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90-16 THE NUCLEAR SHIP "SAVANNAH"

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HEARING BEFORE THE SUBCOMMITTEE ON MERCHANT MARINE AND FISHERIES OF THE COMMITTEE ON COMMERCE UNITED STATES SENATE

NINETIETH CONGRESS

FIRST SESSION

ON

S. Con. Res. 28

TO CONTINUE OPERATION OF THE NUCLEAR SHIP
"SAVANNAH"

JUNE 12, 1967

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THE NUCLEAR SHIP "SAVANNAH"

MONDAY, JUNE 12, 1967

U.S. SENATE,
COMMITTEE ON COMMERCE,
SUBCOMMITTEE ON MERCHANT MARINE AND FISHERIES,
Washington, D.C.

The subcommittee met at 10:10 a.m. in room 5110, New Senate Office Building, Hon. E. L. Bartlett (chairman of the subcommittee) presiding.

Senator BARTLETT. The subcommittee will be in order.

This hearing is for the purpose of reviewing the future of the nuclear merchant ship *Savannah* and for consideration of Senate Concurrent Resolution 28, which would express the sense of Congress that operation of this vessel is in the best interests of the United States and should continue.

(The bill follows:)

[S. Con. Res. 28, 90th Cong., first sess.]

CONCURRENT RESOLUTION

Whereas the foresight, technology, and desire of the United States of America for peaceful application of the atom created the first nuclear-powered merchant vessel, the nuclear ship *Savannah*; and

Whereas the nuclear ship *Savannah* has operated upon the high seas with great success and is an excellent vessel with a speed of twenty-three knots; and

Whereas further operation of the nuclear ship *Savannah* would allow an opportunity for continuing a record of safe operation of a nuclear merchant vessel; and

Whereas the operation of the nuclear ship *Savannah* provides the only realistic laboratory in the world for study of nuclear merchant vessel operations; and

Whereas the operation of the nuclear ship *Savannah* provides a means for training and qualifying crews to man and operate nuclear-powered vessels of the future; and

Whereas operation of the nuclear ship *Savannah* allows utilization of existing facilities specifically designed for maintaining and servicing nuclear vessels; and

Whereas the cost to the United States of America of operating the nuclear ship *Savannah* is nominal; and

Whereas the operation of the nuclear ship *Savannah* bolsters our already over-extended and inadequate merchant fleet; and

Whereas operation of the nuclear ship *Savannah* enhances the prestige of the United States of America and significantly demonstrates this Nation's dedication to peaceful development of nuclear energy and its specific application to the maritime field: Therefore be it

*Resolved by the Senate (the House of Representatives concurring), That it is the sense of the Congress that operation of the nuclear merchant vessel *Savannah* is in the best interest of the United States of America and should continue.*

Staff member assigned to this hearing: Stanley H. Barer.

Senator BARTLETT. The future of the *Savannah* has been an item of intense interest in the Senate these recent months because the proposed budget submitted for fiscal 1968 omitted the funds necessary for its operation and supporting facilities. Recently the House of Representatives Appropriations Committee restored funds to the budget for the coming year specifically earmarked for the continuation of this program.

In recent weeks this subcommittee has heard extensive testimony concerning the present state of our merchant fleet. One fact emerges shockingly clear: The U.S. merchant fleet is inadequate. The commitments of this Nation, both of a military and civilian nature, demand a greater maritime ability than we now possess. At a point in time when an enlargement of our maritime strength is required, it seems not only incongruous but unwise as well to retire this relatively new and certainly unique vessel. And surely, when all indications are that nuclear propulsion will provide the power for ships of the future, there is invaluable information and experience to be obtained from the continued operation of the *Savannah*.

The first witness this morning will be the Honorable J. W. Gulick, Acting Maritime Administrator.

Mr. Gulick, do you have a prepared statement?

STATEMENT OF HON. J. W. GULICK, ACTING MARITIME ADMINISTRATOR, DEPARTMENT OF COMMERCE, WASHINGTON, D.C.; ACCOMPANIED BY E. KEMPER SULLIVAN, ACTING CHIEF, RESEARCH AND DEVELOPMENT OFFICE, MARITIME ADMINISTRATION, DEPARTMENT OF COMMERCE, WASHINGTON, D.C.

Mr. GULICK. I do, Mr. Chairman. With your permission, I would like to be accompanied by Mr. Kemper Sullivan, Acting Chief of our Research and Development Office, Maritime Administration.

Mr. Chairman, I appreciate this opportunity to appear before you to present the views of the Maritime Administration and the Department of Commerce with respect to the future operation of the *Savannah* and Senate Concurrent Resolution 28.

The *Savannah* was built pursuant to section 716 of the Merchant Marine Act, 1936, which was added to the act by Public Law 848, 84th Congress, on July 30, 1956.

The ship has a sustained sea speed of 20.25 knots and a bale cubic of 630,000 cubic feet.

As of June 1963 the cost of building the ship was \$55 million, consisting of \$34,681,000 for the reactor, and \$20,319,000 for the rest of the ship. The total cost of the *Savannah* program through fiscal year 1967 has been estimated at \$106,103,000. This is subject to final audit.

The contract to build the ship—except the reactor—was awarded to New York Shipbuilding on November 16, 1957. The Atomic Energy Commission awarded the contract to build the reactor to Babcock & Wilcox Co. on April 8, 1957.

The keel of the ship was laid on May 22, 1958. The ship was launched on July 21, 1959. Fuel was loaded in November 1961. The reactor went critical on December 21, 1961. Sea trials were made in March and April 1962. The Maritime Administration accepted the ship on May 1,

1962, and turned it over to States Marine Lines for further familiarization tests and for operation.

In August of 1962 AEC operating authorization was obtained and later the same month the vessel began its first domestic voyage.

Between August 1962 and February 1963 the vessel visited 13 U.S. ports and was visited by 344,628 persons.

In 1963 labor troubles developed. Despite continued efforts to secure an equitable settlement of the dispute, an agreement was impossible and the Government was forced to cancel the contract. It became necessary, then, to contract with another operator who employed crewmen from another union.

Several alternatives for the continued operation of the *Savannah* were set forth in a statement by Secretary of Commerce Luther H. Hodges on May 14, 1963. The alternatives he named were:

One, contracting with another private carrier to serve as our General Agent if one is available which can give adequate assurance of obtaining a properly-trained new crew within a reasonable period under circumstances which will justify a conclusion that such private carrier can indeed operate the vessel in the future without the personnel difficulties we have experienced.

Two, direct operation by the Maritime Administration of the Department of Commerce which would employ directly all necessary crew personnel on a Civil Service basis of the Federal Government.

Three, operation of the vessel by the Navy if from the Navy's viewpoint this is feasible.

On May 17, 1963, Acting Secretary of Commerce Franklin D. Roosevelt, Jr., announced the termination of the Department's general agency agreement with States Marine Lines. Secretary Roosevelt said:

In order to put the Government in the proper position to consider all available alternatives for future operation of the *Savannah*, it was evident the situation would be better clarified for this purpose if the present general agency agreement with States Marine Lines was terminated. This would permit the government to consider any proposals offered by other private shipping lines for general agency operation and would permit government at the same time to continue to give careful consideration to the possibility of direct operation by the Maritime Administration or other government agency.

Secretary Roosevelt added:

I would emphasize that the Department has requested officials of the States Marine Lines to continue their efforts to reach satisfactory arrangements with respect to all their crew personnel; and I have specifically requested States Marine Lines to submit further proposals for operation of the *Savannah*, under a new general agency agreement. In other words, I have assured States Marine Lines officials we would give their company every consideration—among the various alternatives available—for the operation of the *Savannah*.

As a result of labor problems, the first general agent's contract was terminated and a new "no-strike" contract was negotiated by the Government with American Export Lines and its associated operating unions in July 1963. The training of the new crew continued until April 1964.

Beginning in May 1964, cruises were begun anew. In May and June 1964, the ship visited six U.S. ports, and was visited by an additional 149,127 people. During the next year, 30 additional ports were visited, both at home and abroad, and 896,025 people visited the ship.

Development operation of the vessel was completed on August 20, 1965, and concurrently experimental commercial operation began when a bareboat charter of the vessel was made by the Maritime Ad-

ministration to First Atomic Ship Transport, Inc. (FAST), a subsidiary of American Export Isbrandtsen Lines, Inc. By so doing the funding requirements were reduced by \$4 million per year.

The bareboat charter provides that for the first year of commercial operation, FAST would be reimbursed on a base amount of \$1,339,000 for estimated operating losses, plus an allowance for actual shore staff expenses up to a maximum of \$473,000. As an incentive to keep operating costs at a minimum and to aggressively promote revenue, the charter provides that if operating expenses, less revenues, were less than \$1.339 million, a "profit" would result with Maritime and FAST receiving equal shares, up to a maximum of \$200,000 for FAST. All "profit" above \$400,000 would revert to Maritime. On the other hand, if operating expenses, less revenues, were more than \$1.339 million, a loss would result with FAST and Maritime sharing equally for the first \$200,000; FAST sharing one-quarter and Maritime three-quarters between \$200,000 and 600,000; and Maritime bearing all losses in excess of \$600,000.

The estimated loss from the first year of commercial operation as reported by the contractor was less than the original estimated loss by the amount of \$426,117 which under the charter would result in a "profit" in that amount which would be shared by FAST and Maritime. FAST's share would be \$200,000. These figures are subject to audit.

During that year the vessel made four voyages on trade routes 5, 7, 8, and 9 with an average cubic utilization of 67 percent; and three voyages on trade route 10, with an average cubic utilization of 81 percent. The average cubic utilization on the seven voyages was 74 percent. During the year, the vessel made 114 port entries at 28 ports, 10 domestic and 18 foreign.

Our latest estimate of the total Government cost of operating the *Savannah* for that year was \$2,711,648, consisting of a loss of \$1,417,848 which was reimbursed to FAST, \$1,011,800 support expense and \$282,000 training expense. This loss was substantially less than the amounts estimated due to the unexpected high revenue attained and lower shore staff costs. These estimates of the contractors are currently under audit.

The present estimated total cost of the Maritime Administration for the second year of operation (fiscal 1967) is \$3,300,000, consisting of an excess of operating expenses over revenues of \$1,260,000; \$541,000 for nuclear shore services; \$1,200,000 for support expenses, and \$300,000 for training expense.

These estimates were made after detailed discussions were held with FAST representatives during negotiations for the second year operation, followed by similar discussions with Todd.

In their pro forma for the second year FAST projected a total revenue of \$2,147,000; operating expenses of \$3,504,082; and shore staff of \$556,000. Total operating cost was estimated by FAST to be \$1,913,582. Coupled with our estimate for Todd support of \$1,200,000 and an estimate for training of \$300,000 the total initial program estimated cost was \$3,413,582.

Although operating experience during the previous year had been quite satisfactory, FAST was extremely concerned over their ability to match these revenues and maintain their good maintenance record.

They also strongly urged establishing a large number of shore staff. After a series of discussions FAST reluctantly agreed to accept \$1,200,000 as the second year estimated operating loss plus \$541,000 for shore staff, or a total of \$1,741,000.

With this as a background we felt that continued operation in 1968 could result in a total cost to the Government comparable to the 1967 estimate of \$3,300,000 as compared to \$1,350,000 if the ship is temporarily laid up.

The *Savannah* has made the following contributions to the future of American merchant marine:

(a) The vessel has visited a total of 46 ports both at home and abroad and has been the vehicle for the development of bilateral agreements with 12 European nations, opening some of the major seaports in the north European and Mediterranean area to nuclear vessels and in doing so has established a significant precedent in acceptance by the local officials and residents in addition to the national governments.

(b) The vessel has carried general cargoes to and from these ports thereby assuring shippers, consignees and personnel involved in the actual handling of the cargoes of the safety involved in such operations.

(c) The vessel has demonstrated the capability of a nuclear vessel to operate and maintain schedules.

(d) The *Savannah* program has resulted in the construction and development of the first commercial nuclear merchant ship servicing and refueling facilities.

(e) The *Savannah* has provided a program of instruction for future licensed officers and future officer candidates including an operational analog simulator system, together with the in-house expertise required of instructor personnel. This has been further expanded to include appropriate officer selection and course content to insure optimized training within the shortest period of time practicable.

(f) The *Savannah* program has made practical the development of numerous technical and economic studies to explore the further use of nuclear propulsion.

(g) The *Savannah* has proven the capability of American seamen to respond to the exacting requirements of a complex nuclear system.

(h) The *Savannah* has illustrated the concept currently under evaluation with regard to mechanization of machinery and control equipment. The nuclear components require automatic and remote control by virtue of nature and radioactivity normally associated with their operation. The characteristics of the system are such as to lend themselves to further development in the field of mechanization while maintaining a safe and efficient operating arrangement.

(i) The *Savannah* has resulted in the development of sizable expertise for the development and administration of a nuclear merchant ship program.

The construction and operation of the *Savannah* have established the technical feasibility of nuclear powered merchant ships, and have also given us valuable knowledge concerning the economics of nuclear ships.

As you know, the President's budget proposed laying up the *Savannah* for the fiscal year 1968. This proposal was based upon an initial estimate that continued operation of the *Savannah* in fiscal 1968 could result in a total cost to the Government of at least \$3,300,000, as compared to \$1,350,000 if the ship is temporarily laid up.

The House of Representatives has included in our appropriation bill funds for the continued operation of the *Savannah* in fiscal 1968. In view of the great interest shown in the continued operation of the *Savannah*, we have reconsidered our position and have concluded, that, on balance, the vessel should be kept in operation in fiscal 1968. Though we believe we have learned most of what can be learned from the operation of the *Savannah*, operation of the vessel in fiscal 1968 would continue to serve the foregoing purposes.

Mr. Chairman, this concludes my statement. I will be glad to answer such questions as you wish to put.

Senator BARTLETT. Thank you, Mr. Gulick. In your opinion, if the funds for the continued operation of the *Savannah* are appropriated, will they be spent?

Mr. GULICK. Yes, sir.

