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PUBLIC WORKS APPROPRIATIONS, 1963

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HEARINGS  
BEFORE THE  
SUBCOMMITTEE OF THE  
COMMITTEE ON APPROPRIATIONS  
UNITED STATES SENATE  
EIGHTY-SEVENTH CONGRESS  
SECOND SESSION

ON  
H.R. 12900

MAKING APPROPRIATIONS FOR CIVIL FUNCTIONS ADMIN-  
ISTERED BY THE DEPARTMENT OF THE ARMY, CERTAIN  
AGENCIES OF THE DEPARTMENT OF THE INTERIOR, THE  
ATOMIC ENERGY COMMISSION, THE TENNESSEE VALLEY  
AUTHORITY, AND CERTAIN STUDY COMMISSIONS, FOR  
THE FISCAL YEAR ENDING JUNE 30, 1963, AND FOR OTHER  
PURPOSES

ATOMIC ENERGY COMMISSION  
TENNESSEE VALLEY AUTHORITY

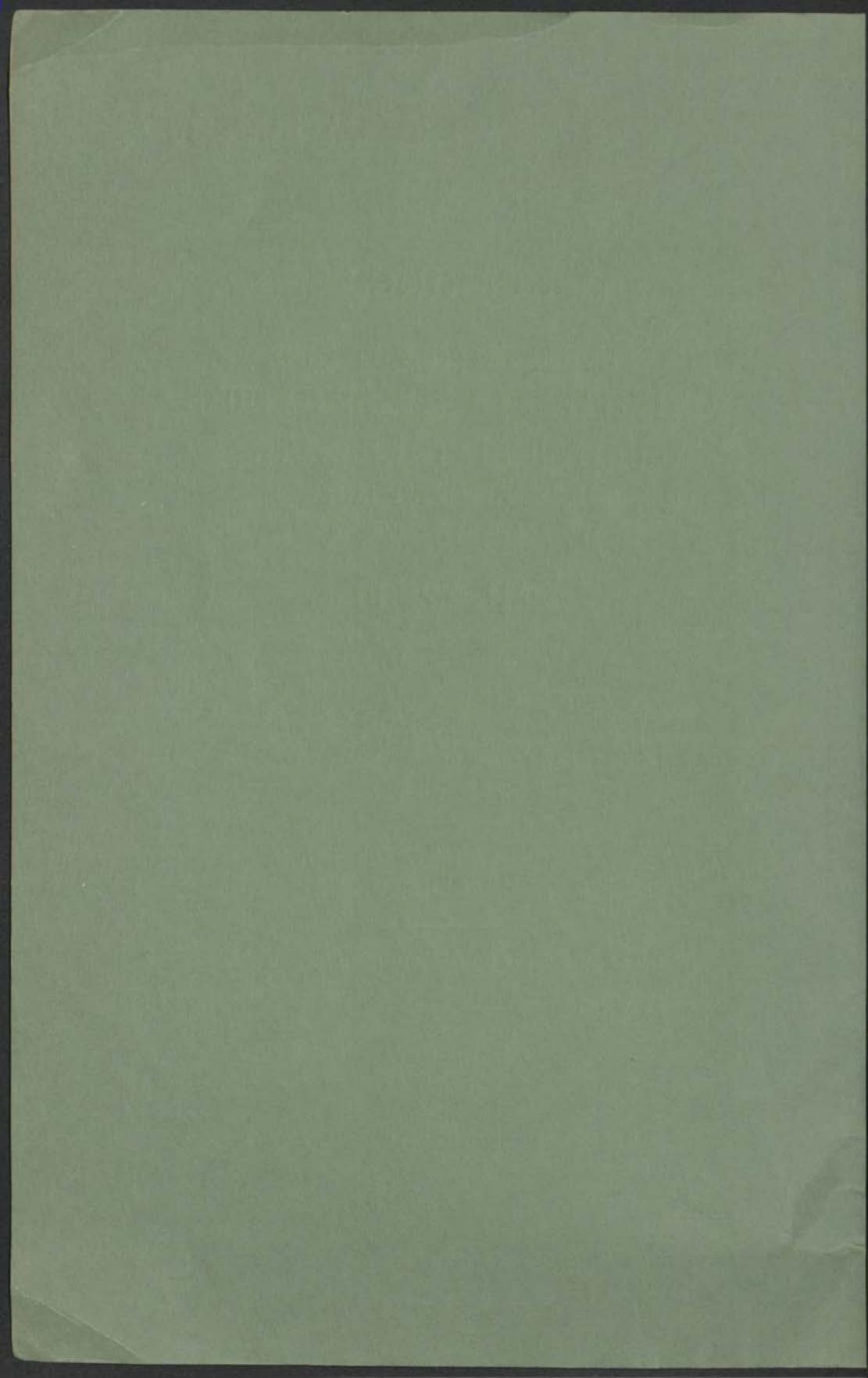
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# PUBLIC WORKS APPROPRIATIONS, 1963

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EIGHTY-SEVENTH CONGRESS

SECOND SESSION

ON

### H.R. 12900

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#### ATOMIC ENERGY COMMISSION TENNESSEE VALLEY AUTHORITY

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Printed for the use of the Committee on Appropriations



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WASHINGTON : 1962

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<sup>1</sup> Deceased July 23, 1962.

<sup>2</sup> Appointed Aug. 22, 1962.

<sup>3</sup> Deceased June 22, 1962.

<sup>4</sup> Appointed July 6, 1962.

# PUBLIC WORKS APPROPRIATIONS FOR 1963

THURSDAY, AUGUST 30, 1962

U.S. SENATE,  
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,  
Washington, D.C.

The subcommittee met, pursuant to notice, at 2:30 p.m., in room F-39, U.S. Capitol, Hon. Lister Hill (chairman of the subcommittee) presiding.

Present: Senators Hill, Kefauver, Pastore, and Hruska.

## ATOMIC ENERGY COMMISSION

STATEMENT OF DR. GLENN T. SEABORG, CHAIRMAN, ACCOMPANIED BY DR. ROBERT E. WILSON, COMMISSIONER; A. R. LUEDECKE, GENERAL MANAGER; GEORGE F. QUINN, ASSISTANT GENERAL MANAGER FOR PLANS AND PRODUCTION; SPOFFORD G. ENGLISH, ASSISTANT GENERAL MANAGER FOR RESEARCH AND DEVELOPMENT; JOHN P. ABBADESSA, CONTROLLER; JOSEPH F. HENNESSEY, GENERAL COUNSEL; JESSE C. JOHNSON, DIRECTOR, DIVISION OF RAW MATERIALS; FRANK P. BARANOWSKI, DIRECTOR, DIVISION OF PRODUCTION; DR. FRANK K. PITTMAN, DIRECTOR, DIVISION OF REACTOR DEVELOPMENT; DR. PAUL W. McDANIEL, DIRECTOR, DIVISION OF RESEARCH; DR. H. D. BRUNER, ACTING DIRECTOR, DIVISION OF BIOLOGY AND MEDICINE; JOHN S. KELLY, DIRECTOR, DIVISION OF PEACEFUL NUCLEAR EXPLOSIVES; DR. RUSSELL S. POOR, DIRECTOR, DIVISION OF NUCLEAR EDUCATION AND TRAINING; ARTHUR L. TACKMAN, DIRECTOR, DIVISION OF PERSONNEL; JOHN A. DERRY, DIRECTOR, DIVISION OF CONSTRUCTION; F. J. McCARTHY, JR., ASSISTANT CONTROLLER FOR BUDGETS, OFFICE OF CONTROLLER; AND VICTOR CORSO, DEPUTY ASSISTANT CONTROLLER FOR BUDGETS, OFFICE OF CONTROLLER

### OPENING STATEMENT BY THE CHAIRMAN

Senator HILL. The committee will kindly come to order.

Chairman Seaborg, we are happy to have you here. As you know in the past the way we have proceeded is to take down the testimony in executive session, and let you look over the testimony afterward so if there is anything you feel ought to come out of the record or anything you think ought to be changed in the record you have the right to do so.

Has everybody in this room been cleared for security reasons? Take a look and see.

Dr. SEABORG. There seems to be no problem.

LETTER FROM GENERAL MANAGER

Senator HILL. I have here, Mr. Chairman, a letter from your General Manager. Perhaps we might put this in the record at this point and then proceed with your statement.

The gist of the letter is to be found in the second paragraph. It says:

As passed by the House the bill makes certain reductions in the appropriations requested for the atomic energy program. We have made a careful review of those areas affected in the House bill and propose certain amendments thereto for consideration by your committee.

And we will put in the record at this point the suggested amendments, too.

Is that agreeable, Mr. Chairman?

Dr. SEABORG. Yes, sir.

Senator HILL. Any questions about that, Senator Pastore?

Senator PASTORE. No.

Senator HILL. We will put in the letter, suggested amendments, the summary statements from the budget documents, and any additional information that might be helpful to the committee; and we will be happy to have you proceed in your own way.

(The materials referred to follow:)

U.S. ATOMIC ENERGY COMMISSION,  
Washington, D.C., August 27, 1962.

HON. CARL HAYDEN,  
Chairman, Committee on Appropriations,  
U.S. Senate.

DEAR SENATOR HAYDEN: The House of Representatives, on August 16, passed H.R. 12900, "An act making appropriations for certain civil functions administered by the Department of Defense, certain agencies of the Department of the Interior, the Atomic Energy Commission, \* \* \* for the fiscal year ending June 30, 1963, and for other purposes."

As passed by the House the bill makes certain reductions in the appropriations requested for the atomic energy program. We have made a careful review of those areas affected in the House bill and propose certain amendments thereto for consideration by your committee.

There are transmitted herewith 15 copies of the amendments proposed by the Atomic Energy Commission to H.R. 12900, together with the reasons therefor.

Sincerely yours,

(Signed) ALVIN R. LUEDECKE,  
General Manager.

