Water Reactor, the Improved Cycle Boiling Water Reactor, the Process Heat Reactor and the Pressurized Water Reactor of Southern California Edison Company.

Pool-Type Reactors. Primarily as a result of the jamming of a control rod in a licensed pool-type reactor, the Commission staff and the ACRS reviewed the design of the control rod systems of existing pool-type reactors. It was determined that in certain of these reactors the jamming could result in inadvertent withdrawal of a fuel element from the core and, if the fuel element then subsequently dropped back in the reactor, a serious accident might result. As a result of the review, the ACRS recommended that operators of pool-type reactors be notified to take special immediate action to ensure that fuel elements could not be withdrawn with control rods.

The Commission staff is taking the necessary action through the regulatory process to implement this recommendation by requiring that appropriate changes be made to three licensed pool reactors which were found to be susceptible to this accident. Action is also being taken to assure that any necessary changes are made in Commission pool-type reactors. In addition, the staff is looking into the cause of control rod swelling to see if further changes in design and operating procedures would be desirable.

Precipitation Hardened Stainless Steel Reactor Components. The failure of a component of the Dresden reactor control rod drive system, which had been fabricated of 17-4 PH stainless steel, prompted a review of the drive design by the Commission staff. During the course of this review, it became apparent that other power reactors are proposing to use, and some have used, drive mechanisms with components made of the same material. The staff investigation was broadened to include a detailed review of the metallurgical and mechanical properties

and past and present applications of the material to determine if components made of precipitation hardened stainless steel are acceptable in critical components of reactors.

To date the investigation has resulted in requests to several reactor organizations to perform various metallurgical and mechanical tests to demonstrate the suitability of components made of this material. An interim report on this subject was provided to the ACRS at its March 1961 meeting. The investigation is continuing and the Committee will be informed of the results of the staff review when it is completed.

Criteria and Standards. In connection with the Commission's problem to develop more detailed reactor safety standards and criteria, the ACRS has suggested a study be made of the available information on matters relating to reactor safety to determine what criteria or guides could be established at the time, and what must yet remain as areas for subjective evaluation.

An ad hoc committee was appointed in December 1959 by the General Manager of the Commission to provide guidance and study, supplementing AEC staff work, on the extent and efforts the Commission should exert at this time on definition of criteria and standards for reactor safety, and how handling of matters closely related to this topic might be revised to advantage. The committee membership included representation from the ACRS as well as the AEC and the nuclear industry. The committee submitted a report dated September 29, 1960. Copies of the report were forwarded to the ACRS, and the ACRS was advised of the action initiated by the Commission to implement the recommendations made therein.

Site Criteria. Advice and assistance of the ACRS was obtained in the formulation by the AEC staff of a set of proposed criteria to be used in considering the acceptability of sites for power and test reactors. These criteria have been published as proposed guides in the Federal Register for public comment.

Seismic and Inversion Conditions on West Coast. The ACRS reviewed the question of the feasibility and acceptability

of locating reactors in the Los Angeles and San Francisco areas in terms of the possible hazards associated with inversion and earthquake conditions. The Committee concluded that through the exercise of appropriate precautions such as avoidance of known surface faults, increased seismic design factors for critical plant components and systems where failure could result in a release of radioactive material, it believed that a reactor facility could be adequately protected against seismic disturbance. With respect to inversions, the Committee advised that the meteorology of the Southern California coastal strip is so unfavorable for dissipating pollutants that sites in this area should be avoided when coupled with a high population density. The Committee concluded that, in theory, a reactor could be so designed, constructed and operated that it would offset the unfavorable meteorology and high population density, although this may require an extreme of conservatism in design and containment. However, the Committee reserved judgment on any specific site until appropriate hazards and siting information was presented.