Senator BARTLETT. You have received assurances to that effect?

Mr. GULICK. We would contemplate, Mr. Chairman, that we would immediately begin negotiations for the continued operation of the *Savannah*. Exactly what form these would take would depend upon the negotiations themselves.

Senator BARTLETT. Does the figure you mentioned in the next-to-the-concluding paragraph of your statement, relating to the total cost to the Government of at least \$3.3 million, hold true today, or have you altered those estimates?

Mr. GULICK. We believe this would be a valid figure, Mr. Chairman.

Senator BARTLETT. The committee has heard that that figure has been reduced to \$2.7 million in some further paperwork. Are you aware of that?

Mr. GULICK. I am not aware of this, Mr. Chairman. I wonder if this figure was the estimate of the Government for the cost of operating the *Savannah* for the first year of operations.

Senator BARTLETT. Well, the committee understood that this lower figure derived from a study made by the Maritime Administration itself. But we can go into that further.

Now you have, on behalf of the Maritime Administration, reversed the decision not to lay up the *Savannah*, and you recommend that the vessel should be kept in operation during the coming fiscal year.

Have you projected your thoughts beyond that fiscal year into succeeding years?

Mr. GULICK. We have been giving consideration to this, Mr. Chairman, but we have come to no conclusions at the moment. We have no plans beyond the coming fiscal year 1968.

Senator BARTLETT. It would seem to me—maybe I am very biased on this proposition—that if it is useful to the United States to operate the *Savannah* in the coming year, it would likewise be valuable for many reasons to do so in the immediate years ahead, in any case. And you say you are now making studies aimed at a future determination concerning this?

Mr. GULICK. Yes, sir; and part of this, Mr. Chairman, depends in large measure upon the future of any U.S. nuclear program.

As you are no doubt aware, a part of the Secretary for Transportation's new merchant marine policy program, which has been discussed with industry, and in fact with this committee also, includes a future nuclear program.

The part the *Savannah* would play in the future will no doubt be largely dependent on the developments of that future nuclear program.

Senator BARTLETT. What part does the Maritime Administration play in the development of maritime plans for the Department of Transportation, which actually has no association whatsoever with maritime affairs?

Mr. GULICK. We have a very close working operation with the Department of Transportation, Mr. Chairman, and we have been working closely with them in the development of their planning.

Senator BARTLETT. Just as a matter of curiosity, how is it that the Department of Transportation announces programs instead of the Maritime Administration?

Mr. GULICK. My only answer to this, Mr. Chairman, must be based upon the President's own words in announcing the creation of the Department of Transportation, during which he indicated that the Secretary for Transportation would be one of his principal advisers on merchant marine policies.

Senator BARTLETT. If the decision were made today to build a new nuclear vessel, how long would it take to have that vessel in the water, operating?

Mr. GULICK. May I have a moment, Mr. Chairman?

The estimate is a little longer than I had originally anticipated, thereby my delay in answering.

I am advised by my technical support staff, 4 to 5 years.

Senator BARTLETT. When does the *Savannah* have to be refueled again?

Mr. GULICK. Probably after fiscal year 1968 operations.

Senator BARTLETT. Is it true that a second fuel core has already been purchased at a cost of \$2.5 million?

Mr. GULICK. This is correct, Mr. Chairman.

Senator BARTLETT. That has been paid for?

Mr. GULICK. Yes, sir; it is available.

Senator BARTLETT. If the *Savannah* were to be laid up, what would happen to that core?

Mr. GULICK. I am unable to say.

Senator BARTLETT. If the *Savannah* were to be laid up now then, it would be at least 5 years before the United States had another nuclear merchant vessel?

Mr. GULICK. Yes, sir.

Senator BARTLETT. I have heard that a Maritime Administration study has been made, pointing out the *Savannah* could be jumboized and made into a container ship for about \$8 million, and the capital cost could be recovered in 5 years, and at the end of 15 years the total program cost would be reduced by something on the order of \$10 million.

Is that right?

Mr. GULICK. This is correct, Mr. Chairman.

Senator BARTLETT. I believe the *Savannah* is comparable to the Mariner vessels and the operating subsidy for a Mariner vessel runs in the neighborhood of \$800,000 a year. Is that correct?

Mr. GULICK. Yes, sir.

Senator BARTLETT. What is the operating subsidy per year for the *Savannah*?

Mr. GULICK. The equivalent, Mr. Chairman, would be \$1.2 million—of course, these figures are still subject to audit—plus around \$500,000 for nuclear shore services, making a total in round figures of about \$1.8 million.

Senator BARTLETT. Is that before profit?

Mr. GULICK. This is after revenue has been counted in.

Senator BARTLETT. It is before the Government recaptures its share of the profit?

Mr. GULICK. Oh, yes, sir.

Senator BARTLETT. Then there is an actual difference of \$300,000 or \$400,000 between subsidy for the *Savannah* and a Mariner-type vessel?

Mr. GULICK. No; I would say, Mr. Chairman, there is a difference of around \$1.3 million, because the total support to FAST for the operation of the ship is about \$1.8 million. These are estimated figures, of course.

Senator BARTLETT. You are talking about shore facilities, too?

Mr. GULICK. Yes. They are essential to the operation of the ship.

Senator BARTLETT. Those shore facilities could service a number of nuclear vessels. Is that right?

Mr. GULICK. The facility would be available for other nuclear ships.

Senator BARTLETT. They are all charged against the *Savannah*, because this is the only one we have.

Mr. GULICK. This is the one, yes.

Senator BARTLETT. In your statement, Mr. Gulick, you say, "We have learned most of what can be learned from the operation of the *Savannah*." But isn't it true that much is to be learned through the refueling operation which will be necessary after next year?

Mr. GULICK. This is something which would be learned, which has not been conducted before, Mr. Chairman.

Senator BARTLETT. What are the essential differences, Mr. Gulick, between refueling a land-based reactor and one such as the *Savannah* has?

Mr. GULICK. I am really unable to advise with respect to the fueling techniques for a land-based reactor, Mr. Chairman. We do know as a result of our preparatory work, looking forward to refueling, that the *Savannah*, having a reactor differing from the normal shore installations, would require new techniques and procedures complicated by the fact that it is located within the restricted confines of a ship's hull.

In my judgment—and this is largely uninformed on the land-based reactor side—I would conclude from this that special procedures would be necessary for the *Savannah* which obviously would have to have AEC approval at each step of the way.

Senator BARTLETT. What countries, if any, have refused to permit the *Savannah* to enter their ports?

Mr. GULICK. To date, Mr. Chairman, my understanding is that we have not been refused entry of the ship into any foreign port.

Senator BARTLETT. Including Japan?

Mr. GULICK. We have no final resolution of the Japanese situation, Mr. Chairman. We have a tentative refusal at the moment.

Senator BARTLETT. As you know, the United States is the leading supplier of nuclear fuel; spent fuel being brought back to the United States for processing must be transported in a safe and efficient manner. Isn't the *Savannah* and its highly trained crew uniquely qualified to transport nuclear cargoes?

Mr. GULICK. I would not think so, Mr. Chairman. We have at the moment an especially designed craft located at Todd, which is available for the transportation of spent fuel from the *Savannah*.

Senator BARTLETT. There will be inserted in the record at the proper point a letter addressed to Chairman Magnuson from Dr. Lanzano, representing the Italian Government, citing the need for the use of the *Savannah* in the transportation of 10 cargoes of nuclear fuel between the United States and Italy. Are you familiar with that?

Mr. GULICK. I am not familiar with this, Mr. Chairman.

I might add, however, that I believe—and it would depend upon AEC to correct this—that any ship normally in a safe operating condition, and taking the necessary precautions established by AEC, could be used to transport properly safeguarded nuclear materials.

Senator BARTLETT. Do you believe the crewmen of all such ships would be willing to have this cargo aboard?

Mr. GULICK. I am assuming, Mr. Chairman, it would be appropriately safeguarded by shielding so it would be, in effect, another piece of equipment.

But again, I would have to rely upon the AEC requirements here. This is out of our field of expertise.

Senator BARTLETT. But the *Savannah* crew has a special capability in this area, does it not, for testing radioactivity and the like?

Mr. GULICK. Yes, sir; they do.

(The letter follows:)

COMITATO NAZIONALE PER L'ENERGIA NUCLEARE,
UFFICIO DI RAPPRESENTANZA,
Washington, D.C., February 13, 1967.

Senator WARREN G. MAGNUSON,
Chairman, Senate Commerce Committee,
Washington, D.C.

DEAR SENATOR: The Italian National Committee for Nuclear Energy (CNEN), of which I am the representative in the United States of America, has underway a research and development program in cooperation with the U.S. Atomic Energy Commission on Thorium-Uranium fuel cycle.

The purpose of such program is to explore the technical and economic feasibility of such a cycle for nuclear power plants, with the result of better utilization of nuclear materials resources.

The USAEC cooperation in such program, called PCUT (which stands for Uranium-Thorium Cycle Program), consists in the supply to the CNEN of the spent fuel elements from the Elk River reactor (Elk River, Minnesota).

Such spent fuel will be reprocessed and refabricated at the Italian pilot plant and sent back to the United States, in part for re-irradiation in the same Elk River reactor.

For the transfer of the material from the United States to Italy, the CNEN is confronted with the problem of transportation. Such a problem is a serious one, especially because of the lack of experience of the shipping companies in the handling of large quantities of radioactive materials.

In order to overcome this difficulty, I was ready to contact the Maritime Administration and F.A.S.T. operators of the *Savannah* nuclear ship, to explore the possibility of transportation of the Elk River spent fuel from the United States to Italy and back, since the *Savannah* is the best qualified ship for such operations, due to her facilities and the experience of the crew in the handling of radioactive materials.

We intended, of course, to make the transaction with the F.A.S.T. on a commercial basis for all ten shipments covering the entire quantity of material going from the United States to Italy and back.

But my action with the F.A.S.T. has no meaning after the announcement of the suspension of the Maritime Administration's subsidy and, as a consequence, the termination of the operation of the Savannah after next August. In fact, we plan to start the shipments in November 1967 and the entire operation will last more than one year.

Before my organization, which, according to the agreement with the USAEC, is in charge of the transfer of the material from the United States to Italy and back, takes action for a different solution, I would like to have your opinion on this matter and specifically on the possibility of having the subsidy to F.A.S.T. reinstated.

We are looking forward with hope to the further operation of the Savannah because of the problems I have already mentioned above and, furthermore, we want the transfer of the Elk River material, the first one in the world as far as the quantity of material is concerned, to be a successful operation, not only in connection with our PCUT Program, but also to show other shipping companies and the public that operations with radioactive materials can be accomplished safely and satisfactorily. And I am sure that this is also the opinion of every American working in the nuclear energy field.

I am at your disposal for any further information and detail on the matter.

Thank you very much for your attention.

Respectfully yours,

G. LANZANO,

CNEN Representative in the United States.

Senator BARTLETT. Was the decision to lay up the *Savannah* originally that of the Maritime Administration?

Mr. GULICK. It was not, sir.

Senator BARTLETT. Would you, or would you not care to inform the committee as to the origin of the decision?

Mr. GULICK. I think, Mr. Chairman, little would be gained by toe dancing on this subject. The Maritime Administration first proposed to the administration for fiscal 1968 a budget which included the continued operation of the *Savannah* as an essential part of the nuclear program for the construction of additional nuclear ships which at that time, in our judgment, was considered to be a wise move.

In the course of further discussion within the Department of Commerce, it became apparent that the amount of money available in fiscal 1968 for distribution among the various agencies of the Department would not permit the full utilization of all of the items which had been proposed by the Maritime Administration.

With this in view, we took a deliberate choice to proceed with the development of captured air bubble vehicles, the surface effects ship program, rather than to lose that as well as the *Savannah*.

Senator BARTLETT. The contract with American Export Lines was made, according to your statement, by negotiation with American Export Lines, and the operating union, in July of 1963?

Mr. GULICK. Yes, sir.

Senator BARTLETT. And it took until April of the following year to train the crew?

Mr. GULICK. Yes, sir.

Senator BARTLETT. If the *Savannah* were laid up, Mr. Gulick, would all these shore-based facilities be dismantled?

Mr. GULICK. If the *Savannah* were laid up, Mr. Chairman, and it were decided the layup was to be a permanent thing, then we would

have no alternative but to also give serious consideration to the abandonment or elimination of our very serviceable shore facilities.

If, however, the *Savannah* were to be laid up as a temporary proposition, we would no doubt endeavor to find some way to at least mothball the shore service facilities.

Senator BARTLETT. Do you have any estimate as to how much the mothballing would cost per year?

Mr. GULICK. The total cost of the layup and the mothballing would be \$1,350,000 as proposed in the original budget.

Senator BARTLETT. And the per annum cost thereafter, the annual cost of the mothballing operation after the facility had been closed?

Mr. GULICK. If the ship continued in the same status, the amount of \$1,350,000 would continue per annum.

Senator BARTLETT. Let's assume, since we are making a lot of assumptions this morning, that the decision to layup the *Savannah* is on a permanent basis. Then how much would it cost to reestablish this shore-based facility and to get it in operating order again?

Mr. GULICK. Mr. Chairman, I am sorry. Was the question if the decision were to place the *Savannah* back in operation after it had been in layup status?

Senator BARTLETT. No. Let's say the decision is that the *Savannah* is not going to be put into service again. So you close the shore-based facility. And the Congress, at the recommendation of the administration, appropriates funds for the construction of a new nuclear vessel or vessels. This, as you said, will take 5 years for the construction.

Then I wonder how much it would cost to reopen the shore facility? Would it still be serviceable? Would it be appropriate for the new vessel?

Mr. GULICK. I think, Mr. Chairman, the greatest loss would not be in the physical equipment and plant that would hopefully be maintained in a mothball status. The principal loss would be in the personnel required to operate this particular facility, and it might be extremely difficult to obtain qualified personnel. As a guesstimate only, I would hazard the opinion that reopening of the shore facilities would possibly run between \$500,000 and \$1 million.