## PROPOSED AMENDMENTS TO THE PUBLIC WORKS APPROPRIATION ACT, 1963, ATOMIC ENERGY COMMISSION (H.R. 12900)

(As passed by the House of Representatives)

Amended estimate of appropriations submitted to the House:

Operating expenses-----	\$2, 888, 588, 000
Plant acquisition and construction-----	332, 345, 000
Total-----	<u>3, 220, 933, 000</u>

Bill as passed by the House:

Operating expenses-----	2, 860, 974, 000
Plant acquisition and construction-----	261, 845, 000
Total-----	<u>3, 122, 819, 000</u>

Change by House:

Operating expenses-----	-27, 614, 000
Plant acquisition and construction-----	-70, 500, 000
Total-----	<u>-98, 114, 000</u>

## PROPOSED AMENDMENTS

(1) Page 22, line 23, strike out "\$2,860,974,000" and insert in lieu thereof "\$2,878,891,000".

(2) Page 24, line 5, strike out "\$261,845,000" and insert in lieu thereof "\$326,595,000".

(3) Page 24, line 6, strike out "\$4,500,000" and insert in lieu thereof "\$9,000,000".

## HOUSE REPORT No. 2223, PUBLIC WORKS APPROPRIATION BILL, 1963, ATOMIC ENERGY COMMISSION

*Operating expenses*

Appropriation, 1962-----	\$2, 352, 001, 000
Estimate, 1963-----	2, 888, 588, 000
Recommended, 1963-----	2, 860, 974, 000
Comparison:	
Appropriation, 1962-----	+508, 973, 000
Estimate, 1963-----	-27, 614, 000

Funds provided under this heading are distributed as shown in the following table:

*Operating expenses*

Program	Budget estimate	Allocation	Reduction
Raw materials-----	\$500, 585, 000	\$497, 000, 000	-\$3, 585, 000
Special nuclear materials-----	537, 300, 000	534, 000, 000	-3, 300, 000
Weapons program-----	797, 010, 000	797, 010, 000	
Reactor development program-----	503, 745, 000	495, 628, 000	-8, 117, 000
Physical research program-----	216, 000, 000	206, 000, 000	-10, 000, 000
Biology and medicine-----	71, 353, 000	71, 353, 000	
Training, education, and information-----	15, 165, 000	14, 815, 000	-350, 000
Isotopes development-----	7, 462, 000	7, 100, 000	-362, 000
Civilian application of nuclear explosives-----	10, 050, 000	9, 650, 000	-400, 000
Community program-----	9, 114, 000	9, 114, 000	
Program direction and administration-----	64, 111, 000	62, 611, 000	-1, 500, 000
Security investigations-----	6, 019, 000	6, 019, 000	
Other costs-----	4, 100, 000	4, 100, 000	
Selected resources-----	173, 274, 000	173, 274, 000	
Revenues received from non-Federal sources-----	-26, 700, 000	-26, 700, 000	
Total-----	2, 888, 588, 000	2, 860, 974, 000	-27, 614, 000

## REDUCTIONS RECOMMENDED AND OTHER ACTIONS

*Raw materials.*—The reduction of \$3,585,000 which the committee has made in the request for this program is based on recent years' experience which shows considerable underruns in costs as compared with the estimates submitted in the budget presentation. This underrun amounted to \$24 million in 1962. The committee believes that it can be reasonably anticipated that there will be an underrun of at least the magnitude of the reduction which has been made.

*Special nuclear materials.*—The reduction of \$3,300,000 in this program has been made on the basis of the same type of experience on underrun of costs as discussed above. The underrun in costs in this case have varied from \$7 to \$40 million in the last 3 years. Again it is believed reasonable to anticipate that at least \$3,300,000 will be saved in this half-billion dollar program.

*Reactor development.*—In applying a total reduction of \$8,117,000 to this program the committee has reduced the amount for unsolicited proposals in the atomic electric power demonstration program from \$4,296,000 to \$1,296,000. In addition to the \$1,296,000 being provided for costs related to unsolicited proposals in 1963, there is available \$10,704,000 which can be used for obligations against future costs. The number of unsolicited proposals has been disappointing and estimates in the past few years have been over optimistic. There is nothing in the testimony taken by the committee to encourage the belief that this situation has changed.

The total reduction also includes a \$3,417,000 decrease in the advanced space power system portion of the satellite and small power sources program. This provides a net amount of \$25 million which is an increase of \$7,500,000 above the fiscal year 1962 appropriation. The committee is concerned about the lack of specific agreement among the Air Force, NASA, and the AEC with respect to responsibility for developing conversion equipment associated with the nuclear power units under development by the AEC. It believes that until there is an agreement in this area and until objectives are more clearly defined for the developmental work now being funded the amount provided is ample.

A further reduction of \$1,700,000 has been made in the general reactor technology program. In view of the numerous increases in the specific development programs under this heading, the committee is convinced that there is no need to increase this generalized research program beyond the fiscal year 1962 level. The amount allowed is \$58,300,000.

The review of the Commission's reactor development program has been most difficult in the past 2 years by reason of the major changes in the subactivities from year to year. It is recognized that some regrouping or reclassification of subactivities under a program may be necessary if the budget justifications are to present meaningful projections of costs. The major reclassifications under the reactor development program, however, have prevented a ready comparison of prior year costs and budget estimates. The committee will expect the budget estimates to be presented on the same basis from year to year, hereafter, except for such changes as need to be made to make the presentation more meaningful.

*Physical research.*—The \$206 million which the committee recommends for this program, while a reduction of \$10 million in the budget estimate, is an increase of \$30 million above the funds available in fiscal year 1962, and \$45 million above the fiscal year 1961 level. The committee recognizes the fact that as more sophisticated machines for use in the high energy physics field come into operation the annual cost in this particular program will probably increase. Of the increase proposed in the budget for 1963, \$17,234,000 is associated with the high energy physics work in order to make the best use of the large investments in machines and equipment in this program. The committee directs that none of the decrease be applied to the high energy physics program.

With respect to the controlled thermonuclear programs the committee desires that an early decision be made as to which of the five different concepts being explored are most promising. It is hoped that the Commission will soon be in a position to concentrate energies on the most likely of these concepts, which will permit savings in funding of the others.

The committee is convinced that the funds made available in this program are not producing returns commensurate with the investment and insists that there be tighter controls on research contracts to assure that they are being effectively used. It is obvious that to expand this program to the extent of financing every scientist who may want to enter the field is impossible. It would appear reasonable that a tougher evaluation of the skills of the persons involved and their previous research contributions would reduce the number of

contracts without seriously penalizing our progress in this important field. The committee urges also that there be a tightening up in the process of selecting areas and subjects for research undertakings, with greater emphasis on the relative usefulness of the potential results.

*Training, education, and information.*—The reduction of \$350,000 made by the committee in this program is to be applied against the expenses of operating the International School at Argonne, Ill., and the Puerto Rico Nuclear Center. There appears little justification for the continually increasing cost of operation of these two schools. The amount provided is the same as that available during the previous fiscal year. The committee believes that further increases, if necessary in operation of these schools, should come from other sources than the Federal Treasury.

*Isotope development program.*—While the committee has reduced the budget estimate by \$362,000 for this program, the amount which it recommends is \$1,216,000 over the previous fiscal year level. Of the amount provided, a total of \$516,000 is to be applied to the program for the radiation of foods.

The committee sees no reason for continually increasing the level of funding of this program in view of the amount of research being done by nongovernmental organizations in this field.

*Civilian application of nuclear explosives.*—The reduction of \$400,000 which the committee has made in this item holds the program to the fiscal year 1962 level. It is the committee's opinion that this reduction should be applied to the project "Chariot" and to the item of \$1,625,000 for experiment preparation.

*Program direction and administration.*—The total increase proposed in this program was \$3,480,000. The committee is convinced that with careful management the increase of \$1,980,000 which is being allowed will be ample.

*Equipment estimates.*—The committee believes that equipment estimates more properly should be included under the capital budget and appropriation. Early budgets of the Commission handled equipment in this manner, but with the requirement for authorization of construction projects equipment was covered under the operating appropriation, in the expectation that the capital budget would be handled separately from the operating budget. This has not proved to be necessary and both appropriations have been handled in the same bill. On the basis of this experience, the committee believes that estimates for equipment should be included in the capital budget and will expect to receive the estimate for fiscal year 1964 on this basis.

#### *Plant acquisition and construction*

Appropriation, 1962.....	\$195,360,000
Estimate, 1963.....	332,345,000
Recommended, 1963.....	261,845,000
Comparison:	
Appropriation, 1962.....	+66,485,000
Estimate, 1963.....	-70,500,000

The committee actions on items under this heading are reflected in the table which follows:

#### *Plant acquisition and construction*

Program	Budget estimate	Allocation	Reduction
Special nuclear materials.....	\$85,605,000	\$81,605,000	-\$4,000,000
Weapons program.....	56,585,000	51,085,000	-5,500,000
Reactor development program.....	77,950,000	77,450,000	-500,000
Physical research.....	132,200,000	71,700,000	-60,500,000
Other items.....	7,505,000	7,505,000	-----
Less unobligated balance brought forward.....	-27,500,000	-27,500,000	-----
Total.....	332,345,000	261,845,000	-70,500,000

#### REDUCTIONS RECOMMENDED

*Special nuclear materials.*—The reduction of \$4 million which the committee has made in the request for this program eliminates funds for emergency duty personnel shelters at AEC facilities sites. It is the committee's opinion that civil defense facilities of this magnitude should not be undertaken without being

fully integrated with any possible overall plans involving personnel engaged in other Federal activities in the same general vicinity and plans for protection of any civilian populations in the area. The committee has no evidence that these considerations have been taken into account.

*Weapons program.*—The budget proposed an expenditure of \$10 million for the construction of a new highway between Las Vegas, Nev. and joint AEC-NASA test site. Since that time the State has agreed to put up \$1 million on the cost of this road under the Federal-aid highway program. The road will be of mutual advantage to the AEC and NASA, and the committee believes that it is only appropriate that the cost of it be shared. The additional \$4,500,000 needed to complete this construction is to be taken from funds available to NASA. In this general connection the committee will expect NASA to carry its full share of all costs involved in joint AEC-NASA programs.