Membership of the Advisory Committee on Reactor Safeguards

Two changes in the membership of the Advisory Committee occurred during the past year. Dr. Richard L. Doan, in submitting his resignation, effective December 31, 1960, completed a long period of important service on the present Committee and its predecessor. Dr. David B. Hall, Division Leader, Division K. Los Alamos Scientific Laboratory, was appointed to the Committee in February 1961. The following is the present roster of members of the Committee:

Dr. Theos J. Thompson, Chairman, Director of MIT Nuclear reactor, Massachusetts Institute of Technology, Cambridge, Mass.

Dr. Harvey Brooks, dean of engineering and applied physics, Harvard University, Cambridge, Mass.

Dr. Willard P. Conner, Jr., technical assistant to director of Research Center, research department, Hercules Powder Co., Wilmington, Del.

Dr. William K. Ergen, principal physicist, Oak Ridge National Laboratory, Oak Ridge, Tenn.

Dr. Franklin A. Gifford, Jr., meteorologist in charge of the Oak Ridge Office, U. S. Weather Bureau, Oak Ridge, Tenn.

Dr. David B. Hall, Division Leader, Division K. Los Alamos Scientific Laboratory.

Dr. C. Rogers McCullough, director of reactor safeguards (for foreign reactors) and scientific adviser to board of directors, Nuclear Utility Services, Washington, D. C.

Dr. Henry W. Newson, professor of physics, Duke University, Durham, N. C.

K. R. Osborn, chief engineer, general chemical division, Allied Chemical Corp., New York, N.Y.

D. A. Rogers, manager of project analysis, Central Research Laboratory, Allied Chemical & Dye Corp., Morristown, N. J.

Dr. Leslie Silverman, professor of engineering in environmental hygiene, director of radiological hygiene program, Harvard University School of Public Health, Boston, Mass.

Reuel C. Stratton, consulting engineer, Hartford, Conn.

Dr. Charles R. Williams, assistant vice president, Liberty Mutual Insurance Co., Boston, Mass.

Dr. Abel Wolman, consulting engineer and professor emeritus, sanitary engineering, The Johns Hopkins University, Baltimore, Md.

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ENCLOSURE I

December 22, 1960

Mr. Eber R. Price, Assistant Director
Division of Licensing and Regulation
U. S. Atomic Energy Commission
Washington 25, D. C.

Re: Atomic Energy Commission Licensees
Indemnity Agreement Provisions
Respecting Common Occurrence

Dear Mr. Price:

We are sorry for the delay in replying to your letter, written early in July to Mr. Thomas, requesting a memorandum to outline the reasons why MAELU and NELIA cannot amend the common occurrence provision in their policies to remove, with respect to each licensee involved, any possibility of a gap between the amount of coverage available from one or both pools for a common occurrence and the point at which government indemnity attaches.

The inordinate amount of time and effort that has been spent on this problem may have distorted general thinking on the subject with the result that its importance has been overestimated. Scientists tell us that the possibility that a major nuclear incident will occur is extremely remote. It is also unlikely that a common occurrence, as defined in NELIA-MAELU policies, will take place. The "common occurrence" provision relates only to nuclear material in the course of transportation and such material discharged or dispensed from facilities over a period of days, weeks, months or longer. Assuming that a "common occurence" takes place, no problem arises unless liabilities of catastrophe proportions are created and the applicable limits of liability of policies issued by one of the pools exceed that pool's capacity and the other pool has issued no applicable policies or the applicable limits of liability of the policies issued by the second pool is less than its capacity.

However, even though the occurrence of the combination of circumstances outlined above is exceedingly unlikely, those charged with the responsibility of running the nuclear pools cannot knowingly commit member companies for amounts in excess of their agreed participation. On the other hand, the Commission has already interpreted the Price-Anderson Act as permitting the Government indemnity to slide down to meet financial protection which has been depleted by a prior incident. It would appear quite consistent for the Government to indemnify those liable for a common occurrence at the point where applicable private insurance has been exhausted. Certainly, the member insurers of each pool have demonstrated their good faith in the matter by committing themselves to pool capacity where the applicable limits of the policies their pool has issued are equal to or in excess of such capacity. The possibility of additional exposure to the Government is negligible.