Senator BARTLETT. Actually, though, the greater loss would be in respect to the trained crewmen and the trained personnel on shore, because these people naturally then would go into other activities and you would have to recruit from the ground up, as you did before?

Mr. GULICK. Yes, Mr. Chairman.

Senator BARTLETT. Does the Maritime Administration, Mr. Gulick, support Senate Concurrent Resolution 28?

Mr. GULICK. We support the resolution, Mr. Chairman, insofar as continued operation for the next year, fiscal 1968, is concerned. We are not in a position at the moment to deal with the future beyond that year because of certain pending policy decisions.

Senator BARTLETT. Thank you. That will be all.

The next witness is Adm. John M. Will, chairman of the board of American Export Isbrandtsen Lines.

STATEMENT OF ADM. JOHN M. WILL, U.S. NAVY (RETIRED),
CHAIRMAN OF THE BOARD, AMERICAN EXPORT ISBRANDTSEN
LINES, INC., NEW YORK, N.Y.; ACCOMPANIED BY ROY MEHANN,
EXECUTIVE VICE PRESIDENT OF FIRST ATOMIC SHIP TRANS-
PORT; AND W. LYLE BULL, WASHINGTON REPRESENTATIVE

Senator BARTLETT. Admiral, please identify your associates for the record.

Admiral WILL. Yes, I will, sir.

I am accompanied, Mr. Chairman, on my left by Mr. Roy Mehann, the executive vice president of First Atomic Ship Transport and an extremely knowledgeable and experienced nuclear engineer, and on my right by Mr. W. Lyle Bull, our esteemed Washington representative.

It has been my privilege on many occasions to appear before several other committees of both the Senate of the United States and the House of Representatives. Each time that I do so, I am deeply aware and inwardly stirred by the fact that I am personally participating in the course of democratic government in the role of a private citizen expressing his views to the legislators who will determine the future course of this Nation. I am, therefore, grateful to you, Mr. Chairman, and the members of your committee for this opportunity to present my opinions to this committee and, through it, to the U.S. Senate.

I am John M. Will, a retired admiral of the U.S. Navy. I appear before you as chairman of the board of directors of American Export Isbrandtsen Lines, and president and chairman of its wholly owned subsidiary, First Atomic Ship Transport, operators of the nuclear ship *Savannah*. I am in the position of a special pleader in behalf of keeping that fine ship in operation.

I should like to address myself today first to Senate Concurrent Resolution 28 introduced at the first session of the 90th Congress by your esteemed colleague, Senator Magnuson, for himself and for you, Senator Bartlett.

I have identified myself as a special pleader in behalf of the NS *Savannah*, with which this concurrent resolution is concerned, but nothing I have ever said or could say would express more succinctly than the resolution itself the cogent arguments favoring the continued operation of this fine nuclear ship.

American Export Isbrandtsen Lines became intimately involved with the affairs of the *Savannah* in midsummer of 1963 when, at the specific request of the Maritime Administrator, we assumed responsibility for the operation of the ship under a general agency agreement after a prolonged series of labor problems had immobilized her in Todd Shipyard in Galveston, Tex.

As general agent for the Maritime Administration, we operated the ship for a year in a highly successful program of demonstration voyages in which she visited 59 ports in the United States and in Europe as visible, tangible proof of this Nation's abiding interest in the peaceful uses of atomic energy. When this phase of her operation was concluded—somewhat prematurely, many of us believe—American Export Isbrandtsen undertook to charter the ship for operation

in a purely commercial service. Although we are a publicly owned company responsible to our shareholders for prudent and profitable business operations, our dedication to the *Savannah* was influenced more by the bright future that she represented than by the prospect of immediate profit. Indeed, at no time during the *Savannah's* development had there ever been any suggestion, or even hope, that, as a prototype, she would be profitable in the economic sense. None of us today can help the fact that the *Savannah* and her program have already cost the American people over \$80 million, although her detractors make much of this considerable sum. The point here is that this ship has returned to this Government and to the American people more than their money's worth in prestige and public relations value as a result of her operations in 1964 and 1965 alone. She has demonstrated to the world the enormous potential inherent in this new and dramatic type of propulsion.

There can be no question, first and foremost, that we have a fine ship, and due to that ship's fine performance we have, still, a clear technological lead over other maritime nations in the field of nuclear propulsion. The problem before us—and before you gentlemen, especially, as the elected representatives of the American people—is to assure that this fine ship and this technological lead are not relegated to the scrap heap by an irrational and incomprehensible act of monetary myopia.

The resolution before you states that the *Savannah* has operated on the high seas with great success. I am happy to add to this that she is still operating successfully. As we meet today, the ship has completed her transit of the Panama Canal and is nearing Pusan, Korea, her first port of call in the Far East, where she is due to arrive the 18th of this month. She is steaming at a speed almost one and a half times greater than the average so-called fast freighter of World War II and over twice as fast as a World War II Liberty ship. Where the Maritime Administration ascribed to her a cruising speed of 20.2, she is cruising 21 knots without any difficulty. On this present voyage, her 14th in commercial service, the *Savannah* is carrying a record amount of cargo—more than 430,000 cubic feet, or about 8,000 weight tons, with a gross revenue of nearly \$400,000 for the outbound voyage alone.

The *Savannah's* deck cargo space exceeds that of a Victory ship and, by and large, her 'tweendeck stowage arrangements are exceptionally good. This is not to say, however, that the *Savannah* is an ideal cargo ship. Her cargo handling equipment is deficient contrasted to a Victory ship. She has no heavy lift booms, and her winch capacity is limited. Inherent in her design as a combination passenger and cargo vessel was a sacrifice of efficiency in her rigging for the esthetics of her appearance. Perhaps this was justified, because the *Savannah* today is undoubtedly the most beautiful ship afloat, but the sacrifice need not be repeated in nuclear ships of the future.

The resolution under consideration speaks of the opportunity for continuing a record of safe operation in the only realistic laboratory in the world for the study of nuclear merchant vessel operations. Only if the *Savannah* continues to sail can we modify existing regulations in the light of engineering experience. Only if the ship continues to operate, can we continue to identify and solve the problems of international agreements and protocols required for the day when nuclear merchant

fleets are commonplace. On her present voyage, for example, the *Savannah* is opening up six ports in the Far East to commercial nuclear operations. She will visit for the first time Pusan and Inchon in Korea, Hong Kong, Manila, and Kaohsiung and Keelung in Taiwan. And only by constant study under actual operation conditions can we reassess our port operating criteria under the more realistic appraisals of current technology and calculating techniques.

Let me be specific on this point. In port the *Savannah* must be prepared to evacuate her berth within a prescribed period of time depending upon the amount and intensity of radioactive waste material generated by her most recent steaming time and by the population density of the area immediately adjacent to her berth. In many cases this requires tugs on a standby basis, emergency removal crews, special guards and evacuation plans. The area involved—the so-called control zone—was originally calculated in the most severely conservative terms. Our present calculations indicate that the control zone may be reduced by perhaps as much as half and may ultimately be further diminished to the length of the ship itself. This, of course, will result in an appreciable reduction in operating costs. With no lessening of consideration for the public safety, we can evolve new criteria that will encourage the operation of new nuclear ships and bring them more closely into line with the operating costs of conventional ships.

Still to be explored in the area of reduction of operating costs is the problem of manning a nuclear ship. Responsible labor leaders have suggested that proposals for more crew reductions might be acceptable, but we are involved here in matters far more important to the future of nuclear ship operations than the elimination of a handful of men from the *Savannah's* crew. The wholehearted cooperation and understanding of our unions has made the success of the operation to date possible, and we intend to tax their powers of cooperation to the utmost to effect further economies which will assure future successes.

For example, we are well down the road to dual licensing. I'm happy to report that we have already achieved in an initial group of deck officers at Kings Point the trained competence which has permitted their licensing by the AEC as reactor operators. The potential here is great. We foresee fully automated nuclear ships, amenable to "one man" or "no man" watches in the machinery spaces, with a well-rounded merchant marine officer in command—a deck officer/reactor operator/marine engineer.

As we strive toward that goal, we want to talk to our union friends about the problems of assignments based on seniority, the problems of requalification after extended absence from the ship, the problems entailed in the watch-standing requirements of a nuclear ship in port. We have an opportunity here to arrive at an annual wage position rather than the present complicated and unsatisfactory overtime, premium time, penalty time, and straight time situation that we are in today throughout the American merchant marine. The men want it, we want it, and the *Savannah* is the place to work out the patterns.

But these quests for better methods can never evolve if this ship is laid up, nor can our highly trained group of specialists be held together until new nuclear ships come down the ways. These men will spin off into other programs and the priceless asset of their accumulated

knowledge will go down the drain. Once lost, this knowledge can be regenerated only through a long, slow, and costly training program.

Much has been made of the cost of operating the *Savannah*. You have heard, I am sure, estimates ranging as high as \$3.5 million a year. Those who advocate retiring the ship cite this figure as a potential saving.

As you just heard from Mr. Gulick, the Maritime Administrator, even a temporary layup with the fuel remaining aboard would cost \$1½ million the first year and \$1½ million per year after that. They do not admit that if the ship were to be defueled and decontaminated prior to permanent layup, the cost could easily reach \$9 million. Nor do they admit that the actual cost differential in operating subsidy costs between the *Savannah* and a conventional powered Victory ship is only \$600,000 a year.

As was brought out before, Mr. Chairman, this does not include the facility at Galveston.

Gentlemen, if transportation were in short supply would you scrap a Rolls Royce because it uses more gas than a Volkswagen?

Ocean transportation most assuredly is in short supply. We are today reactivating superannuated relics of World War II to meet our pressing need for bottoms to meet our commitments worldwide. Yet, it is seriously proposed—even in the face of these circumstances—that we lay up the most advanced ship in the world today.

Forget about propulsion systems. I don't care if the *Savannah* is powered by uranium oxide or rubberbands, she is a valuable ship. Our inadequate merchant fleet is already overextended by the requirements of our Department of Defense and our import and export commerce. It is foolish—it is incomprehensible—it is inconceivable that we should willingly do away with a single unit of that fleet.

But the *Savannah* is not powered by rubberbands or squirrel cages. She is an atomic ship. As such she has virtually unlimited range. She has already steamed well over 250,000 miles on her original charge of fuel and she is capable of at least 1 more full year of operation before refueling will become necessary.

Consider the significance of this freedom from dependence on overseas supplies of fuel oil in light of the situation in the oil-rich Middle East. Consider the value of this nearly limitless range and high speed in a world where such vital arteries as the Suez Canal can be clamped shut without warning.

Our problem goes beyond the fate of one ship. We are striving to retain the *Savannah* in service because of her manifest advantages but we should be striving even harder to bring about an accelerated nuclear building program for both our merchant marine and our surface Navy that would make these advantages a common denominator rather than a unique exception.

I look to the *Savannah's* pioneering work to be the groundwork for the surface ships, nuclear powered, that the Navy needs so badly.

Despite all logic, deactivation of the *Savannah* has been proposed. Unless the Congress intervenes, deactivation probably will take place. The recent action of the House of Representatives, acting on the recommendations of the chairman of its Appropriations Subcommittee, Congressman John J. Rooney, to vote funds for the continued operation of the *Savannah* is heartening but it may not be conclusive. The

mere existence of an appropriation is not always a guarantee that it will be put to its intended use by the executive department concerned, without a strong mandate from the legislative branch.

I believe that Senate Concurrent Resolution 28 constitutes such a mandate and I strongly urge its adoption.

Every bit as important as this action is the need for an immediate expression of policy as to the *Savannah's* future. As operator of the ship, we have read reports in the press that she will not operate after August 20 of this year. We have yet to be officially notified of this by the Maritime Administration, although even the most cursory layup will require a greater leadtime than that which still remains to us under our contract.

We have endeavored to operate the *Savannah* in accordance with sound business practice with the result that last year her revenues exceeded her operating costs by over \$400,000, more than half of which reverted to the Maritime Administration.

We cannot hope to repeat even this small measure of success unless we are in position to solicit cargo for the ship if she is in fact to continue in service.

This vacuum in policy direction, which we realize is due to Maritime itself not being sure the ship would be continued in operation, is but a continuation of many of the woes which have beset the *Savannah* in her short lifetime. She has sometimes suffered more at the hands of her nominal friends than she has from the sea itself or from the complexities of her advanced propulsion system.

It remains, I believe, for the Congress of the United States to come to the aid of a gallant ship and to restore and preserve a bold and forward-looking program of overwhelming importance to our national interest.

The New York Times, of June 9, 1967, carries an account of Admiral Rickover's testimony before the House Armed Services Committee last April, when he discussed the application of nuclear propulsion to naval vessels. Charging that cost analysts "live in a world of immutable abstractions," the admiral said:

At one time the Pagan Gods ruled the world, later the Kings, then the Warriors, followed by the Lawyers. Now it is Cost Accountants. Ultimately some measure of common sense comes into play. Events tame them and relegate them to their proper place.

In closing my brief statement, I would like to say how happy and encouraged I am to hear the Maritime Administrator's very strong recommendation for continued operation of the *Savannah* through fiscal 1968 when she is due for refueling in any event.

Thank you.

Senator BARTLETT. Thank you, Admiral Will, for your very helpful statement.

I should say that when the time comes when Admiral Rickover must retire, if he wants to follow another occupation, he could well become an author.

I am wondering if your quotation of Admiral Rickover's statement before the House Armed Services Committee might possibly mean that he and you share a common view as to the utility and necessity of nuclear propulsion?

Admiral WILL. Mr. Chairman, I think you are right. I think we do have a common point of view regarding the future of nuclear pro-

pulsion. I think that we both recognize the value and need for it, because if you read Admiral Rickover's testimony before the Armed Services Committee in its entirety, he makes a very strong plea for the Department of Defense's support in putting nuclear power into the surface-support ships. And certainly the merchant fleet is needed, as they have always been needed in time of conflict, to support the overseas operations.