*Reactor development program.*—The reduction of \$500,000 made in this item is against the estimate of \$1,500,000 for a new cafeteria at the Argonne National Laboratory in Illinois. It is the committee's opinion that with close attention to economies in design and construction the \$1 million provided should be sufficient for a purely service facility of this type.

*Physical research.*—The budget included a total of \$95 million for full funding of the construction of the Stanford linear accelerator. The estimated obligations for 1963 are only \$35 million. The committee sees no need for appropriating the \$60 million balance ahead of the time of need for these funds.

The additional reduction of \$500,000 made in this item is to be applied against the yard facility at the University of California for which \$1,500,000 was budgeted. Again, the committee is convinced that careful attention to economies in planning and construction will make it possible to obtain an adequate facility with the \$1 million provided.

*Amendment (1): Increase of \$17,917,000 in the appropriation for operating expenses*

The Commission requests restoration of \$17,917,000 of the reduction made by the House. The following summary tabulation shows for each item involved in this amendment the amount included in the budget estimate, the reduction made by the House, and the amount requested for restoration.

	AEC request	House change	Restoration requested
1. Raw materials.....	\$500,585,000	-\$3,585,000	-----
2. Special nuclear materials.....	537,300,000	-3,300,000	-----
3. Reactor development.....	503,745,000	-8,117,000	+\$6,417,000
4. Physical research.....	216,000,000	-10,000,000	+10,000,000
5. Training, education, and information.....	15,165,000	-350,000	-----
6. Isotopes development.....	7,462,000	-352,000	-----
7. Civilian application of nuclear explosives.....	10,050,000	-400,000	-----
8. Program direction and administration.....	64,111,000	-1,500,000	+1,500,000
Total.....		-27,614,000	+17,917,000

An explanation of the reasons for the request for restoration for each item follows:

1. Reactor development.—The House bill would reduce by \$3 million the amount of costs estimated for fiscal year 1963 under the Commission's cooperative power demonstration program. Of the total costs estimated for fiscal year 1963 under this activity, \$4,296,000 were provided against proposals which might be received during this fiscal year from private and public utilities for assistance in the development and construction of nuclear powerplants. The House stated that the number of proposals has been disappointing and that estimates in the past few years have been overoptimistic.

The Congress now has before it for action, legislation (H.R. 11974 and S. 3392) authorizing the Commission's construction program for fiscal year 1963 and containing provisions for cooperative assistance with private and public utilities for construction of power reactors.

The bill provides for the first time an expanded assistance to the utility companies, by authorizing the Commission to provide financial assistance in the design costs of power reactors. The Commission has issued a public invitation requesting proposals along these lines; the invitation states that it is subject to

favorable congressional action on the Commission's request for authorization and funds. We anticipate that at least one and possibly two of these proposals may be accepted during this year and that costs will be incurred under these contracts.

The Commission also has pending an agreement with the Southern California Edison Co., which could result in a cooperative arrangement with that company, depending upon whether they are able to acquire a satisfactory site. The Commission has also had indications from another company in Massachusetts that they may submit a proposal for assistance.

For these reasons the Commission believes the amount estimated does not appear overoptimistic at this time and that the amount reduced by the House should be restored.

The House bill would also make a reduction of \$3,417,000 in the advanced space power system portion of the satellite and small power sources program. The House reduction was directed to this activity due to concern over lack of a specific agreement among the Air Force, NASA and AEC for the responsibility for power conversion system development, and until objectives were more clearly defined for the development work now being funded.

The total request for fiscal year 1963 of \$28.4 million for advanced space power includes \$21.0 million for the lithium-cooled reactor experiment, \$2.9 million for general research and development, and \$4.5 million for the SNAP-50 development system. The first two areas, totaling \$23.9 million, are for the purpose of providing a proof-of-principle demonstration of the lithium-columbium cooled reactor concept, thermionic conversion technology and ORNL laboratory support, and are not dependent upon agreements concerning conversion system development. The potential of the lithium-cooled concept to provide a high-power, compact reactor system warrants its development for use in applications other than space, although the major advantages of such a system are space oriented.

The Air Force development objective requires a nuclear electric powerplant in the 300-1,000 kilowatts electrical range for space vehicle use as a power supply for electric propulsion, communications, and other applications. The \$4.5 million for the SNAP-50 development system is to initiate a program which will design, fabricate, and test a series of reactors, utilizing the lithium-columbium concept, which in later tests will be coupled to a power-conversion system for the development of a fully qualified space powerplant in the 300-1,000 kilowatts electrical range. The AEC and Air Force are conducting close technical coordination on this program to assure that the AEC development program is in consonance with the Air Force objectives.

Both the Air Force and the NASA have advised that advanced space power sources in the hundreds of kilowatts and megawatt range will be needed. Nuclear electric powerplants provide the only means by which these power levels can be provided, and to provide this power at reasonable weights, reactors of the SNAP-50 type will be required. There is a keen sense of urgency to proceed with this development since it appears that the nuclear electric power system will lag the large SATURN booster capability and the development of electric propulsion engines requiring the large power sources. It may well be that the nuclear power supply will be our major limiting factor to significant space advances.

In view of this national need and sense of urgency, we believe that the level of programs requested in fiscal year 1963 should be retained to permit the initiation of the SNAP-50 reactor development and that the reduction of \$3.4 million should be restored.

2. Physical research.—The House bill would reduce by \$10 million the amount of \$216 million requested for the physical research program in fiscal year 1963. The House Appropriations Committee in its report directed that none of the decrease was to be applied to the high-energy physics section of the program. The effect therefore is to apply the reduction to the other programs in physics, mathematics, chemistry, metallurgy, and controlled thermonuclear research, for which an amount of \$134,835,000 was estimated in 1963.

The report also stated that this program is not producing returns commensurate with the investment; that tighter controls should be applied on research contracts; that it is impossible to finance every scientist who may want to enter the field; that there should be a tougher evaluation of the skills of the investigator; and that there should be a tightening up in the process of selecting areas and subjects for research undertakings with greater emphasis on the usefulness of the potential results.

In this program rests the AEC's responsibility for developing a fundamental understanding in the scientific fields underlying the atomic energy program. Careful screening of unsolicited research proposals based on such factors as the scientific competence of the investigators and the relevance of the undertaking to the Commission's developmental programs has and will continue to result in acceptance of less than one-third of the proposals submitted.

As a result of this careful screening, the yield of basic scientific information from the contracts, has been and is expected to remain high. More than 4,000 articles were published in scientific journals in fiscal year 1962 of which about one-half resulted from the cooperative research contracts with educational and other research organizations and about one-half under the program at AEC's major research centers. Each of these articles added newly discovered facts to our ever-expanding fund of knowledge and it is this knowledge that the engineers and technologists will apply in achieving future progress in the more applied areas of production, weapons, and reactor development.

This reduction is severely restrictive when one considers the increasing cost of conducting research, even without increases in staff levels, and the upcoming operation of major research tools such as the Ames research reactor, the Brookhaven beam research reactor, the Oak Ridge high flux isotope reactor, the Berkeley 88-inch cyclotron, the Oak Ridge and Argonne tandem Van de Graaffs, the Oak Ridge isochronous cyclotron, the model C device at Princeton, and the acquisition of a large computer for Brookhaven, to name only some of the more significant new machines.

The effect of such a reduction on our programs in other physics and mathematics would be to delay the initiation and reduce the initial procurement of low-energy accelerators, including the relocation of the University of California's 60-inch cyclotron to the Davis campus. This "stretchout" of machine acquisition will undoubtedly result in a greater delay than 12 months since we will lose our place on the production schedule of the supplier. Thus, we would suffer a serious postponement in making use of these newly designed higher energy and intensity machines in improving our understanding of the basic phenomena central to the atomic energy program. In addition, a reduction of this magnitude will result in a crippling of our proposed effort aimed at the development of the next generation of high-speed computers.

The chemistry program has necessary commitments above the 1962 level for the transplutonium production program, for special projects, and for the costs of operating new facilities and machines. These needs are such that the remainder of the program will have to be reduced below established levels of effort. New facilities and instruments such as the 88-inch cyclotron, the ANL Hot Laboratory, high-energy machines, mass separators, radiation sources, etc., are available and would not be used at their optimum effectiveness. In addition, much needed equipment could not be provided, including large items such as the neutron diffraction apparatus for use at new reactors, instruments for use with the LRL 88-inch cyclotron, and the various pieces of equipment made possible by advances in instrument technology which would increase the productivity and efficiency of the present scientific effort.

Plans for programs in metallurgy and materials must, of necessity, be severely curtailed in the face of a reduction of this magnitude. The effect of this would require us to retard our preparation for effective utilization of the oncoming high flux beam reactor at BNL; hold important programs on radiation damage at relatively low levels; delay the initiation and expansion of important work on the basic metallurgy of plutonium, superconductivity and pure materials; and fail, once again, to meet the AEC obligations with respect to the national program on interdisciplinary laboratories. Much of this work will not only make important contributions to the science of materials but is inextricably involved with the programs central to so many of the major roadblocks besetting AEC and other programs throughout the country.

The controlled thermonuclear program has experienced a number of successes in the confinement of hot plasmas. Newer and excellent machines are coming on stream that we fully expect to achieve even greater advances. At this time we see opportunities to accelerate the utilization and modification of these devices that, after further study and evaluation, could readily lead to the effective use of the full funds requested, if not more.

3. Program direction and administration.—The House bill would reduce program direction and administration by \$1,500,000.

This reduction would not permit the Commission to achieve the staffing level considered to be the minimum necessary to execute the responsibilities and handle effectively the growing workload. The Commission has in past years and will continue in the future to effect economies wherever possible through improved management. Every effort is being made to meet increasing needs for staff for new and expanding programs through various types of staffing economies including the maximum retrenchment in administrative functions and shifts of positions between offices and functional areas to meet priority requirements.

The fiscal year 1963 estimate for this program is the minimum deemed necessary in order to meet the increasing demands in the research and development areas caused by substantial growth in the scope and volume of research in the physical science, life sciences, reactor development including the space nuclear propulsion and Plowshare; increased emphasis on an expanded scope of the nuclear safety program; growth of activities now underway and contemplated at the Nevada test site near Las Vegas; increase in weapons activities; and increases in the regulatory activities of the Commission. Full restoration of the reduction is requested.