As we believe you know, by virtue of a reinsurance agreement between MAELU and NELIA, each nuclear facility which buys insurance is shared between them in the same proportion, no matter which pool writes the policy. At the present time, NELIA accepts 77.5 per cent and MAELU 22.5 per cent of the losses and expenses incurred under each policy. This arrangement is desirable in order to spread the risk of loss as widely as possible. It is necessary for the equitable operation of the long-term Industry Credit Plan, under which that portion of the loss element of the total premiums not used for the payment of losses or loss expenses will be returned ratably to the policy holders of each pool.

Under the arrangement described in the preceding paragraph, if either pool exposes itself to a loss in excess of its pool capacity, the other pool may be likewise so exposed. The two pools together are willing to assume a risk of loss from one occurrence of $60 million; NELIA $46.5 million, MAELU $13.5 million. Were each pool to substitute $60 million for the limit of liability now stated in the common occurrence provision of its policies, the joint exposure would be $120 million. That exposure would have to be cut back to $60 million. Hence, the limitation of liability provision in MAELU's common occurrence clause would have to provide that, with respect to all policies

applicable to a common occurrence, the sum of (1) MAELU's net retentions, after cessions to NELIA, plus (2) its acceptances from NELIA, would be subject to an aggregate limit of $13.5 million. NELIA's policies would have to contain the same provision, substituting $46.5 for $13.5 million. This would make the limit of liability in two facility policies issued by MAELU, one to A and one to B, dependent upon the limit of liability in each of two NELIA policies issued to C and D, assuming A, B, C and D were involved in a common occurrence. C and D, as well as NELIA, are strangers to the contracts between MAELU and A and B. The courts are reluctant to enforce such provisions in insurance contracts. Further, our lawyers have been unable to draft a clause incorporating the $60,000,000 figure which they believe will protect the members of each pool against loss in excess of their respective subscriptions.

It should be emphasized that we have no objection to assuming liabilities up to $60,000,000 in cases where the applicable limit of policies are equal to or in excess of that amount. Thus far, we have been unable to find a way to limit the loss liability of one pool to its insured by policies issued by the other pool to another insured. As pointed out earlier, if such a clause is not enforced by a court, the companies would be exposed beyond their commitments. The managers of the pools have no authority to expose the member companies in such a manner.

If you desire further information on the subject, please do not hesitate to write us.

Yours Sincerely,

NUCLEAR ENERGY LIABILITY INSURANCE ASSOCIATION

/s/
DeRoy C. Thomas, Assistant General Manager

MUTUAL ATOMIC ENERGY LIABILITY UNDERWRITERS

/s/
A. St. Clair, Counsel

ENCLOSURE II

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That:

Subsection 11 u. of the Atomic Energy Act of 1954, as amended, is amended to read as follows:

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

APPENDIX 5

MODEL NUCLEAR FACILITIES LIABILITY ACT

[Approved by the Commissioners on Uniform State Laws]

SECTION 1. [*Definitions.*] As used in this Act.—

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

(2) "injury" means any harm to person or property for which damages may be recovered under the law of this state;

(3) "nuclear facility" means—

(A) any nuclear reactor;

(B) any equipment or device designed or used for (1) separating the isotopes of uranium or plutonium, (2) processing or utilizing spent fuel, or (3) handling, processing, or packaging waste;

(C) any equipment or device used for processing, fabricating, or alloying special nuclear material if at any time the total amount of the material at the site where the equipment or device is located consists of or contains more than 25 grams of plutonium or uranium 233, or any combination thereof, or more than 250 grams of uranium 235;

(D) any structure, basin, excavation, premise, or place prepared and used for the storage or disposal of waste, other than facilities utilized exclusively in connection with the transportation of the material; and