And look what we are doing in Vietnam. To have nuclear ships, to have merchant ships that are going to support the overseas operations, nuclear powered, would be a perfect arrangement.

What I know about Admiral Rickover's attitude is something—he refused to talk to me. I called him one Saturday afternoon and said I would like to come in and see him the following week at his convenience, because I would like to discuss the problem of obtaining support from the Department of Defense for nuclear propulsion in merchant ships because of their need by the Department of Defense in time of war or emergency. And his answer was that "I refuse to talk to you."

Well, it took me sort of aback and I said, "Why is that?" And he said, "Because our problems are entirely different. I am interested and engaged in perfecting nuclear power for the Navy, and your field and your responsibilities are along the line of perfecting nuclear power for merchant ships and we have no joint interest." And that was the real gist of the conversation.

I thanked him. He asked me why I thanked him, and I said, "Well, I wanted to be able to say this if I was ever asked by any Member of Congress whether I discussed the matter with you." He said, "Don't worry, you won't be."

Senator BARTLETT. Now it might be assumed, Admiral Will, that American Export and its subsidiary, FAST, comes here in a prejudiced position because of a desire to make a profit from the operation of the *Savannah*.

What have your profits been, in the aggregate?

Admiral WILL. Well, our profits have been, as brought out by Mr. Gulick, in his testimony, in the first year's operations, about \$200,000. We made a profit of \$426,000, of which the company retained \$200,000.

This year we are running less than that, as we anticipated, but we haven't yet gotten the final figures. But we are sure it will not be more than that, and we are pretty sure it will be less.

Senator BARTLETT. There are no huge profits, then, for a company of the size of your company?

Admiral WILL. No, sir. We have gambled with this operation, just as we gamble in our commercial operation of conventional ships on losing, where we cannot develop the cargoes. And this has been one of our great worries, that with all of the lack of information on continued operation of the *Savannah*, we have been unable to advertise for cargoes in the future. That is why we have to have a decision soon, because you can't just put a ship on berth today and expect to fill her up.

Senator BARTLETT. Does any other nation possess a nuclear-powered merchant vessel?

Admiral WILL. No. The Russians have a nuclear-powered icebreaker, and I hope the Coast Guard will soon get a nuclear-powered icebreaker. This country needs one.

The Germans are building a bulk carrier. I inspected her last month in Kiel. She has been somewhat delayed, but she is being powered with a reactor somewhat similar to, but smaller than, the reactor now in the *Savannah*. And she hopes to go critical in September and start operating around the end of the year. That is the only other nuclear-powered merchant-type ship in actual construction.

The Japanese have plans on the drawing boards, but I don't believe they have actually laid a keel.

Senator BARTLETT. And Italy and Red China have plans?

Admiral WILL. We read in the newspapers they have plans to build a nuclear-powered merchant vessel, but so far I have seen no concrete evidence.

Senator BARTLETT. It occurs to me, Admiral Will, that your statement presented several very valid reasons as to why the operation of the *Savannah* should be continued.

You mentioned, among other things, that you expect to reduce the size of the control zone, and work is actively proceeding on that. And you mentioned the fact that deck officers are assuming a new role, and further work must be carried on in this field.

I think these are important considerations, together with the others that you mentioned.

Admiral WILL. If I might say here, Mr. Chairman, during our licensing hearing before the Atomic Energy Commission they made quite a point of the fact that in the merchant marine we have a deck officer in command who knows very little about what is going on in the engineroom and when a decision has to be made regarding a nuclear-powered propulsion plant, it is a fact that the chief engineer has to make the decision and the master of the ship, who is responsible for the safety of the ship and its passengers and cargo has very little to say, because of a lack of knowledge.

Well, we had to admit that that is somewhat the case. In the Navy, the commanding officer of a nuclear-powered ship is brought up through all of the stages of engineering before he takes command.

Now I think this move on our part to train the deck officers in the same area that the engineers are trained is going to go a great way toward eliminating that concern of the AEC.

Senator BARTLETT. It seems to me the operating costs of the *Savannah* are really quite low when we recognize the fact that she wasn't built primarily to be an efficient cargo carrier, she was built for other purpose as well. Is that not correct?

Admiral WILL. That is correct, sir. The ship was built at a time when we needed to demonstrate that there were peaceful uses for the atom in trade and she was to be a show ship. She was to carry the flag to all corners and all ports of the world, and she was to be a ship that was to be a great credit to this country. As such, no expense was spared in the elaborateness of her passenger accommodations, in her lounge. Of course, we didn't pay for it, but that ship's lounge was decorated with pictures loaned from the New York Payne Whitney Museum.

She has tables made out of polished petrified wood from our petrified forests. There was no end to the money that was spent in making the ship a credit to the country wherever she went.

Senator BARTLETT. The committee has received information, Admiral Will, that American Export has submitted a plan to Maritime for building and operating several nuclear ships. Is that right?

Admiral WILL. Yes, sir; we have. About 2½ years ago now. We haven't heard anything.

Senator BARTLETT. You have had no response yet?

Admiral WILL. No, sir.

Senator BARTLETT. The reactors in the new ships would be substantially different from those in the *Savannah*, would they not?

Admiral WILL. Yes. The principle would be the same, the application of the nuclear fuel, but the material construction and the design would be greatly improved in order to reduce the volume per unit of horsepower and the weight per unit of horsepower over that which we have in the *Savannah* reactor. In fact I think the weight, the volume is about one-fifth of the *Savannah's* reactor size. We have 100,000 horsepower in the proposed new ships as against 22,000 horsepower for the *Savannah*. And the cost per unit of horsepower would be greatly reduced.

I think that the technological advances have been such and the manufacturers have given us firm proposals on costs such that we should give them an opportunity, provide an opportunity for these people to build these new advanced reactors and try them out in ships.

We have gone so far as to take the proposals that were given to us by Westinghouse and Babcock & Wilcox and have them evaluated and compared and judged by an outside neutral company.

We are still waiting for some action on the part of the Maritime Administration as to where they are going with their nuclear program and I guess they are waiting for the administration's new maritime policy to see where we are going with the nuclear program.

Senator BARTLETT. When you submitted your suggestions to Maritime did you establish fixed prices?

Admiral WILL. We gave them the costs as we had estimated them.

Senator BARTLETT. Would these be faster ships?

Admiral WILL. Yes, sir; they would be—did you say faster ships?

Senator BARTLETT. Yes.

Admiral WILL. Thirty-knot ships. A minimum of 30 knots.

Senator BARTLETT. What size?

Admiral WILL. 800,000-cubic-foot capacity—they were to be container ships that would carry up to 1,500 containers.

Senator BARTLETT. Would the reactors insofar as you know, which you propose to be used in these ships, cost as much as the reactors used by the Navy?

Admiral WILL. No, sir; I would be guessing, and it would be unfair. My own knowledge of Navy standards and Navy requirements of construction, the amount of secrecy surrounding the Navy nuclear construction, and the standards of welding, they are all different, I believe, and much more rigid than what we would expect in a nuclear-powered plant for a merchant ship, built to commercial standards and built to the standards that the *Savannah* was built.

I have read where Admiral McDonald said one of the reasons why they didn't want to use the *Savannah* was because the *Savannah* was not built to Navy specifications and standards.

Senator BARTLETT. But it has had no troubles whatsoever?

Admiral WILL. Oh, she is the most reliable ship we have operating today, Mr. Chairman.

Senator BARTLETT. Well, for the reasons you have assigned, there is perhaps no particular point in trying to draw comparisons between the cost and commercial and Navy reactors, but the committee understands the commercial reactor would cost just about one-third as much?

Admiral WILL. I really haven't a basis on which to judge, because all I marvel at is the figures I read on these hearings that are given by Mr. McNamara comparing the difference in cost between a nuclear propelled aircraft carrier, or cruiser, or submarine and the conventionally propelled. I just can't imagine that great a difference could be attributed entirely to the nuclear propulsion plant.

Senator BARTLETT. I think the Coast Guard informed the committee that an icebreaker powered by a nuclear plant would cost about \$15 million more than the conventionally powered ship. That was very much of a surprise to me, because I thought the differential would be much greater. Unhappily, in my opinion, the Coast Guard is now not prepared to suggest that the next icebreaker should be powered by atomic energy.

Admiral WILL. This has come as a great surprise to me. I just can't understand why they would do an about-face. But they must have their own reasons. I couldn't help but appreciate Mr. Holifield's remark on the recent launching of the *J. F. Kennedy*, when he said that ship was obsolete the day she went down the ways.

Senator BARTLETT. The House Committee on Merchant Marine and Fisheries in the Coast Guard authorization bill added \$1 million to the sum which had been requested by the Coast Guard for planning the next icebreaker. The Coast Guard estimate was \$1.5 million. And this Commerce Committee is about to take to floor the Coast Guard authorization bill with this extra million dollars deleted, which means necessarily there will be a conference between the two Houses. And it is possible, of course, that the Senate may be overcome and may have to yield to the House's insistence upon including extra money for a nuclear icebreaker.

You very correctly, Admiral Will, stated that an appropriation doesn't necessarily mean the money appropriated will be spent. But, nevertheless, I think that the *Savannah* won a tremendous victory when Representative Rooney and his associates decided to insert in the appropriation bill the additional money for the continued operation of the *Savannah*. With that, and with hopeful the passage of Senate Concurrent Resolution 28, the money will be spent.

For your information, if I had a Rolls Royce, I would not scrap it.

On an unrelated subject, kind of, but only kind of, I made a statement on the floor the other day, Admiral Will, suggesting that should we unhappily become engaged in military activities in the Middle East, I didn't know where the ships for the transport of cargo would come from. We were told here not too long ago, the public was told, that perhaps the merchant fleet was not at all necessary for a limited warfare. But it seems to me we are near the bottom of the barrel right now over in Southeast Asia.

How many limited wars of this kind do you think could be supported by the availability of merchant marine vessels?

Admiral WILL. None beyond Vietnam.

Senator BARTLETT. You think we have had it there.

Admiral WILL. We have had it.

Senator BARTLETT. I agree wholeheartedly.

Admiral WILL. Just one other thing, unless you wanted to give up every pound of cargo that our merchant marine carries to foreign flag, and never get it back.

Senator BARTLETT. Just to bear out what you say, there are 1,190 vessels in the reserve fleet, 517 of those are destined for the scrap heap, 292 are military auxiliaries, 170 are being employed in Vietnam, 211 cargo vessels are left, and we have been told they are not of much account, it would cost a lot of money to put them into service and they wouldn't be too useful then, and 70 percent of the entire American tramp fleet is now committed to Vietnam. So I think these figures shore up your estimate that we couldn't engage in any other activity anywhere else than Vietnam even if it were a comparatively small one.

Admiral WILL. One additional statistic, Mr. Chairman, that might be of great interest would be, How much did it cost to break those 170 reserve ships out, place them in operation, and how much additional has been spent on their maintenance to keep them in operation and repair since that time?

Senator BARTLETT. It costs \$500,000 per ship to break them out.

Admiral WILL. That is when they began paying.

Senator BARTLETT. But sometimes they weren't put successfully in operation at all.

Admiral WILL. Then they had to get on the towline, then they had to be left in port in various repair units. The \$500,000 breakout cost was just the downpayment.

Senator BARTLETT. And sometimes they got out to sea and had to be towed into port.

Admiral WILL. Very, very frequently.

Senator BARTLETT. Well, the committee is very appreciative of your statement, Admiral Will. I am kind of prejudiced on your side to start with. Thank you very much.

Admiral WILL. Thank you very much. And I hope you help the Coast Guard get that icebreaker, too, Mr. Chairman.

Senator BARTLETT. You mean they might have to be forced into it?

Admiral WILL. They might, but when something is inevitable, they might relax and enjoy it if they knew that.

Senator BARTLETT. Mr. C. W. Hathway, manager, Nuclear Division, Todd Shipyards Corp.

**STATEMENT OF C. W. HATHWAY, MANAGER, NUCLEAR DIVISION,
TODD SHIPYARDS CORP., GALVESTON, TEX.**

Mr. HATHWAY. Mr. Chairman and members of the committee, I appreciate this opportunity to appear before your committee and to provide information pertinent to the continued operation of the NS *Savannah*.

I am C. W. Hathway, manager of the Nuclear Division of Todd Shipyards Corp. and am responsible for the management of the refueling facility in Galveston, Tex. I have been associated with the *Savannah* program for the past 7 years.

Since the President sent his budget to Congress, including \$1.35 million to lay up the NS *Savannah*, there has been a great deal of discussion about this subject. As a result of this discussion, two reasons have been given for laying up the *Savannah*. They are:

- (1) That she has accomplished all of her original goals and thus there was no reason for continuing her operation.
- (2) That she is too expensive a ship to operate.

In order to evaluate the first of these reasons for laying up the *Savannah*, let us first look at the objectives of the program:

- (1) To demonstrate advanced technology and peaceful use of nuclear energy for U.S. prestige;
- (2) To provide a working test-bed laboratory to be used as a tool in creating advanced ships;
- (3) To establish acceptable standards in (a) design of ship and reactor, (b) operating practices, (c) manning, (d) port entry and operation, (e) safety of crew, passengers, and general public;
- (4) To establish necessary acceptance terms under which foreign ports could be entered; and
- (5) To establish acceptance by passengers, authorities, and general public as well as cargo shippers.

In general, the *Savannah* has worked toward the accomplishment of these goals in a very satisfactory manner. In fact, a list of her accomplishments is quite long. However, the goals have not been reached; we're only halfway there.

As far as the first of these is concerned, the *Savannah* has visited 23 major ports of the United States and 22 ports in 15 countries in Europe and the Mediterranean, making regular stops and discharging and loading cargo as any conventional commercial ship would do. However, she has not been to any Central or South American, African, Middle East or Far East ports. If the *Savannah* is laid up, as planned, she will not have visited Japan, where perhaps the most meaningful demonstration of the peaceful uses of atomic energy can be made.