*Amendment (2): Increase of \$64,750,000 in the appropriation for plant acquisition and construction*

The Commission requests restoration of \$64,750,000 of the reduction made by the House. The following summary tabulation shows for each item involved in this amendment the amount included in the budget estimate, the reduction made by the House, and the amount requested for restoration.

	AEC request	House change	Restoration requested
1. Special nuclear materials.....	\$85,605,000	-\$4,000,000	
2. Weapons.....	56,585,000	-5,500,000	+\$4,500,000
3. Reactor development.....	77,950,000	-500,000	+250,000
4. Physical research.....	132,200,000	-60,500,000	+60,000,000
Total.....		-70,500,000	+64,750,000

An explanation of the reasons for the request for restoration for each item follows:

1. *Weapons.*—The budget estimate for plant obligations for the weapons program included \$10 million for the construction of a highway between Las Vegas, Nev., and the Nevada test site. The House reduced this estimate by a total of \$5,500,000 on the basis that (a) the State of Nevada has agreed to provide \$1 million of the cost of this highway, and (b) since the test site will be used jointly by the Atomic Energy Commission and the National Aeronautics and Space Administration, that the NASA should bear one-half of the Government's cost of this project, or \$4,500,000.

While it is generally agreed that this project does benefit jointly the AEC and the NASA, the Bureau of the Budget has indicated its belief that this construction project should be funded by one agency, namely the AEC.

The Atomic Energy Commission's main concern is that this project proceed as planned and it has no objection to the NASA's participating in the cost of this project. However, in light of the Bureau of the Budget position, the Atomic Energy Commission is requesting restoration of this amount to its appropriation.

This requested restoration also requires that the amount authorized for transfer to the Bureau of Public Roads, Department of Commerce, be amended from the \$4,500,000 included in H.R. 12900 to \$9 million.

2. *Reactor development.*—The House bill would reduce the amount for the cafeteria at Argonne National Laboratory, Illinois, from \$1,500,000 to \$1 million. The committee report states that with close attention to economies in design and construction that \$1 million should be sufficient for a purely service facility of this type. Subsequent to preparation of the budget estimates, title I design has been completed, and it is expected that a facility which will fulfill adequately the requirements can be constructed for \$1,250,000. Therefore, restoration of \$250,000 of the \$500,000 reduction in the House bill is requested.

3. *Physical research.*—The House bill would reduce the funds requested in the amount of \$95 million for the Stanford linear accelerator project to \$35 million, the amount estimated to be obligated in fiscal year 1963. The committee's basis

for this reduction was that since \$60 million would not be obligated, there was no need to appropriate this amount.

While our budget estimates submitted to Congress recognized that the full \$95 million requested for this project would not be obligated in fiscal year 1963, it is the policy of the Bureau of the Budget that construction projects should be fully funded in the amount authorized. While our obligation plans for this project remain unchanged, in that \$35 million is required for obligation in fiscal year 1963, in light of the Bureau of the Budget policy to fully fund authorized projects, restoration is requested of the \$60 million reduced by the House.

[H. Doc. 467, 87th Cong., 2d sess.]

COMMUNICATION FROM THE PRESIDENT OF THE UNITED STATES TRANSMITTING AN AMENDMENT TO THE BUDGET FOR THE FISCAL YEAR 1963 INVOLVING AN INCREASE IN THE AMOUNT OF \$23,300,000 FOR THE ATOMIC ENERGY COMMISSION

THE WHITE HOUSE,  
Washington, July 5, 1962.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

SIR: I have the honor to transmit herewith for the consideration of the Congress an amendment to the budget for the fiscal year 1963 involving an increase in the amount of \$23,300,000 for the Atomic Energy Commission.

The details of the amendment, the necessity therefor, and the reasons for its submission at this time are set forth in the attached letter from the Director of the Bureau of the Budget, with whose comments and observations thereon I concur.

Respectfully yours,

JOHN F. KENNEDY.

EXECUTIVE OFFICE OF THE PRESIDENT,  
BUREAU OF THE BUDGET,  
Washington, D.C., July 5, 1962.

THE PRESIDENT,  
The White House.

SIR: I have the honor to submit herewith for your consideration an amendment to the budget for the fiscal year 1963 involving an increase in the amount of \$23,300,000 for the Atomic Energy Commission, as follows:

ATOMIC ENERGY COMMISSION

Budget appendix page	Heading	Original estimate as amended	Revised estimate	Increase
655	Operating expenses.....	\$2,865,288,000	\$2,888,588,000	\$23,300,000

On May 21, 1962, a budget amendment (H. Doc. 409) was transmitted to the Congress proposing an increase of \$164,500,000 from the original budget estimate for this appropriation. The proposal herein is in addition to this amendment.

This proposed increase of \$23,300,000 is required in 1963 to procure devices for installation in certain deployed nuclear weapons to prevent the possibility of unauthorized use.

I recommend that the foregoing amendment to the budget for the fiscal year 1963 be transmitted to the Congress.

Respectfully yours,

DAVID E. BELL,  
Director of the Bureau of the Budget.

[H Doc. 409, 87th Cong., 2d sess.]

COMMUNICATION FROM THE PRESIDENT OF THE UNITED STATES TRANSMITTING AN AMENDMENT TO THE BUDGET FOR THE FISCAL YEAR 1963 INVOLVING AN INCREASE IN THE AMOUNT OF \$210,800,000 FOR THE ATOMIC ENERGY COMMISSION

THE WHITE HOUSE,  
Washington, May 21, 1962.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

SIR: I have the honor to transmit herewith for the consideration of the Congress an amendment to the budget for the fiscal year 1963 involving an increase in the amount of \$210,800,000 for the Atomic Energy Commission.

The details of this amendment, the necessity therefor, and the reasons for its submission at this time are set forth in the attached letter from the Director of the Bureau of the Budget, with whose comments and observations thereon I concur.

Respectfully yours,

JOHN F. KENNEDY.

EXECUTIVE OFFICE OF THE PRESIDENT,  
BUREAU OF THE BUDGET,  
Washington, D.C., May 14, 1962.

THE PRESIDENT,  
The White House.

SIR: I have the honor to submit herewith for your consideration an amendment to the budget for the fiscal year 1963 involving an increase in the amount of \$210,800,000 for the Atomic Energy Commission, as follows:

ATOMIC ENERGY COMMISSION

Budget appendix page	Heading	Original estimate	Revised estimate	Increase
655	Operating expenses..... (Delete the paragraph under this heading and insert in lieu thereof the following: For necessary operating expenses of the Commission in carrying out the purposes of the Atomic Energy Act of 1954, as amended, including the employment of aliens; services authorized by section 15 of the Act of August 2, 1946 (5 U.S.C. 55a); purchase of equipment; purchase, maintenance, and operation of aircraft; publication and dissemination of atomic information; purchase, repair, and cleaning of uniforms; official entertainment expenses (not to exceed \$30,000); reimbursement of the General Services Administration for security guard services; purchase (not to exceed [four hundred and thirty-two] <i>seven hundred and forty</i> , of which [three hundred and fourteen] <i>four hundred and ten</i> are for replacement only) and hire of passenger motor vehicles; [\$2,352,001,000] <i>\$2,865,288,000</i> , and any moneys (except sums received from disposal of property under the Atomic Energy Community Act of 1955 (42 U.S.C. 2301)) received by the Commission, notwithstanding the provisions of section 3617 of the Revised Statutes (31 U.S.C. 484), to remain available until expended: <i>Provided</i> , That of such amount \$100,000 may be expended for objects of a confidential nature and in any such case the certificate of the Commission as to the amount of the expenditure and that it is deemed inadvisable to specify the nature thereof shall be deemed a sufficient voucher for the sum therein expressed to have been expended: <i>Provided further</i> , That from this appropriation transfers of sums may be made to other agencies of the Government for the performance of the work for which this appropriation is made, and in such cases the sums so transferred may be merged with the appropriation to which transferred: <i>Provided further</i> , That no part of this appropriation shall be used in connection with the payment of a fixed fee to any contractor or firm of contractors engaged under a cost-plus-a-fixed-fee contract or contracts at any installation of the Commission, where that fee for community management is at a rate in excess of \$90,000 per annum, or for the operation of a transportation system where that fee is at a rate in excess of \$45,000 per annum.	\$2,700,788,000	\$2,865,288,000	\$164,500,000

The additional funds requested for the "Operating expenses" appropriation include primarily an amount of \$120 million to provide necessary restoration of Commission funds currently being used in connection with the weapons testing program. Moreover, significant additional amounts are requested in connection with the production of atomic weapons, for a detailed study into the technical and economic attractiveness of the "seed and blanket" approach to design of civilian atomic power reactors, and for certain other adjustments. These increases are offset in part by various savings, primarily reductions in the estimated cost of uranium ore purchased in Canada. Authority is also sought to purchase additional passenger motor vehicles.

Budget appendix page	Heading	Original estimate	Revised estimate	Increase
659	Plant acquisition and construction..... (Add the following proviso at the end of the paragraph under this head): : Provided, That not to exceed \$10,000,000 of this appropriation for carrying out improvements on U.S. Highway 95, Nevada, as authorized in the Commission's 1963 authorization Act, may be transferred to the Bureau of Public Roads, Department of Commerce.	\$286,045,000	\$332,345,000	\$46,300,000

Additional funds are needed for the "Plant acquisition and construction" appropriation primarily to cover major cost overruns in two large reactor projects (the new production reactor at Hanford and the experimental gas-cooled reactor at Oak Ridge), and to provide for widening and otherwise improving the existing highway from AEC's Nevada Test Site to Las Vegas, Nev., a distance of 58 miles. This improvement is made necessary by the intensification of activity at the Nevada Test Site as a result of the growth in Project Rover (nuclear rocket development) and the resumption of underground weapons testing. In addition, it is proposed to use \$20 million of unobligated fiscal year 1962 balances for construction of a prototype organic power and heat industrial reactor under a cooperative arrangement with private industry.