(E) the site on which any of the above is located;

(4) "nuclear incident" means any occurrence or series of occurrences

(A) causing, elsewhere than at the nuclear facility, bodily injury, sickness, disease, or death, or loss of or damage to property, or loss of use of property, arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear, or byproduct material;

(B) caused by any reason, other than an act of war;

(C) occurring either at the nuclear facility or in the course of transportation of source, special nuclear, or byproduct material to or from the facility; and

(D) as to which an indemnification agreement exists between the United States Atomic Energy Commission and the operator in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, whether or not indemnification under the agreement may be necessary;

(5) "nuclear reactor" means any apparatus designed or used to sustain nuclear fission in a self-supporting chain reaction or to contain a critical mass of special nuclear material;

(6) "operator" means the person with whom the United States Atomic Energy Commission has executed an indemnification agreement in accordance with Section 170 of the Atomic Energy Act of 1954, as amended;

(7) "person" means (A) an individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency, a State or any political subdivision thereof, or a political entity within a State, a foreign government or nation or a political subdivision of any such government or nation, or other entity and (B) a legal successor, representative, agent, or agency of the foregoing;

(8) "source material" means (A) uranium, thorium, or any other material which has been determined by the [United States Atomic Energy Commission] to be source material, or (B) ores containing one or more of the foregoing materials, in any concentration as determined by regulation of [the United States Atomic Energy Commission];

(9) "special nuclear material" means (A) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which [the United States Atomic Energy Commission] has determined to be special nuclear material; or (B) any material artifically enriched by any of the foregoing, but does not include source material;

(10) "spent fuel" means any fuel element or fuel component, solid or liquid, which has been used or exposed to radiation in any nuclear reactor;

(11) "waste" means any waste material (A) resulting from the operation of a nuclear facility and (B) containing byproduct material.

SEC. 2. [*Liability; Nuclear Facilities.*] The operator of a nuclear facility is liable, without proof of fault, for an injury arising out of or resulting from a nuclear incident, other than (1) an injury, compensable under a State or Federal workmen's compensation act, of any employee employed at the site of and in connection with the nuclear facility, or (2) an injury to the nuclear facility or to property located at the site of and used in connection with the nuclear facility.

SEC. 3. [*Application of Act.*] This Act applies to (1) an injury suffered in this State arising out of or resulting from a nuclear incident either within or without this State and (2) an injury suffered outside this State arising out of or resulting from a nuclear incident within this State.

SEC. 4. [*Exclusive Liability.*] If in any action an operator is liable without proof of fault under section 2 or a substantially similar statute, either in this State or by application of controlling law rules and if jurisdiction can be obtained over the operator in such an action, the operator is exclusively liable, and no action may be brought against any other person with respect to the injury.

SEC. 5. [*Limitations.*] No action may be brought under this Act more than three years after the person suffering or incurring the injury knows, or reasonably could have knowledge of, the cause of the injury or more than ten years after the date of the last occurrence to which the injury is attributed, whichever first occurs.

SEC. 6. [*Effect of Other Laws.*] The provisions of this Act do not affect, amend, or repeal (1) any other rule or provision of law governing immunity to suit, the conditions and effect of a waiver of immunity, or the effect of the purchase of insurance upon the insurer or the insured, (2) any other provisions of law governing liability for injuries not covered by this Act, limiting the amount of recovery for injuries covered by this Act, or governing the kinds of injuries for which damages may be awarded, or (3) unless otherwise provided by this Act, any other provisions of law relating to the establishment and proof of legal liability.