The business of obtaining port entry permits has other purposes besides that of demonstrating the peaceful uses of atomic energy. It is also a significant step toward paving the way for future nuclear ships, a step that must be undertaken before this country can have an economically competitive nuclear fleet. At the present time the *Savannah* is on a voyage which will take her to perhaps six ports in the Far East. This voyage, which was undertaken at this time largely as a result of the announced intentions to lay up the *Savannah*, has amply demonstrated one of the reasons why the *Savannah* should be kept in operation. As a result of the negotiations with the Japanese to obtain port entry for the *Savannah*, it has come to light that there are certain differences in the indemnity policies of our two countries. The Japanese have indicated that they will need to change their law. This problem which has been identified with the Japanese is not unusual since similar problems have occurred with Turkey and the Netherlands.

These legal matters must be identified and settled or at least a framework must be developed within which they can be resolved for a future nuclear ship program to be successful. Some of these problems have been identified but only for the ports the *Savannah* has visited. What about the rest?

When we make a further review we see that another of the primary objectives of the *Savannah* was to discover and try to solve problems which would be encountered by the future nuclear ships.

It is in this field that so much remains to be done. Many of the problems have not even been discovered and will be found only by continuing to operate the ship. It can also be said that only by continued operation will solutions be found to some of the problems which have been identified.

Let me point out some examples in the area of *Savannah* safeguards. When the ship first went into operation, little or nothing was known of the effect that the "ships working" would have on the containment vessel integrity. To prove this safety feature, a leak rate test is performed on the containment vessel each quarter. This requires the nuclear plant to be out of service 3 to 4 days and delays sailing until the test is completed. Over the years the results of the testing have uniformly shown that the amount of leakage is considerably less than the maximum acceptable value established by the AEC. It now appears that annual testing of this system will maintain the same high safety standards and at the same time allow a reduction in out-of-service time. FAST has submitted such a request to the Division of Reactor Licensing, and it is expected that AEC will agree to reduce the frequency of the test.

The reactor space filter system is another area where the efficiency must be proven by a test at quarterly intervals. The purpose of the system is to prevent a release to the atmosphere of fission products which might leak from the containment vessel in the event of an accident. The system installed when the ship was built was found to be completely unsatisfactory and was removed and a newly designed system was installed. The new system has undergone some major modifications since its installation which will further improve its efficiency.

Studies are now underway to minimize the testing requirements for the filter systems and to take credit for other ventilation filter system changes which can allow a reasonable reduction in requirements for port criteria.

Another area where the *Savannah* can participate effectively is in crew reduction programs.

Much work and training has been accomplished to date toward providing the special skills that the *Savannah* requires in the licensed officers. As a result we are now at a point where some reduction in manning can be made.

FAST has just recently submitted a request to the AEC to eliminate the nuclear adviser, as the crew is now sufficiently experienced and technically qualified to assume all of his duties, functions, and responsibilities. The elimination of this job represents a savings of \$50,000 per year.

In this connection and in conjunction with the second objective of the *Savannah* program, the ship offers the ideal vehicle for the demonstration of features which would certainly be included in any new nuclear merchant ship. Included in such features are those of plant automation, specifically automatic bridge control of the reactor and its associated plant. The design and installation of such a system has been a part of Marad's program for the ship, and presumably would continue if the ship continues to operate.

Involved is not only the design and installation of such a system for use in a marine environment, but the full acceptance of it by regulatory people, and the realization of its benefits through operation and actual reduction in crew size.

The unions on board the *Savannah* have indicated their willingness to explore these areas.

These are items particularly important to the next fleet of nuclear ships and must be accomplished with sufficient leadtime to be incorporated in the initial design. It is believed that the possible effect on the American merchant marine of continuing such a program is beyond evaluation.

We have just begun preparations for refueling. Our target date for the first refueling on the *Savannah* is September 1, 1968, and we have just started to wrestle with the problems of licensing safeguards, training, costs, and time. To date no one can tell you how long it will take to refuel the *Savannah*. People have said that ship refueling will be very similar to refueling central station powerplants.

This is not the case. The refueling of a central station plant differs from refueling the *Savannah*, in that, ashore, reactors are not subject to the same space limitations as they are aboard the ships. Therefore, they have built-in shielding which can be utilized during refueling and it is not necessary to utilize casks for the transfer of fuel elements from the reactor vessel. Ashore, the refueling operation is conducted within a containment vessel, containing the cranes and storage facilities, and the results of an accident during such an operation are accordingly reduced. When the *Savannah* is refueled, both the reactor vessel and containment vessel must be open because the crane is outside on the pier and the fuel must be transferred from the ship to a storage pit several hundred feet away. During the refueling operation, the reactor vessel, containing irradiated fuel elements, is effectively opened to the atmosphere and at times the heavy fuel element transfer cask is suspended over it. The possible accidents which could happen are presently being analyzed. Designs and procedures must be developed to provide for a completely safe operation.

It is interesting to note that the German maritime people responsible for the *Otto Hahn* have identified a similar situation with their reactor and these problems would undoubtedly exist in any future nuclear ship program. To lay the *Savannah* up without first refueling here would be to miss an opportunity to gain significant information directly applicable to a new nuclear ship program.

Annual inspection by the Coast Guard is the normal procedure for all ships. In the case of the *Savannah* these inspections have often consumed several days resulting in a substantially longer out-of-service time. In fiscal 1966 the job required over 30 days. Since the outage took place in Galveston another 10 days had to be consumed. At that time it was a record. Since that time ways to reduce the outage time have been studied, and as a result this year, the outage resulted in only 12 out-of-service days.

Since the outage was performed in Todd's Brooklyn yard under the supervision of Nuclear Division personnel, no additional time was lost. Further reduction in this time can be made, but only with continued efforts to seek out and eliminate the time-consuming areas.

Let us turn our attention to the question of money. The Maritime Administration budgeted \$3.3 million for the *Savannah* program for

fiscal year 1968. Since this is identical with the budget for fiscal year 1967, let's look at the components which made up this \$3.3 million:

Ship operation	\$1,800,000
Training	400,000
Technical support	1,100,000
Total	3,300,000

The \$1.8 million number for ship operations is made up to two main components. First, \$1,330,000 for vessel operation, and second, \$470,000 for shore staff support. In the first year of commercial operation of the *Savannah*, and that was essentially fiscal 1966, the actual costs were:

Ship operation	\$912,439
Profit	200,000
Subtotal	1,112,439
Shore staff	305,409
Total	1,417,848

The total cost to the Government was not the budgeted \$1.8 million but \$1.4 million. The fiscal 1967 costs, of course, cannot yet be determined since the year is not over and the final costs are particularly sensitive to the results of the current voyage. However, there is every indication that the *Savannah* is doing even better during its second year of commercial service and will at least duplicate this performance or improve upon it. It is expected that the cost of her third year of commercial operation will be slightly lower.

Training costs which were budgeted at \$400,000 actually only ran \$282,000 in fiscal 1966, and I believe a reasonable estimate of those costs for 1967 is \$300,000. There is every reason to believe that the fiscal 1968 costs will be no more than \$250,000. It should also be pointed out that a large part of this training cost, \$100,000, supports the U.S. Merchant Marine Academy at Kings Point, N.Y.

Now let us look at the third component of these costs: \$1.1 million for technical support, that is the servicing facility at Galveston, Tex. I have analyzed our planned costs for 1967 in four categories: facilities, ship support, improvements, and refueling. We have budgeted the following amounts for these items:

Facilities	\$294,000
Ship support	88,000
Improvements	418,000
Refueling	300,000
Total	1,100,000

An estimate of our actual costs through May show that we have only spent the following amounts for this work to date:

Facilities	\$195,000
Ship support	55,000
Improvements	231,900
Refueling	89,800
Total	571,700

As a result, I would not be surprised if we underran by at least \$250,000 for this year.

It should be recognized that while the technical support costs are a part of the *Savannah* program, the facility itself exists primarily for

refueling. In that connection the existing facilities could easily service 10 *Savannahs*, based on a 21½-year core life.

The above figures bring the expected actual cost of the program to:

Ship operation.....	\$1,400,000
Training	300,000
Technical support.....	850,000
Total program cost.....	2,550,000

This is significantly less than the \$3.3 million. It should be kept in mind that this \$2,550,000 is the cost of the entire *Savannah* program, a program which is proceeding to accomplish the original goals and work toward a successful future nuclear ship program, not the cost to operate a cargo ship.

With regard to layup, you can't just tie the *Savannah* up to a pier and walk away from there. In fact, we have estimated that it would take at least an 8-man watch to maintain the *Savannah* in a cold iron condition; that is, completely shut down. To provide 24 hours a day, 7 days a week coverage will take four such watches.

If we assume that the *Savannah* goes into a cold iron watch status the 1st day of September 1967, it would cost \$1,350,000 for the rest of the fiscal year. This \$1,350,000 is the number which Maritime has given and is broken down by them as follows:

Contractor administrative management.....	\$375,000
Ship maintenance.....	200,000
Cold iron watch.....	675,000
Training	100,000
Total	1,350,000

However, the \$1.35 million is only the start. The second year would cost \$1,153,000 and the third and fourth and on at the rate of \$1,153,000 a year until the *Savannah* was either reactivated or her fuel removed.

It is estimated that once a decision is made to remove the fuel that it will take \$1,716,000 the first year and \$2,034,000 the second. At this point the fuel would be off the ship and the ship laid up in the Reserve Fleet. She would still have aboard her several highly irradiated components and much contaminated equipment. Based upon the limited data available, it has been estimated that a layup which would leave the ship "clean," radioactively speaking, would cost in the neighborhood of \$9 million.

On the other hand, if the *Savannah* is reactivated after a 1-year layup or more, it will cost \$3.5 million and 1 year to place her back in operation.

Let me briefly summarize these layup costs:

Temporary layup:	
1st year.....	\$1,350,000
2d year and each succeeding year.....	1,153,000
Reactivation	3,500,000
Permanent layup:	
1st year.....	1,716,000
2d year.....	2,034,000
Total	3,750,000

A hypothetical case including a 2-year temporary layup followed by a decision to remove her fuel, and subsequent removal of the contaminated components could cost as much as \$11 million.

A positive decision to continue the operation of the *Savannah* must be made now. There are only 69 days left before the financial agreement between the Maritime Administration and FAST expires, and only 18 days left in this fiscal year.

Mr. Chairman, I heartily support Concurrent Resolution 28 which you and Senator Magnuson have proposed. I hope that prompt action can be taken on it so that the *Savannah* can continue to sail.

In this connection it would seem desirable that any plans for the *Savannah's* future cover a longer period than 1 year. The proposal under discussion to lay the ship up for 1 year has caused many valuable men to leave the program and the efficiency of those who have stayed has been reduced by their speculation on the future. Considerable time has been spent by the Senate, the House of Representatives, and other departments of the Government in studying and evaluating the proposal. Many citizens have expressed their desires and opinions in letters, newspapers, radio, and television. I would venture a guess that a complete evaluation would show that the total costs resulting from the proposal to layup the *Savannah* would approach the cost to operate the ship for the period in question. In view of this, it would seem expedient for guidelines to be established that would permit long-range planning.

Senator BARTLETT. Thank you, Mr. Hathway. The committee will be in recess briefly.

AFTER RECESS

Mr. Hathway, I think you made a very valuable point when you mentioned that there are many ports at which the *Savannah* has not yet called and one of its essential purposes, of course, was to show the U.S. nuclear vessel all over the world. And we have a long way to go before that is done, as you pointed out.

I am a little curious—on page 13 of your statement when you broke down the costs for the layup, when you mentioned a training item of \$100,000. What would that be for? I know these figures are not yours, they are the Maritime Administration's, but do you know?

Mr. HATHWAY. Well, actually I am very familiar with these particular figures. The \$100,000 here for training is money necessary to train personnel for the cold iron watch initially.

First of all, we have more or less gone through this kind of a program once before at the termination of the States Marine contract subsequent to American Export's entry into the picture.

At that time we had to undertake a very extensive training program as a result of training new reactor operators. This time, however, we feel we would not have to embark upon such an extensive program, but would have to have some training for the people who would man the ship in cold iron condition.

Senator BARTLETT. Why would contract administrative management cost \$375,000?

Mr. HATHWAY. This is really a very large area that a number of costs have been lumped into. It includes all supervision associated with the cold iron watch, the health physics area. It includes the cost of licensing, and those costs born in our dealings with the AEC.

Senator BARTLETT. If the fuel were to be removed from the *Savannah*, where would it be placed?

Mr. HATHWAY. Initially it would be placed in the fuel storage pit located in the facilities building in Galveston, and subsequently shipped to a reprocessing site, any one of those presently or at that time in operation.

Senator BARTLETT. Thank you very much, Mr. Hathway. You have given us a lot of information we didn't have before.

Mr. HATHWAY. Thank you.

Senator BARTLETT. The next witness is Admiral James.

Admiral, we welcome you, as always.

STATEMENT OF REAR ADM. RALPH K. JAMES, U.S. NAVY (RETIRED), EXECUTIVE DIRECTOR, COMMITTEE OF AMERICAN STEAMSHIP LINES, WASHINGTON, D.C.

Admiral JAMES. Mr. Chairman, the events that were announced this morning by Mr. Gulick seem to make my contribution rather anti-climactic.

I would be pleased to offer my statement for the record, or to read it. It is quite brief.

Senator BARTLETT. Why don't you put it in the record—we will print it in full—and then brief it?

Admiral JAMES. Very good, sir.

I speak only to the question of the commercial potential of nuclear power application in merchant shipping, which may be different from what you have heard from the witnesses thus far. And I pose the fact that there are two questions that might properly be asked to determine whether or not nuclear power should be considered for application to merchant shipping, and if the answer to the first question is "Yes"; then the second question is, Does the *Savannah* have a potential for contributing to this exercise?

In the Committee of American Steamship Lines, and the American Merchant Marine Institute, which I am representing here today also, we believe the answer to both of these questions is "Yes."