I recommend that the foregoing amendment to the budget for the fiscal year 1963 be transmitted to the Congress.

Respectfully yours,

DAVID E. BELL,  
Director of the Bureau of the Budget.

#### U.S. ATOMIC ENERGY COMMISSION—FISCAL YEAR 1963 BUDGET ESTIMATES

##### GENERAL STATEMENT FOR OPERATING EXPENSES

###### *Estimate of appropriation*

This book contains the budget estimates for the appropriations "Operating expenses" for fiscal year 1963. The estimates provide for total obligations of \$2,915,288,000 to be funded by (1) a new appropriation of \$2,888,588,000, (2) an estimated \$26,700,000 to be received as revenues from non-Federal sources during the fiscal year.

###### *Estimates of costs and obligations*

The budget estimates for this appropriation are stated in terms of accrued costs for each of the AEC's operating programs. "Accrued costs" denotes the actual application of labor, materials, equipment, and services to the program during the year, but excludes depreciation of facilities used in the operations. The AEC does, however, maintain accounts for depreciation for the purpose of determining total costs of production and for use in establishing prices for services rendered or products sold to others.

The costs of operation are reconciled to the total obligations to be incurred during the year by estimating the buildup or decrease during the year of the resources that are to be applied to future years' operations. These estimates are included in the section titled, "Increase or decrease (—) in selected resources" and include inventories and undelivered orders.

From total obligations are deducted the revenues estimated to be obtained from non-Federal sources in order to arrive at the amount of appropriations required. These revenues are obtained from AEC-owned community and hous-

ing operations, from the sale of products, from services performed for others, and from other miscellaneous sources. These revenues are identified and summarized under the tab "Revenues applied."

The following table summarizes the accrued costs for each program, and the total obligations for fiscal years 1961, 1962, and 1963. The detailed justifications, beginning on page 13, present the programs in the same order as they appear on this summary table.

*Summary of accrued operating costs by program reconciled to net obligations*

	Actual, fiscal year 1961	Estimate, fiscal year 1962	Estimate, fiscal year 1963
Accrued costs by program:			
Raw materials.....	\$634,603,883	\$538,394,000	\$500,585,000
Special nuclear materials.....	560,356,676	526,819,000	537,300,000
Weapons.....	517,670,663	749,000,000	797,010,000
Reactor development.....	424,381,797	429,774,000	503,745,000
Physical research.....	160,998,302	175,978,000	216,000,000
Biology and medicine.....	52,904,282	61,077,000	71,353,000
Training, education, and information.....	13,204,745	14,233,000	15,165,000
Civilian applications of—			
Isotopes.....	4,166,513	5,884,000	7,462,000
Nuclear explosives.....	7,466,617	9,650,000	10,050,000
Community.....	9,146,215	8,583,000	9,114,000
Program direction and administration.....	58,898,528	60,631,000	64,111,000
Security investigations.....	6,466,799	7,215,000	6,019,000
Cost of work for others.....	6,528,457	7,430,000	4,100,000
Adjustment to prior year costs.....	1,434,600		
Total accrued program costs.....	2,458,228,077	2,594,668,000	2,742,014,000
Changes in selected resources.....	-5,711,443	-57,121,521	173,274,000
Total obligations for operating expenses.....	2,452,516,634	2,537,546,479	2,915,288,000
Less revenues applied.....	29,494,924	31,469,000	26,700,000
Net obligations (financed by appropriated funds).....	2,423,021,710	2,506,077,479	2,888,588,000

*Financing of obligations*

The financing of the estimated total obligations of \$2,915,288,000 proposed in the budget estimates for fiscal year 1963, together with comparable data for fiscal years 1961 and 1962, is summarized in the following table:

	Actual fiscal year 1961	Estimate, fiscal year 1962	Estimate, fiscal year 1963
Funds available for obligations:			
Unobligated balance, beginning of year.....	\$120,894,334	\$154,082,624	
Appropriation.....	2,451,210,000	2,352,001,000	\$2,888,588,000
Transfer to "Operating expenses, Public Buildings Services," General Services Administration (75 Stat. 353).....		-6,145	
Revenues received from non-Federal sources.....	29,494,924	31,469,000	26,700,000
Transfer from "Plant acquisition and construction", Atomic Energy Commission (74 Stat. 752).....	5,000,000		
Total funds available for obligation.....	2,606,599,258	2,537,546,479	2,915,288,000
Less unobligated balance, end of year.....	154,082,624		
Total obligations incurred.....	2,452,516,634	2,537,546,479	2,915,288,000

*Expenditures for operating expenses*

Expenditures from the operating expenses appropriation for fiscal year 1963 are estimated at \$2,645 million, an increase of \$95 million over estimated expenditures of \$2,550 million in fiscal year 1962. Actual expenditures for operating expenses in fiscal year 1961 totaled \$2,411,816,785. The estimated amounts available for expenditure in fiscal years 1961, 1962, and 1963, the expenditures for each year, and the remaining unexpended balances are shown in the following table:

*Expenditure analysis*

	Actual fiscal year 1961	Estimate, fiscal year 1962	Estimate, fiscal year 1963
Funds available for expenditure:			
Unexpended balance, beginning of year:			
Obligated.....	\$847,111,996	\$858,316,921	\$814,394,400
Unobligated balance.....	120,894,334	154,082,624	-----
New appropriation.....	2,451,210,000	2,352,001,000	2,888,588,000
Transfer to "Operating expenses, Public Buildings Services," General Services Administration (75 Stat. 353).....	-----	-6,145	-----
Transfer from "Plant acquisition and construction," Atomic Energy Commission (74 Stat. 752).....	5,000,000	-----	-----
Total funds available for expenditure.....	3,424,216,330	3,364,394,400	3,702,982,400
Less: Expenditures.....	2,411,816,785	2,550,000,000	2,645,000,000
Unexpended balance, end of year:			
Obligated.....	858,316,921	814,394,400	1,057,982,400
Unobligated balance.....	154,082,624	-----	-----
Total unexpended balance.....	1,012,399,545	814,394,400	1,057,982,400

*Highlights of operating programs*

There follows a brief description of each of the programs set forth in the summary on page 2:

1. *Raw materials program.*—Operating costs for the raw materials program are estimated at \$500.6 million in fiscal year 1963, compared with estimated fiscal year 1962 costs of \$538.4 million and actual fiscal year 1961 costs of \$634.6 million. The raw materials program provides for procurement of uranium concentrates and ores from foreign and domestic sources. The decrease in quantities of uranium concentrates to be procured in fiscal year 1963 is principally the result of reduced deliveries from domestic and Canadian producers in accordance with the provisions of the respective contracts.

2. *Special nuclear materials program.*—Operating costs for the special nuclear materials program are estimated at \$537.3 million in fiscal year 1963, compared with estimated fiscal year 1962 costs of \$526.8 million and actual fiscal year 1961 costs of \$560.4 million. The production of special nuclear materials begins with the refinement of uranium concentrates for diffusion plants or reactors. The isotope uranium-235 is extracted in gaseous diffusion plants at Oak Ridge, Tenn., Paducah, Ky., and Portsmouth, Ohio. Plutonium and related products are produced in the reactors at Hanford, Wash., and Savannah River, S.C. Process development effort is aimed at improving efficiency and product quality, maintaining approved health and safety standards, and investigating promising new concepts.

3. *Weapons program.*—Operating costs for the weapons program are estimated at \$797 million in fiscal year 1963, compared with estimated fiscal year 1962 costs of \$749 million, and actual fiscal year 1961 costs of \$517.7 million. The weapons program includes the production of atomic weapons, the maintenance of stockpiled weapons in a state of constant readiness, the development, design, and testing of new weapon types, and participation with the Department of Defense in experimental programs for detecting nuclear detonations at high altitude and underground.

4. *Reactor development program.*—Operating costs for the reactor development program are estimated at \$503.7 million in fiscal year 1963, compared with estimated fiscal year 1962 costs of \$429.8 million and actual fiscal year 1961 costs of \$424.4 million. Emphasis will continue to be placed on advancing power reactor technology in order to achieve large-scale generation of economic electrici-

cal energy from atomic reactors. Cooperative endeavors between the Commission and industrial groups, as well as with the European Atomic Energy Community (EURATOM) and Canada, will be continued.

The estimates provide for research and development applicable to advanced systems as well as to many current reactor designs, fuel cycle development, a program of reactor environmental and aerospace nuclear safety, development of separations systems for processing irradiated fuel elements, and a program of high-temperature materials research and high-performance reactors research.

Work will also be continued on reactors to propel merchant vessels, on reactors to meet military needs for power in remote areas, on reactors to propel naval vessels, rockets, and missiles, and on reactors and radioisotopes to provide electric power and heat for satellites. This research and developmental effort will also provide information useful in the development of civilian power reactors.

Operation of test facilities and experimental reactors will be continued at the National Reactor Testing Station, Idaho, and at other locations.

5. *Physical research program.*—Operating costs for physical research are estimated at \$216 million in fiscal year 1963, compared with estimated fiscal year 1962 costs of \$176 million, and actual fiscal year 1961 costs of \$161 million. The physical research program consists of theoretical and experimental investigations required to support the Commission's immediate and long-range objectives for utilizing nuclear energy. Advances achieved in the past can be traced back to similar laboratory investigations. In the atomic energy program, research plays a relatively more important role than in other industrial operations of comparable size. The phenomena dealt with are close to the fringes of scientific knowledge. Unusual materials are employed and their nuclear, as well as their chemical and physical properties, must be determined. The temperatures and radiation densities at which these materials are used are outside the range of previous experience in industrial technology.

6. *Biology and medicine program.*—Operating costs for research in biology and medicine are estimated at \$71.4 million for fiscal year 1963, compared with estimated costs of \$61.1 million in fiscal year 1962, and actual cost of \$52.9 million in fiscal year 1961. Primary emphasis will continue to be placed on the protection of the health and safety of atomic energy plant workers and the general populace from the hazards of atomic energy operations. Research on radioactive fallout problems and related research in the biological hazards of radiation will be expanded with increasing attention given to large-scale studies of chronic effects of radiation. Continued emphasis will be placed on research efforts of pertinence in the field of industrial uses of atomic energy. Close liaison will continue to be maintained with other agencies performing functions interrelated with Commission biomedical interests. Research is carried on by Commission laboratories, universities, and other independent institutions.