SEC. 7. [*Repeal.*] The following acts and parts of acts are hereby repealed:

(a)

(b)

(c)

SEC. 8. [*Time of Taking Effect.*] This Act shall take effect * * *

APPENDIX 6

STATEMENT BY CONGRESSMAN MELVIN PRICE INTRODUCING H.R. 9244, A BILL EXTENDING THE COVERAGE OF THE INDEMNITY PROVISIONS OF THE ATOMIC ENERGY ACT OF 1954, TO INCLUDE NUCLEAR INCIDENTS OCCURRING OUTSIDE THE UNITED STATES, AND BILL ANALYSIS

The SPEAKER pro tempore. Under previous order of the House, the gentleman from Illinois [Mr. Price] is recognized for 10 minutes.

Mr. PRICE. Mr. Speaker, I am introducing today a bill to expand the coverage of the indemnity provisions of the Atomic Energy Act of 1954 so as to cover nuclear incidents occurring outside the United States. Without objection I request that an analysis of the bill be inserted in the Record at the conclusion of my remarks.

I am introducing this bill at this time without any expectation or wish that it be brought to the floor for action at this session. It is my hope in introducing the bill at this time, that interested parties will have the opportunity between now and the next session to study the bill and the accompanying analysis in order that the Joint Committee on Atomic Energy may have their best thinking on this important and somewhat technical subject.

[H.R. 9244, 87th Cong., 1st sess.]

A BILL 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 11 o. of the Atomic Energy Act of 1954 is amended to read as follows:

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

ever, 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: *And provided further*, That as the term is used in section 170 d., it shall include any such occurrence either within the United States or outside the United States."

SEC. Section 11 r. of the Atomic Energy Act of 1954 is amended to read as follows:

"r. The term 'person indemnified' means the person with whom an indemnity agreement is executed and also (1) with respect to a nuclear incident occurring within the United States and with respect to a nuclear incident in connection with the design, development, construction, operation, repair, maintenance, or use of the nuclear ship *Savannah*, any other person who may be liable for public liability, or (2) with respect to any other nuclear incident occurring outside the United States, any other person who may be liable for public liability as a result of his activities under any contract with the Commission or under any subcontract, purchase order, or other agreement of any tier under any such contract."

SEC. 3. Section 170 d. of the Atomic Energy Act of 1954 is amended by adding before the period at the end of the second sentence thereof the following proviso: ": *Provided*, That in the case of nuclear incidents occurring outside the United States, the amount of the indemnity provided by the Commission shall not exceed the legal limit of liability of persons responsible for nuclear incidents in effect in the jurisdiction where the the nuclear incident occurs."

SEC. 4. Section 170 e. of the Atomic Energy Act of 1954 is amended to read as follows:

"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; except that in the case of nuclear incidents occurring outside the United States, the Commission or any person indemnified may apply to the United States District Court for the District of Columbia, 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."

SEC. 5. From and after the date of enactment of this Act, the terms "nuclear incident" and "person indemnified", as used in indemnity agreements entered into by the Atomic Energy Commission pursuant to section 170 d. of the Atomic Energy Act of 1954, shall have the meaning provided by the amendments made by the first two sections of this Act.

BILL ANALYSIS

The general purpose of the bill is to make Price-Anderson Act indemnity coverage available in the AEC contractor program for nuclear incidents occurring outside the United States.

Section 1 amends section 11 o. of the Atomic Energy Act of 1954, as amended (the definition of "nuclear incident") in two respects:

(A) The qualifying clause, "within or outside the United States," has been inserted after the word "causing" in section 11 o. The effect of this amendment is to clarify Price-Anderson Act coverage in the situation where incidents occur within the United States but cause damage outside the United States. Although the General Counsel of the Atomic Energy Commission has held that Price-Anderson Act coverage extends to this situation, it may be desirable to clarify the coverage through this amendment.

(B) A second proviso has been added to the definition of "nuclear incident" as follows: "*And provided further*, That as the term is used in section 170 d., it shall include any such occurrence either within the United States or outside the United States."

This new proviso is the heart of the amendment. Its purpose is to make clear that with respect to persons having indemnity agreements under section 170d (AEC contractors in the atomic energy program, the definition of nuclear incident will encompass an occurrence outside the United States.