In the statement I go into an examination of the capability of nuclear power being economically feasible for merchant ship application, pointing out that the high initial costs for the capital equipment are a significant bar at the moment to the early adoption of nuclear power, recognizing, however, that with developments that are currently in prospect, that this high nuclear initial cost for the initial reactor equipment could be reduced, and consequently, with the fuel costs, which already are competitive, there is the great potential under certain conditions of power and speed of ships of the future to create a future for nuclear power application.

I note with some concern that in the report of one of the witnesses from the Atomic Energy Commission before the House Merchant Marine and Fisheries Committee, that there was a speculation that to generate the most sophisticated of nuclear-powered plants, that the Atomic Energy Commission would program roughly \$100 million into this development, and perhaps would take on the order of 10 years to complete it.

This seems to me to be quite unacceptable, a slowing down of the potential that exists in the developments of manufacturers in the country already, having produced practical plants, designed plants, and have offered them at guarantees in performance and at significantly reduced numbers of personnel that would serve the ships in which they would be installed. These factors would considerably encourage the early adoption of nuclear power in merchant shipping, a result which the people that I represent would embrace as the wave of the future.

We are seeing the newer, larger ships being produced, the large carriers, and the container ships, which my member lines are building, and the growth in these ships in size and speed almost certainly augurs well for the future of nuclear power. And to this the *Savannah* can contribute significantly. We have heard speaker after speaker outline the details on how this might be done, and I would join in endorsing all of these.

I would therefore urge this committee to take whatever steps are within its capability, and certainly the enactment of Senate Resolution 28, to stimulate consideration of early increases in nuclear shipbuilding construction for merchant ship operation.

(The prepared statement follows:)

STATEMENT OF REAR ADM. RALPH K. JAMES, U.S. NAVY (RETIRED), EXECUTIVE DIRECTOR, COMMITTEE OF AMERICAN STEAMSHIP LINES

Mr. Chairman and Gentlemen: There has been much debate about the unfortunate plan of the Maritime Administration to lay up the Nuclear Ship *Savannah*. I therefore appreciate this opportunity to present the position of the Committee of American Steamship Lines (CASL) and the American Merchant Marine Institute (AMMI) on the proposed lay-up. CASL is composed of 13 U.S. flag liner companies who have operating subsidy contracts with the Government. These companies own some 280 liner ships which serve essential trade routes throughout the world. They are presently engaged in a major vessel replacement program which has resulted in a fleet which includes the most modern and technologically advanced liner ships in the world.

The health of U.S. flag liner vessels is dependent on two major factors, first the continuing and wholehearted support of U.S. shippers and upon our ability to outstrip foreign flag ships in the development and application of new technology in all aspects of cargo movement systems. In the second area we have demonstrated great ability to design and build ships possessing many technological advances in contrast to our foreign competitors. One such "first" was the application of nuclear powered steam generating system to merchant ships. The potential efficiency and economy of nuclear fueled ships in future ship construction is great and we have a major interest in the Government's policy in this area.

The Congress was instrumental in developing the national policy which led to the building of the NS *Savannah*. Mr. Chairman, your continued personal interest in the operation of the ship and concern over the decision to lay her up effective August 20 of this year, is evidenced by Senate Concurrent Resolution #28 introduced by yourself and Senator Magnuson. Most of the arguments against *Savannah* lay-up are contained in this resolution but some will bear repeating. There is no purpose however in my further reviewing the basic facts of the *Savannah* dilemma.

By any reasonable measure, the cost of continued operation of this unique ship is considered small. The fact that it is not making a profit in commercial operation should not be a matter for concern or criticism, for the vessel was conceived as a prototype which was never contemplated to be economically competitive; rather, it was to demonstrate the peaceful application of nuclear power to the world. The ship has been and could continue to be eminently successful in achieving this intended purpose.

It has demonstrated the operational feasibility of nuclear powered merchant ships;

It has provided an operational vehicle for training and exercising specially skilled professional crews;

It has visited many ports of the world and opened them to transit by nuclear powered ships; and

It has dramatically displayed to over a million and a half on-board visitors and millions of others in foreign ports U.S. technological leadership in the nuclear field.

In my opinion, a decision on future operation of the *Savannah* depends upon the answers to two questions:

(1) Is there a commercial future for nuclear powered merchant ships?

(2) If the answer is "yes", can the continued operation of the *Savannah* make a contribution to such a program?

We are convinced that the answers to both questions are yes.

The answer to the first question depends upon how soon capital and fuel costs of nuclear power plants will be competitive with fossil-fueled plants. The date when this will occur cannot precisely be determined. On the basis of current developments in this technology, I feel certain that that state of the art can be reached within the next decade and possibly very much sooner.

A forward looking program on the part of the Government, such as that proposed in S. 508 by Senator Magnuson, proposing the construction of not more than six nuclear ships, and other similar bills, would do much to advance the technology and experience needed to accelerate this date.

Secretary of Transportation Alan S. Boyd in his testimony before this Committee on May 1, 1967, advocated an expanded and accelerated Government nuclear research program which "may include the construction of one or more vessels." From this and other evidence, it would appear reasonable to conclude that Government studies indicate the present or early establishment of the commercial feasibility of nuclear propulsion.

In a report to the A.E.C. dated January 31, 1967, the Maritime Administration indicated that nuclear plants will be competitive with conventional propulsion systems when there is a requirement for 60,000 or more shaft h.p. and when ships reach 70% utilization—that is 70% of their time is spent at sea rather than in port. The development of new methods of handling conventional liner cargo and the application of new technology such as containers and automatic hatch covers have already greatly reduced in port time. The container and barge ships under construction or to be contracted for this year should easily achieve the 70% utilization and perhaps even higher. The requirement for 60,000 shp has not yet been reached but may arrive sooner than even experts in the industry anticipated.

It was originally thought that nuclear propulsion would have its first economic application in very large tankers or bulk carriers traversing long distances. Further study and experience with the *Savannah* has indicated that this probably will not be the case for despite their vast size and to some extent because of it, these ships travel at relatively slow speeds and require relatively low h.p. plants.

Horsepower requirements go up extremely fast as ships' speeds increase. A few statistics may help put the situation in perspective. Most of the better World War II built line vessels operated at speeds of 15 or 16 knots and required only 6,000 shp. Ten years ago, new ships built by the CASL companies generally had cruising speeds of around 20 knots and required only 10,000 to 14,000 shp. The maximum shaft h.p. of ships built in 1957 was the 17,500 shp incorporated in large C-4's built for the Trans-Pacific trade. Now barely ten years later many ships under construction will have operating speeds of 24 to 25 knots and require 24,000 to 26,000 shp. Very recently the Maritime Administration announced its approval for the construction of LASH type barge ships for two CASL companies—Prudential Lines and Pacific Far East Line, Inc. and the Sea Barge carrier of Lykes Bros. These ships will have about 32,000 shp installed. Each of these companies studied the possibility of nuclear propulsion for the present LASH or Sea Barge ships. I am certain they will consider it further in designs for future flights of ships, which undoubtedly will be larger and faster ships.

The significance of these figures is that maximum horsepower requirements for CASL ships have doubled in a decade and average horsepower requirements also have more than doubled. Some of our companies are presently examining ships that would require about 60,000 hp. It certainly seems reasonable to expect that a number of such ships will be built within the next decade and that nuclear propulsion will become an economic reality.

In his recent appearance before the House Merchant Marine and Fisheries Committee, Mr. Milton Shaw of the Atomic Energy Commission testified that

while the A.E.C. would propose a research and development program aggregating about \$100,000,000 and requiring about ten years time to produce the most highly sophisticated nuclear reactor system for merchant ships application, that several United States manufacturers already have designs and equipment studies that might justify early application of nuclear power to merchant ships.

On the strength of these studies, some of which I have examined, I believe that if a significant number of nuclear power plants—say 30—were ordered today, initial costs would drop to a point where ships of substantially less than 60,000 shp would be competitive with fossil-fuel powered vessels. I do not foresee such an order in the near future, but do believe that the faster we proceed the sooner we will enjoy the benefits of quantity production.

With nuclear propulsion so fast approaching economic feasibility, it is essential that the United States retain its present leadership both for the well-being of our merchant fleet and to insure that our manufacturers obtain a large portion of the world market for marine nuclear units.

With regard to the second question, we believe that the *Savannah* can continue to make major contributions to our merchant marine. It is important to maintain continuity in our nuclear development. The lay-up of the *Savannah* would result in the closing of support facilities at Galveston, Texas and the dispersal of highly professional crews trained at great expense. It would appear probable that the reactivation of support facilities and the retraining of crews for the nuclear ships which Senator Magnuson proposes building might well cost more than the continued operation of the *Savannah*. In addition, the commercial feasibility of future nuclear ships will depend upon their ability to trade between all of the world's major cargo centers. The *Savannah* must be continued as a precursor of the ships to come in opening up ports. While this has been successfully done in most of Europe, there has never been a nuclear ship in most of the ports in Asia or in any of the ports of South America and other areas. Finally, we have a continuing need for the technological data and operational experience that can be obtained only through the actual operation of a nuclear propelled ship.

There have been many proposals regarding the nature of future *Savannah* operations. Whether the ship should continue on commercial freighter service, resume its earlier program of demonstration cruises, or be converted to a Government or private trade fair ship requires careful study by the Congress.

Let me simply urge that when the most profitable mode of operation is decided upon, this Committee will utilize every resource to insure that this valuable national asset is not abandoned. If we act in haste and lay up the *Savannah* just 69 days from today, we will surely repent this short-sighted expediency for years to come, both through loss of our dominant position in nuclear propulsion and increased total cost in the future.

Senator BARTLETT. Thank you very much, Admiral.

The final witness will be E. Joseph Farr, executive vice president, Brotherhood of Marine Officers, NMU, AFL-CIO.

**STATEMENT OF E. JOSEPH FARR, EXECUTIVE VICE PRESIDENT,
BROTHERHOOD OF MARINE OFFICERS, NMU, AFL-CIO, HOBOKEN,
N.J.**

Senator BARTLETT. We are glad to see you. Glad to see you looking so well, too.

Mr. FARR. Thank you, sir.

Mr. Chairman, and members of the committee, I, E. Joseph Farr, am the chief executive of the Brotherhood of Marine Officers, affiliated with the AFL-CIO. I have been associated with the maritime industry all my adult life, and am a graduate of the New York State Maritime College.

I am grateful for the opportunity to appear before this committee, and I hope that what I have to say will be influential in proving the feasibility of the continued commercial operation of the NS *Savannah*.

Ever since the BMO assumed jurisdiction of licensed officers

aboard this vessel 4 years ago, I have done my best to see that this important aspect of the "Atoms for Peace" project be successful in every respect. This project, gentlemen, is the concern of every American, and will continue to be so—a vital link in the American goal for world peace.

Laid up, the NS *Savannah* would in essence be silent testimony to the failure of the United States to apply marine atomic power to anything except weapons of offense.

This is quoted from a letter written to us by Dr. A. S. Limouze, president of Massachusetts Maritime Academy. It points up the fact that any decision regarding the *Savannah* must be based on the realization that more than just the life or death of a particular ship is involved. I believe that the entire future of maritime trade is involved, since that future lies in nuclear shipping; and that the future of U.S. nuclear shipping ties in strongly with the future of the *Savannah*, at least until we have additional nuclear ships on the drawing board.

There are four separate categories to be considered:

(1) That the reported financial savings of decommissioning her are practically nonexistent;

(2) That our image on the international stage will be irreparably damaged by this contemplated layup: other nations will surpass us in second-generation nuclear shipping, or else will laugh at us for giving up the *Savannah*;

(3) That our first-hand, 4-year experience in operating a nuclear ship gives us an advantage in the development of second-generation nuclear shipping which will be irretrievably lost to us;

(4) Finally, I will offer an evaluation of her unique place in labor-management relations since the BMO took over manning her. I will define the position of the BMO regarding our willingness to cooperate with the Government, management, and labor to keep her sailing. I suggest that the experiences in this area which the *Savannah* has implemented could set a precedent for future improvement generally between labor and management.

Before going into this matter as outlined above, I would like to make it crystal clear that the BMO has little to gain personally by the continued operation of the *Savannah*. There is, as you are aware, an acute shortage of marine officer personnel—so acute that we have started an apprentice engineering program to produce enough officers to fill our needs. Those of our members who are now associated with the *Savannah* and would be willing to stay in the industry should she be decommissioned, would have other berths immediately. Our concern is for the inevitable loss of trained and experienced nuclear personnel, who, with her decommissioning, would quickly be absorbed into shore-side nuclear plants, or would be snatched up by other nations to help them develop superior nuclear propulsion. The damage to the American merchant marine would be twofold: (a) It would offer to our competitors a trained and easy-to-contact pool from which to satisfy their own nuclear needs; and (b) this would destroy the carefully built-up cadre of skilled personnel which was planned as the backbone of second generation nuclear shipping.

As a nuclear ship, *Savannah* has brought no additional revenue to the BMO. On the other hand, she has presented operational problems, because of lack of experience in manning nuclear ships, that no other vessel in the world could raise. Quite honestly, there have been times when we in the BMO have thought what a pleasure it would be to lay hands on the guy who thought this one up. The problems which arose, I am happy to say, have all been solved.

1. Lay-up versus operating costs

We have been told that the 1967 projected total cost to the Government for continued operation is about \$2.7 million, including training and technical support. Cost to the Government for the operating subsidy on a C-4 freighter is approximately \$700,000. Therefore, the additional cost to the Government for operating the only nuclear merchant ship in the world over the cost of a conventional ship is approximately \$2 million. The cost for a temporary layup would be about \$1.5 million. The difference is \$500,000. This is what the Government would actually save. To save a half-million dollars—and thereby destroy the prototype of the future of the merchant marine—seems to me to be the very epitome of false economy.

The Government is considering "other, more productive uses for her." What are these possibilities? For the Government to operate her, in any capacity whatever, would mean a loss to the Government of her proved earning power; she would no longer contribute to our announced policy of "atoms for peace," and the Government would pay the whole bill. Is this economy?

She could be used for training additional personnel; however, with no nuclear ships available, the personnel which we already have—enough to man four nuclear vessels—would seem to be sufficient.