7. *Training, education, and information program.*—Operating costs for the training, education, and information program are estimated at \$15.2 million in fiscal year 1963, compared to estimated fiscal year 1962 costs of \$14.2 million, and actual fiscal year 1961 costs of \$13.2 million. Primary program emphasis will continue to be placed on broadening the base of nuclear technology at home and abroad. Program efforts are directed toward provision of assistance to colleges and universities in establishing nuclear curriculums; provision of assistance to States for training in radiation control; operation, through contract, of schools and the conduct of specialized courses; offering of graduate fellowships in the nuclear energy field; presentation of international conferences, studies, and exhibits; and development and dissemination of technical information.

8. *Civilian applications of—*

Isotopes: Operating costs for this program are estimated at \$7.5 million in fiscal year 1963, compared to estimated fiscal year 1962 costs of \$5.9 million, and actual fiscal year 1961 costs of \$4.2 million. The program consists of research and development activities required to accelerate realization of the potentially vast uses of radioisotopes and radiation technology. The program will provide for expanding the technology and utilization of isotopes with particular attention to civilian applications; and developing, through research and development activities, applications of high-level or massive radiation; large-scale economic uses of fission product wastes, and methods and technology for preservation of foods by irradiation.

Nuclear explosives: The civilian applications of nuclear explosives (PLOW-SHARE) for which costs amount to \$10.1 million are estimated for fiscal year

1963, compared to estimated costs of \$9.7 million in fiscal year 1962, and actual costs of \$7.5 million in 1961, encompasses the development of peaceful uses of nuclear explosives. The program provides for development of special instrumentation and feasibility studies regarding new applications and devices and for experimental projects directed toward excavation applications and the use of nuclear explosives for scientific purposes such as transplutonium element production.

9. *Community.*—The AEC will continue to operate the community of Los Alamos, N. Mex., under contract, and will provide assistance payments for Oak Ridge, Tenn., and Richland, Wash. All houses have been disposed of at Oak Ridge and Richland, and remaining building lots, apartments, and commercial properties at Richland are expected to be disposed of during fiscal year 1962. Operating costs of the program are estimated at \$9.1 million in fiscal year 1963, compared to estimated fiscal year 1962 costs of \$8.6 million, and fiscal year 1961 costs of \$9.1 million.

10. *Program direction and administration.*—Under the general heading of program direction and administration are grouped together the salary costs and other expenses of Commission personnel engaged in general management, executive direction, and technical supervision of program operations; the negotiation and administration of contracts; other related administrative activities; and the discharge of regulatory functions. The corresponding costs for Commission personnel engaged in nonadministrative and nonregulatory activities, directly related to a specific program, are included in that program, as, for example, personnel safeguarding classified shipments or providing fire protection for a community. Expenses of personnel of other Government agencies, including their travel, doing work for the Commission, are treated as contractual services, and are therefore not included in the AEC detail of personal services and travel.

Estimated costs of \$64.1 million will be incurred in fiscal year 1963 for program direction and administration compared with estimated fiscal year 1962 costs of \$60.6 million and actual fiscal year 1961 costs of \$58.9 million. An increase in staff of 222 employees is budgeted for fiscal year 1963 under this program. The increase of \$3.5 million is required principally for salaries, travel, and other costs associated with the higher average employment, resulting from the increase in staff. The costs in fiscal year 1963 represents 2.3 percent of the total operating costs, compared with an estimated 2.3 percent in fiscal year 1962 and 2.4 percent in fiscal year 1961.

11. *Security investigations.*—This program covers the costs of investigations performed by the Civil Service Commission and the Federal Bureau of Investigation, at the request of the Commission, of persons to be employed on work involving access to restricted data, under the provisions of the Atomic Energy Act of 1954, as amended. Costs of security investigations in fiscal year 1963 are estimated at \$6 million compared with estimated fiscal year 1962 costs of \$7.2 million and actual fiscal year 1961 costs of \$6.5 million.

12. *Cost of work for others.*—This program includes costs incurred by the Commission in furnishing materials and services to industrial organizations and other private parties apart from those which it provides normally for its own basic program. The costs are incurred only upon the request of others. Charges are made for these materials and services and the revenues derived are included under "Revenues applied." Cost of work for others is estimated to be \$4.1 million in fiscal year 1963, compared with \$7.4 million in fiscal year 1962 and \$6.5 million in fiscal year 1961. The lower estimate in fiscal year 1963 is due principally to an estimated decrease in sales of miscellaneous products and isotopes, together with reduced levels of services rendered to others.

13. *Increase or decrease in selected resources.*—This program includes inventory stocks held by AEC and its contractor, collateral funds, and goods and services on order under contract. The appropriation requirements for these items are based on the changes in balances from the previous fiscal year. Selected resources at the end of fiscal year 1963 are estimated at \$1,001.7 million as compared with \$828.4 million in fiscal year 1962 and \$885.6 million in fiscal year 1961. The net increase of \$173.3 million in fiscal year 1963 results principally from (1) increases in goods and services on order related to expanded levels of effort in the weapons, reactor development, and physical research programs; (2) an increase related to procurement of equipment under the physical research program; (3) increases in balances related to the cooperative arrange-

ments program; and (4) decreases in balances related to procurement of Canadian uranium concentrates.

14. *Revenues applied.*—This program includes income from sale and lease of products and from services rendered, revenues from communities, and other miscellaneous income items. These revenues are applied against Atomic Energy Commission appropriation requirements. Revenues are estimated at \$26.7 million for fiscal year 1963, compared to an estimate of \$31.5 million for fiscal year 1962. The lower estimate in fiscal year 1963 is due principally to an estimated decrease in sales of various products and reduced levels of services partially offset by increased revenue from charges for SS material consumed and charges for separation of irradiated SS materials. Revenues for fiscal year 1961 were \$29.5 million.

#### U.S. ATOMIC ENERGY COMMISSION

##### JUSTIFICATION FOR PROPOSED LANGUAGE CHANGES—OPERATING EXPENSES

Proposed changes in language are indicated as follows: Language enclosed in brackets [ ] indicates proposed deletions; language italicized indicates proposed insertions.

1. "purchase (not to exceed [four hundred and thirty-two] *seven hundred and forty*, of which [three hundred and fourteen] *four hundred and ten* are for replacement only) and hire of passenger motor vehicles".

This change provides for authorization of the procurement in fiscal year 1963 of 740 passenger motor vehicles of which 410 are required for replacement of older vehicles and 330 would be additions to the fleet.

The operation of the General Services Administration interagency motor pool at Livermore, Calif., is to be terminated and 170 passenger vehicles are to be transferred to AEC. Sixty-five of these vehicles, representing the return of vehicles AEC furnished GSA when the motor pool was started in 1957, will be transferred without cost to AEC. The acquisition of the remaining 105 passenger vehicles from GSA requires congressional approval under 5 U.S.C. 78 (e). These 105 vehicles are included in the 330 vehicles to be added to the fleet.

Apart from those at Livermore, the additional vehicles requested include 222 automobiles and 3 station wagons. Major requirements are 200 automobiles for the Nevada Test Site to offset a like number of commercial rentals in view of the continuing program at this location, 8 automobiles for the Atomic Bomb Casualty Commission to be substituted for 4-wheel-drive truck-type vehicles used for passenger and patient transportation, 10 automobiles for activities at the National Reactor Testing Station in Idaho, and 4 automobiles and 3 station wagons for Brookhaven National Laboratory.

All vehicles to be replaced will meet or exceed the GSA replacement standards.

Contractors are assigned passenger motor vehicles as Government-furnished equipment and operate them in carrying out the Commission's program. The passenger vehicle fleet will number 2,496 at the end of fiscal year 1963.

2. "[~~\$2,352,001,000~~] \$2,888,588,000, and any moneys (except sums received from disposal of property under the Atomic Energy Community Act of 1955 (42 U.S.C. 2301)) received by the Commission, notwithstanding the provisions of section 3617 of the Revised Statutes (31 U.S.C. 484), to remain available until expended."

To reflect the fiscal year 1963 appropriation amount.

##### JUSTIFICATION FOR PROPOSED LANGUAGE CHANGES—GENERAL PROVISIONS

The proposed change in the language for the administrative provisions is described below. Language enclosed in brackets [ ] indicates proposed deletions; language italicized indicates proposed insertions.

1. "Any appropriation available under this or any other Act to the Atomic Energy Commission may initially be used subject to limitations in this Act during the fiscal year [1962] *1963* to finance the procurement of materials, services, or other costs which are a part of work or activities for which funds have been provided in any other appropriation available to the Commission: \* \* \*".

This change makes the provision applicable to fiscal year 1963.

2. "Not to exceed 5 per centum of appropriations made available for the fiscal year [1962] *1963* for 'Operating expenses' and 'Plant acquisition and construction' may be transferred between such appropriations, but neither such appropriation, except as otherwise provided herein, shall be increased by more than

5 per centum by any such transfers, and any such transfers shall be reported promptly to the Appropriations Committees of the House and Senate" \* \* \*. This change makes the provision applicable to fiscal year 1963.

U.S. ATOMIC ENERGY COMMISSION—FISCAL YEAR 1963 BUDGET ESTIMATES

GENERAL STATEMENT FOR PLANT ACQUISITION AND CONSTRUCTION

Summary of requirements for fiscal year 1963

The budget estimates for the appropriation "Plant acquisition and construction" for the fiscal year 1963 provide for estimated obligations of \$359,845,000 to be funded by a new appropriation of \$332,345,000 and by utilization of an unobligated balance of \$27,500,000 estimated to be available at the close of fiscal year 1962. Of the estimated total obligations, \$201.7 million is requested for projects previously authorized, while the balance, \$158.1 million, is required for projects for which initial authorization is being requested in the 1963 authorization bill.