Section 2 of the bill amends section 11r of the Atomic Energy Act of 1954, as amended, to establish two separate categories of coverage which depend respectively upon the place where the nuclear incident occurs.

Price-Anderson Act coverage has, from its inception, extended to any person who may be liable for public liability. This coverage was predicated on the fact that the Price-Anderson Act was meant to protect the public. As such, there was no reason to restrict coverage to those situations in which contractors or licensees of the Commission were the persons liable. This coverage has been preserved in this amendment with respect to incidents occurring within the United States and with respect to the operation of the nuclear ship *Savannah*. It is reflected in section 2, clause (1).

The theory of coverage outlined above, however, does not underlie the extension of Price-Anderson indemnity to incidents outside the United States. The principal purpose of this extended coverage is to protect AEC contractors and subcontractors. Therefore, coverage in section 2, clause (2) has been limited to the contractor himself, or to any other person who may be liable for public liability provided that the other person's liability results from his activities under a subcontract, purchase order, or other agreement of any tier under the basic contract.

The class of contractors covered by Price-Anderson indemnity is not affected by the terms of this amendment. Thus, contractors of the Commission or contractors of the Commission and another Government agency under a joint program, having an existing Price-Anderson agreement will continue to be so covered. The only change, as a result of this amendment, is that such contractors—and their subcontractors and suppliers—will have the benefits of Price-Anderson indemnity for incidents occurring outside the United States.

As a practical matter, this amendment will permit the AEC to indemnify its contractors for public liability arising out of or in connection with the contractual activity, even if the incident occurs outside the United States. For example, firms such as General Electric and Westinghouse and their subcontractors and suppliers would be covered if an incident, arising out of the operation of a nuclear submarine and traceable to their activities under an AEC contract, or a Navy contract with respect to which the Commission had extended its indemnity coverage, caused damage abroad. The same coverage would apply to contractors in the AEC–NASA joint Rover program. In general, the coverage described above would be for "products liability."

In addition, firms under contract with AEC for the operation of facilities abroad (Martin Co. in Antarctica) would have the benefit of Price-Anderson indemnity coverage for incidents arising out of such operations.

Under present Commission policy in administering the Price-Anderson Act, the following persons and activities would not be covered:

(1) Suppliers of components of naval reactors to DOD under contract with DOD.

(2) Suppliers or assemblers of components of nuclear weapons.

(3) Commercial exporters of reactors or reactor components.

(4) Operation outside the United States of nuclear powerplants procured by DOD: e.g., Greenland.

Section 3 of the bill amends section 170d of the Atomic Energy Act of 1954, as amended, by adding a proviso at the end of the second sentence. The effect of the proviso is to assure that the Commission will not be liable for indemnity payments on a judgment rendered by a foreign court in excess of the locally applicable limit of liability for nuclear incidents, whether that limit be established by national legislation or international convention.

Section 4 of the bill amends section 170e of the Atomic Energy Act of 1954, as amended, to establish a single place of venue over all applications for limitation of liability in connection with incidents occurring outside the United States. The place of venue established is the U.S. District Court for the District of Columbia.

Section 170e now provides that, in connection with the *Savannah*, applications for limitation of liability must be filed in the district court "having venue in bankruptcy matters over the location of the principal place of business of the shipping company owning or operating the ship." This amendment would bring

the *Savannah* under the venue provisions established for all foreign nuclear incidents; namely, the district court of the District of Columbia.

Section 5 of the bill provides that as of the effective date of the act, the terms "nuclear incident" and "person indemnified" as used in existing indemnity agreements with AEC contractors shall have the meaning provided in sections 1 and 2 of this bill. This amendment has been suggested by the Commission in order to facilitate the incorporation of the amended definitions in this legislation into existing indemnity agreements. By including section 4 in this bill, assurances of extended coverage to AEC contractors can be given without the necessity of amending all the outstanding agreements.

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