Or, she could be turned into a tourist attraction to remind the people that once again we took a first step into a new era—only to hand the prize, the ultimate payoff, over to other nations who always seem to be more farsighted and success-minded than we.

An example of this kind of thinking was the SS *Savannah*, for which this vessel was named, and the startling similarity in their histories: The SS *Savannah* made the first successful voyage under steam; then, because steam was "too expensive," her boilers were removed and she returned to sail. But Britain capitalized on our daring, and thereby became the foremost maritime power. Shall we repeat this mistake?

I believe that *Savannah's* present voyage to the Far East will prove that her continued use commercially is justified. Besides supplying another badly needed ship to our depleted merchant marine, she will continue her original purpose—the display of her unique qualities to the world—and bring prestige to our country. She will prove the economic feasibility of nuclear fuel on long hauls. She will continue to testify to the genuine desire of our Government to apply atomic power to something besides weapons of offense.

2. Our image on the international stage

I have already indicated certain aspects of the international situation which layup of the *Savannah* would affect. Besides these considerations, there is another one; namely, that other nations are developing nuclear shipping. If we are to compete for any part of the

world market—even our own—we must remain active in the nuclear maritime field.

England is one of the few nations who is in a position to do so, but has not, as yet, entered this increasingly vital field. She is undoubtedly speaking not only for herself but for the many other countries who are unable to compete in this area. The British magazine, *The Economist*, ran an article called "Atoms Unseaworthy" which starts: "So the British were right after all! The American Maritime Administration has announced that the '*Savannah*,' the world's first, and so far only, nuclear-powered merchant ship, is being taken out of service," and it ends with: "Even the Americans have now grown tired of footing the subsidy bill for this great white sacred sea cow." To me, this looks suspiciously like sour grapes.

3. *Our position in second-generation nuclear shipping*

The maintenance of an active pool of nuclear-trained personnel, held in readiness for a future nuclear merchant marine, is mandatory in the light of the training development experience we have had in the past. Quite a while ago, we instigated a program of rotation of the trained personnel between the *Savannah* and the regular fleet, in order to insure that all trained personnel keep their abilities up to operational standards. The implementation of this plan has not only served this purpose, but it has also offered an opportunity to the younger men to participate in the nuclear program. Without the *Savannah*, both of these aims would be impossible.

If an advanced ship program is to be developed, it would seem of inestimable value to keep the *Savannah* sailing. In the matter of training alone, she would prove her value. In the area of manning, even more than training, the *Savannah* could supply the place for experimentation, she could be a proving ground for possible manning modifications and discussions between the unions, the company, and the Government. Conversion, modification, containerization, and other types of improvement in ship construction could open the door to such discussion. Such matters could enhance, not only the advanced ship program, but also the productivity of the *Savannah* herself.

4. *Labor-management relations*

In reviewing the *Savannah* story, nothing pleases me more than the excellent record of labor-management relationship which has attended this ship from the moment American Export Isbrandtsen Lines took over the operation and the Brotherhood of Marine Officers took over the officer manning. In this respect, she is indeed unique. It was barely a month after this change went into effect before the BMO asked for and received, from the six unions involved, a strong and sincere pledge that the *Savannah* would never be held up by labor problems; that never would a strike or work stoppage interfere with her mission. This pledge has never been broken. Labor problems have been solved satisfactorily to all parties concerned over the negotiating table. Any strike that has been applied to other ships has never touched her.

This could perhaps be a start toward improved maritime labor-management stability. I suggest that the very fact that this cooperation has been so successful might be a start for better labor-management relations throughout the industry. The *Savannah* has proved that it can be done.

Many, if not all, of the problems relating to the *Savannah* have stemmed from a lack of operational experience and a consequent desire to be cautious and careful—perhaps, as increasing experience seems to suggest—too cautious. This, too, is an area which is open to further investigation and evaluation.

I wonder if it is necessary at this time to continue the present intensive training program. Would it not be possible, for instance, to incorporate into the undergraduate maritime academy curriculums the basic nuclear training, and then to increase the on-shipboard training, thus making the present costly program unnecessary? This is a cost-reduction area that could be reevaluated if economy is so important a consideration.

Another consideration, surely as important as economy, is this country's desperate need for ships to carry material to one—and possibly two—war theaters. When rusty, inefficient ships are being used, how can it be justified to lay up a fine, fast, new ship, even if it were to cost twice as much to keep her carrying these supplies?

Our future needs, as well as our present ones, would seem to present an absolutely watertight case for saving the *Savannah*, especially in the light of our past mistakes.

In the words of the Senate Concurrent Resolution 28, it is certainly not in the best interest of the United States to lay up the NS *Savannah*.

Mr. Chairman, although I was advised by my doctor not to appear here today because of a recent illness, I felt that the continued success and operation for all of us to continue to operate the *Savannah* was of the utmost importance. I speak only for my organization, the Brotherhood of Marine Officers. We are affiliated with that great maritime union, the National Maritime Union, and I can assure you that our great president, Mr. Joseph Curran, concurs with my statement.

Again I would like to thank the committee for your patience and courtesies extended to me by allowing me to appear here today. Thank you, sir.

Senator BARTLETT. The committee is indebted to you for your statement, Mr. Farr. There will be no questions.

Admiral FARR. Thank you, sir.

(The attachment to the statement follows:)

STATEMENT BY THE BROTHERHOOD OF MARINE OFFICERS, HOBOKEN, N.J.

Save the *Savannah*!

The Nuclear Ship *Savannah* will be laid up in August "for reasons of economy", President Johnson has announced. This casual pronouncement signs a devastating blow to national pride and performance.

Here are the facts about this most advanced vessel of the U. S. Merchant Marine, the world's first and only nuclear powered merchant vessel. Here are the facts about what she means to the country sailing and what she will mean if she is cast aside as the President has announced.

We gave you the facts; perhaps you can answer the burning question: What suicidal folly impels this Nation to take this proud achievement of American scientific knowledge and maritime skill and consign it to the boneyard?

HISTORY REPEATS ITSELF

In 1819, the United States of America developed, built and operated the world's first steamship, the S.S. *Savannah*. She made one highly successful voyage. Then the government decided that "steam" was too expensive. Her engines were removed, and she was sent to sea as a sailing ship.

But Europe was impressed with her performance. While we spent our energy and money re-converting her, England took up where we left off: she turned to steam. We built beautiful and elegant sails (the entire Clipper line), and had a wonderful time dressing up the old sails. We took sails further than any other country ever had. *But*—we were stuck in a sail-boat rut.

In no time flat, Britain had surpassed us on the high seas. By picking up what we dropped, England became the foremost Merchant Marine Power—truly the Ruler of the Seas.

We had had it in our hands, but we let it go: England recognized the value of steam, and cashed in on it. The results, for us, were disastrous. England became the primary World Maritime Power: the country on which "the sun never set."

1969 will mark the 150th anniversary of the old *Savannah's* birth.

The parallel between the Old and the New *Savannah* is remarkable.

Once again we were "first", this time in the development of nuclear ship power.

Again, we have operated the N.S. *Savannah* just long enough to prove her value, just long enough for other nations to become aware of nuclear potential. Now our government plans to lay her up.

The consequences were harmful to us in 1819; the consequences will be staggering in 1967. The rest of the world is not so foolish as we: already they are using our *Savannah* experience for the development of their own merchant marines. If we insist on sticking with steam, we shall soon find ourselves stuck—with ordinary steam.

THE VIET NAM WAR NEED FOR SHIPS

The N.S. *Savannah* is being sold down the river. At the extremely young age of six, at a time when our country needs every ship we can muster, and just as she is reaching her true commercial potential, our government is planning to lay her up!

In her first year of commercial operation, *Savannah* carried 40,000 tons of cargo. In the following four months, she carried another 20,000 tons. How will the next 60,000 tons after that be delivered?

There are two choices:

1. We can take another old ship out of the boneyard. But we've already taken so many out of moth-balls that there isn't much left. Besides, the cost of re-activating one of those "rust buckets" runs to about one-half million dollars. Then too, these old crates spend almost as much time in shipyards being repaired as they do on the high seas. We say nothing about the mounting repair bills!

2. We can let foreign flag ships carry our American cargoes. We can permit our Merchant Marine to dwindle further and face the impact on our general economy: a further escalation in our balance of payments (high in 1963 showed a net deficit of \$55-million, with the upward trend continuing progressively), and a loss of tax revenue from taxable wages and corporation taxes amounting yearly to well over \$160-million, as well as the incalculable loss of the good will and prestige that accrues to our country from our ships and ship personnel visiting ports of foreign countries.

How can anyone figure that it makes good sense to lay up a perfectly good ship in view of our desperate need of ships?

CONSEQUENCES OF "SAVANNAH" LAYUP

To interrupt the continuity of our nuclear shipping program at this time of crisis is dealing a deadly blow to the future of American sea commerce. Four years of personnel training and experience will go down the drain. These highly trained people will not stand around waiting: they will take their skills to other industries—perhaps to other countries.

And then, when all the other nations (unfriendly as well as friendly ones) have taken full advantage of our technical knowledge to develop nuclear vessels of their own, then *we* will have to start at the beginning again. We will need a new training program, a new technical system, and new design concepts.

We have all this now. We also have the magnificent group of men who have the technical know-how, the interest and the ability to continue the progress already made in experiments in more economical operation, increased speed, reduction in fuel consumption (which already is better than anticipated), and hundreds of other technical advances.

By continuing the operational use of the *Savannah*, we will continue to advance our position in world transportation until a program is developed by the United States that will put us as far ahead of the rest of the world commercially as we are technically at this moment.

If we lay up the N.S. *Savannah*, we will destroy the next generation's hopes of competing in a world market.

WORLD COMPETITION IN THE NUCLEAR FIELD

If we lay up the N.S. *Savannah* at this time, when the whole world is becoming increasingly nuclear-ship conscious, we will not only lose the tremendous lead which we now have as the *only* nation operating a Nuclear Merchant ship, but we will also lose all of the enormous advantages which four years of personal experience have given our country in nuclear operation.

World acceptance is growing. Foreign countries are beginning to take action. For example:

Germany is now installing the reactor (based on Babcock & Wilcox *Savannah* design) in an already-constructed merchant nuclear vessel, to be in operation in late 1967.

Russia already has one nuclear ice-breaker in use, which has been so successful that two more are in the process of construction.

Japan has scheduled a prototype oceanographic and cargo nuclear ship for production.

Italy is planning a combination military-commercial type.

Red China, according to the foreign press, is in the process of building a nuclear coastal passenger ship.

Other countries are watching us, and studying plans, to determine exactly what they will build.

We have done all the preliminary work; paid all the preliminary costs. Is this the moment for us to bow out of the Nuclear merchant ship picture? Shall we permit every other country to cash in on our hard-earned knowledge, while we return to ordinary steam? Shall we, once again, tie ourselves to the past, give up our head start, and let our Merchant Marine stagnate?

"SAVANNAH" COST EVALUATION

President Johnson wants to lay up the N.S. *Savannah* because "her continued operation is not feasible against the over-all financial needs of the country."

Ironically enough, it will cost as much to lay her up as it will to operate her—and perhaps a good bit more!

At the end of her first year under bare-boat charter to FAST, \$200,000 was returned to the government to reduce the \$1,300,000 they had agreed to invest and the same amount was kept as net profit to the Company. The second year contract provided a \$200,000 reduction in the initial amounts the government agreed to invest. At the end of the first four months of operations on this second-year contract, there had already been a proportionate *additional* saving.

The *Savannah* has recently made two calls at Rijeka, Yugoslavia (the first port-of-call in a country behind the Iron Curtain), and there were 1,200 tons of cargo waiting on the dock for her the second time in.

FAST is waiting for final approval to assign her to Route #12, to the Far East. The projected revenue from this run look even better than the Mediterranean run has produced. She is due to start this run early this summer. (A further reduction in government costs is anticipated.)

If we look at lay-up costs, we find that there are two possibilities open to the government:

1. A one-year temporary lay-up, the cost of which would be the same each year she sits. This would involve holding her at the Dock of Galveston, Texas, and the estimated cost would be between \$1,500,000 and \$2,000,000. Under this plan, it would cost *more* to keep her at Galveston for two years than to sail her.

2. To put her in moth-balls, or to completely lay her up—with no intention of future reactivation—would cost a minimum of \$3,000,000: about \$1,800,000 to remove the core, reactor and fuel, and another \$1,300,000 to complete the job.

If this is done, it will exceed the total *Savannah* costs for over one year, and could run over a two-year cost!

Also, it would probably eliminate, for all time, any chance of ever sailing her again. This at a time when ships for the American Merchant Marine are at an

all-time premium. This at a time when revenues are exceeding the best estimates! This at a time when the *Savannah* is just beginning to prove her potential value commercially!

Senator BARTLETT. There will be inserted in the record a statement from Mr. J. M. Farrell, vice president of the Waterman Steamship Corp., in favor of the resolution.

Likewise, a letter addressed to Chairman Magnuson by Dr. Seaborg, Chairman of the Atomic Energy Commission, in which he has some very kind words to say about the *Savannah's* operation; a letter to Chairman Magnuson from John L. Sweeney, Assistant Secretary for Public Affairs of the Office of the Secretary of Transportation, noting that the intention of the administration is to continue the *Savannah* in operation for another year; and a further report to the chairman from both the Assistant Comptroller General of the United States and the Attorney General's Office, taking no position one way or another. (The material referred to follows:)

U.S. ATOMIC ENERGY COMMISSION,
Washington, D.C., June 10, 1967.

HON. WARREN G. MAGNUSON,
*Chairman, Committee on Commerce,
U.S. Senate.*

DEAR SENATOR MAGNUSON: We are pleased to respond to your request for comments on proposed S. Con. Res. 28 which, if passed, would express the sense of Congress that it is in the best interest of the United States to continue operation of the N.S. Savannah.