A summarization of estimated fiscal year 1963 obligations by program follows:

	Estimated fiscal year 1963 obligations		
	Funding for projects previously authorized <sup>1</sup>	Funding for projects included in the 1963 authorization act	Total
Raw materials.....	0	\$40,000	\$40,000
Special nuclear materials.....	\$52,000,000	33,605,000	85,605,000
Weapons.....	7,500,000	49,085,000	56,585,000
Reactor development.....	26,950,000	51,000,000	77,950,000
Physical research.....	112,000,000	20,200,000	132,200,000
Biology and medicine.....	3,280,000	1,530,000	4,810,000
Training, education, and information.....	0	225,000	225,000
Isotopes development.....	0	390,000	390,000
Community.....	0	1,940,000	1,940,000
Administrative.....	0	100,000	100,000
Total obligations.....	201,730,000	158,115,000	359,845,000
Less unobligated balance brought forward.....			27,500,000
Appropriation.....			332,345,000

<sup>1</sup> Includes funds on previously authorized projects for which amended authorization is requested in the 1963 authorization bill.

Summary of obligations

The following table summarizes the total obligations for each of the construction programs for fiscal year 1961, fiscal year 1962, and fiscal year 1963. The detailed justifications, beginning on page 420 present the programs in the same order as they appear on this summary table.

Summary of obligations by program

	Actual, fiscal year 1961	Estimate, fiscal year 1962	Estimate, fiscal year 1963
Raw materials.....	\$12,448	\$61,000	\$40,000
Special nuclear materials.....	76,262,323	47,440,000	85,605,000
Weapons.....	25,375,646	30,794,000	56,585,000
Reactor development.....	84,767,131	165,701,769	77,950,000
Physical research.....	42,588,021	78,343,000	132,200,000
Biology and medicine.....	4,784,411	3,623,000	4,810,000
Training, education, and information.....	51,884	411,000	225,000
Isotopes development.....	1,293,705	171,000	390,000
Community.....	1,532,056	4,241,000	1,940,000
Administrative.....	364,333	200,000	100,000
Total obligations.....	237,031,958	330,965,769	359,845,000

*Financing of obligations*

The financing of the estimated total obligations of \$359,845,000 proposed in the budget estimates for fiscal year 1963, together with comparable data for fiscal years 1961 and 1962, is summarized in the following table:

	Actual, fiscal year 1961	Estimate, fiscal year 1962	Estimate, fiscal year 1963
<b>Funds available:</b>			
Unobligated balance at beginning of year.....	\$182,830,727	\$160,807,769	\$27,500,000
Recovery of prior-year obligations.....	4,459,000	2,318,000	0
Appropriation.....	212,750,000	195,360,000	332,345,000
Transfer from "Research, development, test and evaluation, Air Force" (74 Stat. 751).....	6,300,000	0	0
Transfer to "Operating expenses, Atomic Energy Commission" (74 Stat. 752).....	-5,000,000	0	0
Transfer to "Other procurement, Navy" (74 Stat. 752).....	-3,500,000	0	0
Net amount available for obligations.....	397,839,727	358,485,769	359,845,000
Unobligated balance at end of year.....	160,807,769	27,500,000	0
Total, obligations.....	237,031,958	330,985,769	359,845,000

*Expenditures for plant acquisition and construction*

Expenditures for plant acquisition and construction for fiscal year 1963 are estimated to be \$290 million, an increase of \$10 million over the estimate of \$280 million for fiscal year 1962. Actual expenditures in fiscal year 1961 totaled \$299,707,258. Unexpended balances are expected to decrease from \$553,718,139 at the beginning of fiscal year 1961 to an estimated \$422,265,881 at the end of fiscal year 1963 as shown in the following table:

	Actual, fiscal year 1961	Estimate, fiscal year 1962	Estimate, fiscal year 1963
Unexpended balance, beginning of year.....	\$553,718,139	\$464,560,881	\$379,920,881
Appropriation.....	212,750,000	195,360,000	332,345,000
Transfer from "Research, development, test and evaluation, Air Force" (74 Stat. 751).....	6,300,000	0	0
Transfer to "Operating expenses, Atomic Energy Commission" (74 Stat. 752).....	-5,000,000	0	0
Transfer to "Other procurement, Navy" (74 Stat. 752).....	-3,500,000	0	0
Total funds available.....	764,268,139	659,920,881	712,265,881
Less: Expenditures.....	299,707,258	280,000,000	290,000,000
Unexpended balance, end of year.....	464,560,881	379,920,881	422,265,881

*Highlights of construction programs*

As shown in the table on page 412, estimates are presented on an obligation basis for construction requirements for each of the AEC's functional programs. The highlights of the estimates for new projects and previously authorized projects for which appropriations are required in fiscal year 1963 are as follows:

1. *Raw materials.*—Obligations for raw materials facilities in fiscal year 1963 are estimated at \$40,000 to provide for minor modifications and improvements to existing plant or installations of the Grand Junction, Colo., office.

2. *Special nuclear materials.*—Obligations for special nuclear materials facilities in fiscal year 1963 are estimated at \$85.6 million and will provide \$33.6 million for new projects proposed for authorization in fiscal year 1963, \$9 million for increased funding of previously authorized reactor confinement work at Savannah River for which an increased authorization to \$12 million is being requested and \$43 million for increased costs for the new production reactor at Hanford (now estimated at \$195.2 million). The \$33.6 million proposed for new projects includes \$9.7 million for radioactive waste disposal facilities at Savannah River and Hanford, \$7.4 million for projects to improve the health, safety, and efficiency of operations, \$5 million for modifications to production and supporting installations, and \$11.5 million for general plant projects.

3. *Weapons.*—Obligations for weapons facilities in fiscal year 1963 are estimated at \$56.6 million to provide \$49.1 million for new projects proposed for authorization in fiscal year 1963, including \$29.1 million for additional production, development, and supporting facilities, \$10 million for improvement of U.S. Highway 95 between Las Vegas, Nev., and the Nevada test site, and \$10 million for general plant projects; and increased funding of \$7.5 million for a previously authorized project for which an increase in authorization is being requested.

4. *Reactor development.*—Obligations for reactor development facilities in fiscal year 1963 are estimated at \$78 million which will provide \$51 million for new projects to be authorized and \$27 million for funding on previously authorized projects. The new projects provide \$20 million for an organic power and heat industrial reactor; \$10 million for research and development test plants for Project ROVER; \$9 million for housing of the lithium cooled reactor experiment; \$5 million for modifications to reactors; \$1.4 million for modification and additions to CANEL facilities at Middletown, Conn.; \$1.5 million for a cafeteria at Argonne National Laboratory, and \$8.1 million for general plant projects. The funding on previously authorized projects provides \$13.5 million for the advanced test reactor (on which total cost is increased from \$40 million to \$47 million); \$11 million for the flexible experimental gas-cooled reactor (on which total cost is increased from \$40 million to \$51 million); and \$2.5 million for modifications to the sodium graphite reactor experiment for increased operating performance.

5. *Physical research.*—Obligations for physical research facilities in fiscal year 1963 are estimated at \$132.2 million, consisting of \$20.2 million for new projects to be authorized including \$5 million for a building addition for physics and mathematics, \$2.5 million for an inorganic materials laboratory, \$2.3 million for a mathematics and computer building and \$3.4 million for general plant projects; \$7.5 million for a transuranium processing plant for which increased authorization is being requested in fiscal year 1963; and \$104.5 million for additional funding on previously authorized projects including \$95 million for a linear electron accelerator.

6. *Biology and medicine.*—Obligations for biology and medicine facilities in fiscal year 1963 are estimated at \$4.8 million, consisting of \$1.5 million for new projects to be authorized including \$0.9 million for support of biomedical research projects in atomic energy and \$0.6 million for general plant projects; \$2.8 million for a controlled environment laboratory and an animal bioradiological laboratory for which increased authorization is being requested in fiscal year 1963; and \$0.5 million to complete the funding on the laboratory for mixed fission product inhalation studies authorized in fiscal year 1962.

7. *Training, education, and information.*—Obligations for training, education, and information facilities in fiscal year 1963 are estimated at \$225,000 to provide for general plant construction at the Nuclear Training Center at Puerto Rico.

8. *Isotopes development.*—Obligations for isotopes development facilities in fiscal year 1963 are estimated at \$390,000 for an isotopes technology laboratory.

9. *Community.*—Obligations for community facilities in fiscal year 1963 are estimated at \$1.9 million to provide for the following at Los Alamos: \$0.6 million for an additional elementary school; \$0.7 million for real estate development and a new water well; and \$0.6 million for general plant projects.

10. *Administrative.*—Obligations for administrative facilities in fiscal year 1963 are estimated at \$100,000 for general plant projects at headquarters.

#### U.S. ATOMIC ENERGY COMMISSION

##### EXPLANATION OF PROPOSED LANGUAGE CHANGES—PLANT ACQUISITION AND CONSTRUCTION

Proposed changes in language are indicated as follows: Language enclosed in brackets [ ] indicates proposed deletions, and language italicized indicates proposed insertion of new language.

1. "[~~\$195,360,000~~] \$332,345,000, to remain available until expended".

To delete the amount appropriated in fiscal year 1962 and to insert the amount of the fiscal year 1963 appropriation request.

2. "Provided, That not to exceed \$10,000,000 of the funds herein provided may be transferred to the Bureau of Public Roads, Department of Commerce, for carrying out improvements on United States Highway 95, Nevada as authorized in the Commission's 1963 authorization Act".

To permit the Commission to transfer not to exceed \$10 million to the Bureau of Public Roads, Department of Commerce, to be used for improvement of U.S. Highway 95 between Las Vegas, Nev., and the Nevada test site in accordance with the authorization in the Commission's proposed 1963 authorization act.

#### GENERAL STATEMENT

Dr. SEABORG. I am pleased to appear before your committee to discuss with you the programs of the Atomic Energy Commission and the appropriations for the conduct of these programs which we are requesting for the fiscal year 1963.

#### APPROPRIATION REQUEST

As you know, the House, on August 16, passed the public works appropriation bill which includes the estimates for the AEC. The House bill provides appropriations of \$2,860,974,000 for operating expenses and \$261,845,000 for plant acquisition and construction. These amounts represent reductions from the estimates included in the President's budget of \$27,614,000 for operating expenses and \$70,500,000 for plant acquisition and construction.