As you know, the Atomic Energy Commission participated jointly with the Maritime Administration in the development, construction and testing of the N.S. Savannah and was highly pleased with the successful accomplishment of that effort. The turnover of the ship to the Maritime Administration for operation ended our direct program concern, but our interest in the economic adaptation of nuclear propulsion to peaceful maritime uses continues.

If the resolution is passed and the operation of the N.S. Savannah continued, the AEC would be in a position to continue its cooperation with the Maritime Administration to monitor the performance of the nuclear propulsion plant and discharge its statutory responsibility for safety.

The N.S. Savannah is the only U.S. civilian nuclear powered maritime ship and, consequently, has contributed to the successful demonstration of peaceful uses for atomic energy. The Commission believes that should the Savannah continue to operate, additional contributions would be forthcoming along the following lines: port clearances, insurance, manning, training, reliability and safety.

I trust these brief comments will be helpful to your Committee in its deliberations.

The Bureau of the Budget has advised that there is no objection to the presentation of this report from the standpoint of the Administration's program.

Cordially,

GLENN T. SEABORG, *Chairman.*

OFFICE OF THE SECRETARY OF TRANSPORTATION,
Washington, D.C., June 9, 1967.

HON. WARREN G. MAGNUSON,
*Chairman, Committee on Commerce,
U.S. Senate,
Washington, D.C.*

DEAR MR. CHAIRMAN: Your Committee has requested the views of this Department on S. Con. Res. 28, "That it is the sense of the Congress that operation of the nuclear merchant vessel Savannah is in the best interest of the United States of America and should continue."

We are advised that N.S. Savannah will be continued in operation for at least another year and that the details of the Administration position will be given your Committee at the hearing scheduled to consider the resolution.

The Bureau of the Budget advises that from the standpoint of the Administration's program there is no objection to the submission of this report for the consideration of the Committee.

Sincerely,

JOHN L. SWEENEY,
Assistant Secretary for Public Affairs.

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, D.C., June 9, 1967.

XXXXXXX.

HON. WARREN G. MAGNUSON,
*Chairman, Committee on Commerce,
U.S. Senate.*

DEAR MR. CHAIRMAN: Your letter of May 31, 1967, requests our comments on S. Con. Res. 28, a concurrent resolution providing that it is the sense of the Congress that operation of the nuclear merchant vessel *Savannah* is in the best interest of the United States of America and should be continued.

We have no special information or knowledge that would assist in the consideration of S. Con. Res. 28, and therefore have no comments to offer.

Sincerely yours,

FRANK H. WEITZEL,
Assistant Comptroller General of the United States.

U.S. DEPARTMENT OF JUSTICE,
Washington, D.C., June 26, 1967.

HON. WARREN G. MAGNUSON,
*Chairman, Commerce Committee,
U.S. Senate, Washington, D.C.*

DEAR SENATOR: This is in response to your request for the views of the Department of Justice on S. Con. Res. 28, a resolution expressing the sense of the Congress that operation of the nuclear merchant vessel *Savannah* should continue.

In the "Whereas" clauses the resolution sets forth several reasons to support its conclusion that the continued operation of the NS *Savannah* would be in the best interest of the United States. Those reasons are essentially technical, maritime, and financial in nature, and since the subject of the resolution does not affect the activities of the Department of Justice, we prefer not to offer any comment concerning it.

Sincerely,

RAMSEY CLARK,
Attorney General.

WATERMAN STEAMSHIP CORP.,
Washington, D.C., June 7, 1967.

HON. E. L. BARTLETT,
*Chairman, Subcommittee on Merchant Marine and Fisheries, Senate Committee
on Commerce, U.S. Senate, Washington, D.C.*

MY DEAR SENATOR BARTLETT: In response to your kind invitation to submit a written statement to your Committee in connection with the hearings on the future of the nuclear ship *Savannah*, we respectfully submit fifty copies of the attached statement, and request that it be included in the printed hearings and considered by your Committee in its deliberations.

The statement has been prepared on behalf of our company by Herbert Hansen, Vice President in charge of the Marine Department. Mr. Hansen's duties involve the responsibility for the operation, maintenance and repair of the vessels owned and operated by Waterman Steamship Corporation.

Sincerely yours,

WATERMAN STEAMSHIP CORP.,
J. M. FARRELL, *Vice President*

STATEMENT OF HERBERT HANSEN, VICE PRESIDENT, WATERMAN STEAMSHIP CORP.

The management of Waterman Steamship Corporation has, for the past two (2) years, been following the development of merchant marine applications of nuclear power and the performance of the "Savannah" with great interest. We are convinced that nuclear power is well suited for use in the large, fast merchant

ships now being planned to serve the various trade routes in our foreign commerce where a large volume of high revenue cargoes is involved. It is our belief that nuclear power will develop its full potential in vessels of this type operating on the long trade routes and will, when fully developed, place us in a good position to produce a fleet of highly productive vessels which will, in turn, permit us to compete with foreign vessels on a favorable basis.

The day of very large, specialized, high-speed merchant ships is here and it does not appear practical to use conventional power plants in these vessels due to the large quantities of fuel such ships must carry and consume, particularly in the long trade routes. Nuclear power appears to be the most promising source of power for ships of this type.

Approximately one (1) year ago our Company replied to a questionnaire prepared by the Maritime Administration to the effect that we would be interested in building and operating a fleet of twelve (12) nuclear ships to be used on the various trade routes we serve. At the time we prepared our reply to the MARAD questionnaire, we were of the opinion the "Savannah" would be operated for the next few years and were quite surprised to learn a few months ago that the early lay-up of this vessel is contemplated.

It is our opinion that the "Savannah" should be kept in operation, for many reasons, if we are seriously interested in revitalizing the United States Merchant Marine and in building a new generation of nuclear powered merchant ships. Other companies apparently feel as we do—generally sharing our views.

The "Savannah" is, in addition to being a proud symbol of the American Merchant Marine, a valuable training and developmental facility. In spite of the problems she has encountered during her rather short life, she has added immeasurably to our knowledge of nuclear vessel operations, opened numerous ports of the world to nuclear merchant vessels and, in the process, the program has produced a significant number of trained and knowledgeable seamen and staff members.

This pool of nuclear trained seagoing personnel and shore staff members will quickly disappear if the vessel is withdrawn from service. The result will be that, when we again commence to build nuclear merchant vessels, we will find ourselves in the same position we were in, in 1958, when construction of the "Savannah" was started.

Many of the lessons we have learned, and much of the information we have gathered, will be lost if we permit the trained and experienced operating organizations now involved in the operation of the ship to disappear. The know-how and experience which is required to operate vessels of this type cannot be passed to future staffs entirely in books and in training programs. A complete understanding of the many faceted problems encountered and solved, during the past few years in this project, will be lost and it is in this area that we will suffer our largest setback if present plans are followed. It is my belief that the decision to withdraw the vessel from service may be the result of a lack of understanding of these aspects on the part of some of the persons making this decision.

We feel that the "Savannah" should be continued in service so that government and industry may continue to expand our knowledge of this new and relatively undeveloped power source and to maintain a seed organization from which we can supply the know-how and experience to produce the next generation of commercial nuclear vessels.

The program should be kept alive in order that we may add to our store of knowledge in the fields of crew selection, training, water chemistry, insurance, health physics, containment, instrumentation, foreign acceptance, mechanization, waste handling, refueling, safeguards fuel management, materials and equipment selection and reactor operation. The "Savannah" project has helped to place us far ahead of our competitors in these and other fields. It is obvious that our present advantage will be lost if we do not continue the project and quickly proceed with the production of a second generation of commercial nuclear vessels. Naturally, the military nuclear programs will continue to make progress in many areas but, due to the nature of these programs, certain vital areas of importance will be neglected. These include regulatory matters, foreign acceptance, insurance and certain aspects of safeguards.

Unless we continue to operate the "Savannah", we will not be aware of some of the problems future nuclear vessels will encounter. An example of the type of problem I refer to was encountered recently when we were negotiating with the Japanese to permit the "Savannah" to enter Japanese ports. It was found that the Japanese laws prevented proper indemnification and the vessel's visit

was cancelled. I would expect these laws to be altered within a reasonable period as Japan is a seafaring nation and one assumes they expect foreign nuclear ships will be using their harbors in the future.

Had the "Savannah" not been scheduled for a voyage to Japan, this matter would not have developed at this time and no consideration would have been given to a solution until some undetermined future date.

Recently the President of Waterman, Mr. E. P. Walsh, addressed a letter to Mr. James W. Gullick, Acting Maritime Administrator, which included the following statement:

"Waterman Steamship Corporation is considering an expansion of commercial service in several trades and is contemplating the utilization of container ships in order to improve our cargo carrying capability and to increase the efficiency of our service. We are studying the possible use of nuclear power in order to produce the high speeds required and at the same time take advantage of the improved fuel rate offered by nuclear propulsion systems. The results obtained so far cause us to be reasonably optimistic about the use of nuclear propulsion in the vessels under consideration.

"We hope and trust that the Maritime Administration is going forward with a program to resolve some of the problems that must be dealt with before the next generation of nuclear merchant ships is built and placed in operation. As you know, our Corporation is greatly interested in the future of nuclear power and its application in ocean going merchant vessels. We are eager to participate in future nuclear ship programs as soon as adequate legislation has been passed, which will enable such programs to go forward.

"Waterman Steamship Corporation will be interested in operating the 'Savannah' under bareboat charter if the present operator does not choose to continue to charter the vessel and if the proper financial, legal and labor arrangements can be made to permit the operation of the vessel by our Company.

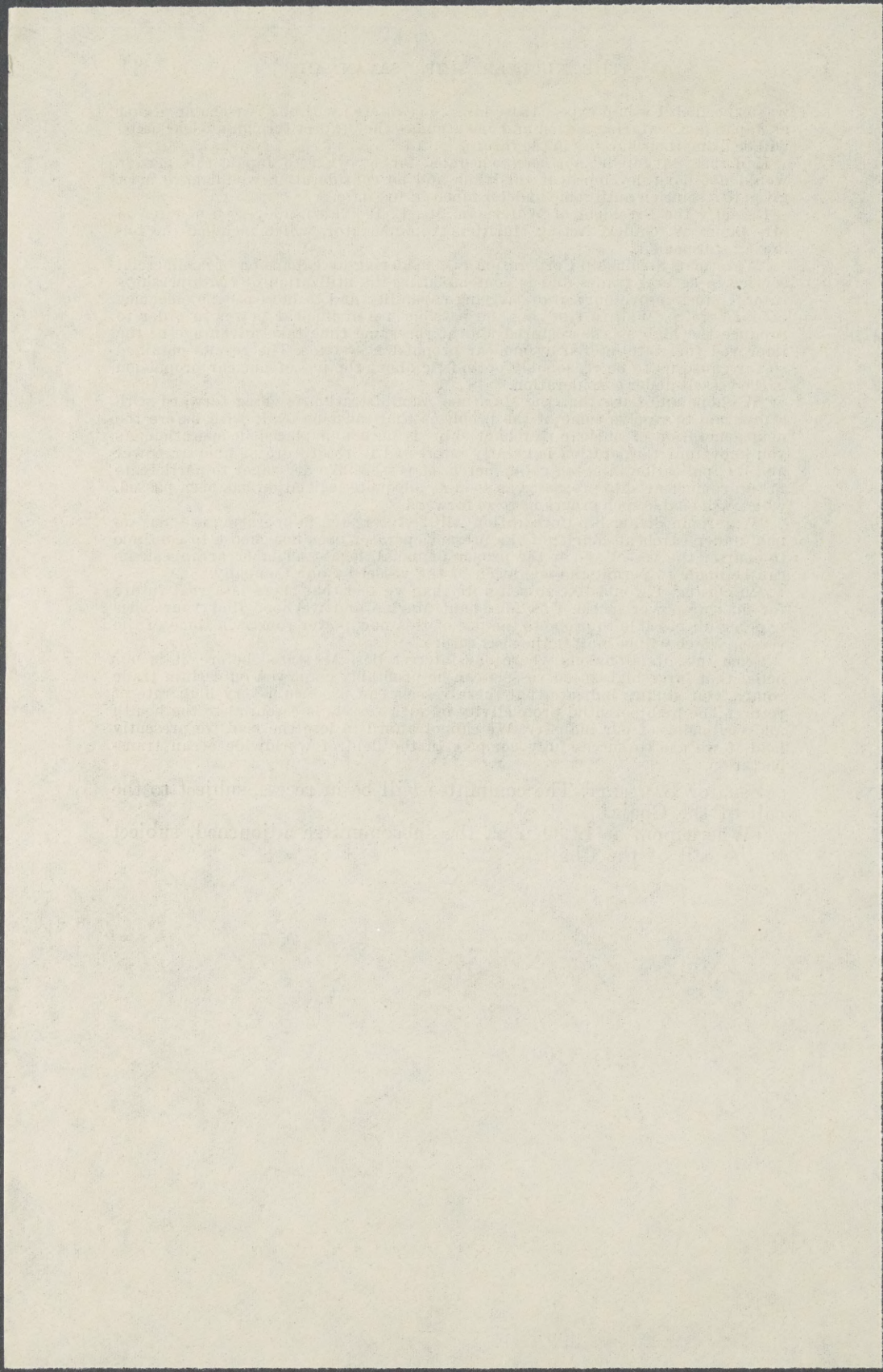
"In closing, I would like to reiterate that we feel that there is a real future for nuclear power in the U.S. Merchant Marine and we hope that your office is doing all possible to promote the use of this new power source in some of the vessels which will be built in the near future."

From this, it is obvious where our interest lies. As stated before, it is our belief that large high speed vessels can be profitably employed on certain trade routes. Our studies indicate that these vessels can produce a very high rate of return. The high potential productivity of such vessels is essential to the health and well-being of our industry. We cannot afford to lose the lead we presently hold if we are to successfully compete in the field of worldwide ocean transportation.

Senator BARTLETT. The committee will be in recess, subject to the call of the Chair.

(Whereupon, at 12:30 p.m., the subcommittee adjourned, subject to the call of the Chair.)





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