In our letter to Senator Hayden of August 27, 1962, we transmitted an analysis of the reductions made by the House and indicated those reductions for which the Commission is requesting that funds be restored in the Senate.

However, at this point, I would like to outline briefly the appropriations being requested for the major programs of the Commission. I will use the amounts for these programs included in the President's budget, even though in some cases, you understand, the House bill would change these amounts.

#### RAW-MATERIALS PROGRAM

The \$500.6 million requested in the estimates for the raw materials program continues the downward trend in this program which we have experienced for the past 3 years. Our procurement of uranium concentrates in 1963 will aggregate 28,400 tons of which 17,300 tons, or 61 percent, will be obtained from domestic producers.

Senator HILL. Will it disturb you if I ask you a question there, or would you like to have questions later?

Dr. SEABORG. As you wish.

#### SOURCES OF SUPPLY OF URANIUM

Senator HILL. I note there you are going to get 61 percent of your uranium from domestic producers. What about the other materials you are going to buy?

Dr. SEABORG. The balance would be from foreign producers, on the basis of commitments that were made a good many years ago.

Senator HILL. Where will most of those materials come from?

Mr. LUEDECKE. From Canada and South Africa.

Dr. SEABORG. From Canada, and from South Africa, and these are being closed out.

Senator HILL. When you say these, you mean the ones from both Canada and South Africa?

Dr. SEABORG. Both; yes.

## CLOSEOUT OF FOREIGN URANIUM PURCHASES

Senator HILL. Why are they being closed out?

Dr. SEABORG. Because we have as much uranium as we need, and we have a domestic uranium industry with a capacity which exceeds our needs, and so we are going in the direction of placing the maximum amount of our business with the domestic industry.

Senator PASTORE. Isn't it a fact that we entered into these commitments with these foreign governments at a time when we thought that the domestic supply would be inadequate for our needs?

Dr. SEABORG. Exactly.

Senator PASTORE. And since that time the situation has changed?

Dr. SEABORG. That is right.

Senator PASTORE. And we do not need any foreign importations now, but we have this commitment, and we are easing it off?

Dr. SEABORG. That is right. We made these long-term commitments at a time when the domestic supply seemed to be inadequate, and now these commitments must be met. Our domestic producers and suppliers can now more than meet our needs, and, in fact, the problem is one of keeping them in business in view of our prospective needs for the next few years.

Senator PASTORE. The next relative question, I think, would be, Dr. Seaborg, when do we expect this to be completely terminated, these importations of the purchases from foreign governments?

Dr. SEABORG. At the end of 1966.

Mr. LUEDECKE. At the end of calendar 1966.

Senator PASTORE. I see.

## DOMESTIC SUPPLY OF URANIUM

Senator HILL. Let me ask this: Did we find we had more uranium here within our own United States than we thought we had?

Dr. SEABORG. That is right; we did.

Senator HILL. I see, when we estimated at the time—

Dr. SEABORG. At the time those commitments were entered into we estimated we would need the foreign uranium. In the meantime we have found our domestic producers of uranium could deliver more than we had estimated.

Dr. WILSON. The fact that we found so much in this country was due largely to the incentive program which we adopted to encourage domestic exploration, and that resulted in finding a great deal more than we thought was possible.

Senator PASTORE. I think the wrong impression should not be left upon the record. We did the wise thing at the time we did it, because it was for national security of this country and we needed to get into a long-term commitment.

Fortunately enough, of course, the evolution was such that we were producing more on the domestic level because of the incentives that were given. Now, we find we have a commitment that we are trying to extract ourselves from, but, after all, we do have an obligation which we are a party to and must meet. Isn't that correct, gentlemen?

Dr. SEABORG. That is right.

Dr. WILSON. Furthermore, the Canadian program under the original terms would have expired at the end of 1962. The fact that it now runs to the end of 1966 is due to the fact that they stretched out their deliveries under contract at our request to ease the amount that we would have to hold.

Senator HILL. Now, you speak of incentive. What was our incentive to our domestic producers?

Dr. SEABORG. We made a long-term commitment to purchase domestic uranium at an announced price. I think it was a 10-year commitment. Is that right, Mr. General Manager?

Mr. LUEDECKE. In general; yes, sir.

Dr. WILSON. The 10-year purchase program greatly encouraged exploration.

#### LOCATIONS OF DOMESTIC URANIUM

Senator HILL. Where do we find most of this uranium in the United States?

Dr. WILSON. In the Western States.

Senator HILL. That is where I thought.

When you said the Western States, what States particularly?

Dr. WILSON. Colorado—

Senator HILL. What belt do you have in mind?

Dr. WILSON. The Rocky Mountain area.

Dr. SEABORG. The area includes Colorado, New Mexico, Montana, Utah, and Wyoming.

Senator HILL. In that Rocky Mountain belt, so to speak.

Any other questions?

Senator PASTORE. No.

Senator HILL. Proceed.

#### SPECIAL NUCLEAR MATERIALS

Dr. SEABORG. The estimates include \$537.3 million for this program to continue production and processing of source material, special nuclear material, and other special materials required in AEC programs. The major AEC facilities operated under this program include the large production reactors at Hanford and Savannah River used to make plutonium and tritium, and the gaseous diffusion cascades used for the production of enriched uranium. These operations provide the active materials used in the production of nuclear weapons and also the fuel for the Nation's military and civilian reactors. Actually, the production capability reflected by this estimate contributes, in large part, to this country's leadership in military and civilian nuclear endeavors.

#### WEAPONS

Weapons production, development, and testing is estimated to require \$797 million in fiscal year 1963. This amount includes the cost of producing atomic weapons, exclusive of the cost of the nuclear materials, which will be delivered to stockpile in the numbers and types requested by the Department of Defense. It will permit the continued operation of the Los Alamos, Livermore, and Sandia Weapons Laboratories engaged in the development of new weapons types and sizes to meet the strategic and tactical needs of the DOD. It will also permit the continuation of a program of nuclear weapons testing which was resumed in fiscal year 1962.

## COOPERATION WITH DEPARTMENT OF DEFENSE

Senator HILL. In speaking about your weapons, you have the closest understanding with the Department of Defense?

Dr. SEABORG. Yes, sir.

Senator HILL. They are the ones who would use the weapons if we have to use them?

Dr. SEABORG. Yes. We have a very close cooperation and understanding with the Department of Defense.

Senator HILL. Do you want to add something to that?

Dr. SEABORG. The cooperation extends to all levels.

Senator HILL. How is that?

Mr. LUEDECKE. To all levels of the weapons program. Down through the research and development, and the production, and storage.

Senator HILL. In other words, not only nuclear material for existing weapons, but where the Defense Department perhaps is carrying on certain experiments, certain developments looking to new weapons, you are in close cooperation and collaboration with them in connection with these new or prospective hoped-for weapons; is that right?

Dr. SEABORG. That is right.

## REACTOR DEVELOPMENT

Dr. SEABORG. The estimates for the program of reactor development aggregate \$503.7 million, or approximately \$74 million over our 1962 operating costs. Over 40 percent of this growth, that is about \$31 million, occurs in Project Rover, the program for developing reactors for rocket propulsion. Undeniably, there are many space missions which, if they are to be attained, can be attained only through the successful development of nuclear propulsion systems. The Commission is indeed gratified that it has the resources and skills available which can be applied toward meeting national objectives in the space program.

The second largest growth in the reactor development program takes place in our effort to develop satellite and compact power sources, which is also largely space oriented. This effort, designated as the SNAP program, increases by some \$22.4 million in 1963 over the 1962 level of \$54.1 million. It is under the SNAP program that we are undertaking the development of power sources which will be used in the communication satellite network. The balance of the reactor development program encompasses development of stationary and portable electric power reactors for civilian and military purposes, development of propulsion reactors for missiles and for naval and merchant ship applications, and research to advance general reactor technology and solve safety problems associated with nuclear operations. These efforts will be supported at budget levels designed to produce effective results both in the near and longer term.

## PROGRESS IN NUCLEAR POWER PROGRAM

Senator HILL. Mr. Chairman, what progress are you making with your reactors for what we might term your peaceful purposes, for electric power?

Dr. SEABORG. I think that we are making very good progress, Mr. Chairman.

Dr. WILSON. We are really ahead of our schedule in making nuclear power competitive in high-cost areas by 1968. This was our stated 10-year objective, and we are going to beat that.

Senator HILL. You think you will beat your goal of 1968?

Dr. WILSON. Yes.

Senator HILL. To make reactors to produce power that will be competitive in your, as you say, high-cost power areas?

Dr. WILSON. Yes, in high-cost fuel areas. That is only in large units. It still isn't quite competitive in small units, but where you can put in a large plant on a tieline we are on the threshold of being competitive now.

Senator HILL. That is true with the big steamplants. The big steamplants are more economical to operate than the smaller steamplants, is that not right?

Dr. WILSON. Yes; but it is even more true of nuclear plants.

Senator HILL. All right.

Go ahead, and proceed, Mr. Chairman.

#### PHYSICAL RESEARCH

Dr. SEABORG. The Commission's budget includes \$216 million for the physical research program in 1963. Of this amount, almost 40 percent, or about \$81 million, is programed for high-energy physics research. Our efforts in this so vital area of research will be materially assisted by the recent startup of the Cambridge electron accelerator and the Princeton-Penn accelerator which is in process of coming "on-line." It is expected that construction of the zero gradient synchrotron at Argonne National Laboratory will approach the final stages of completion by the end of this fiscal year. I am also pleased to report that within the past few months we have broken ground and started construction of the Stanford linear accelerator.

#### HIGH ENERGY PHYSICS

While the high energy physics program, in a sense, dominates our research efforts in the physical sciences, the Commission is keenly sensitive to the need of maintaining a balance in other fields of physical research. To this end, our programs in physics, chemistry, and materials will benefit greatly from the recent startup of the 88-inch cyclotron at the Lawrence Radiation Laboratory and the completion of construction, which is scheduled toward the close of this fiscal year, of the high flux beam reactor at the Brookhaven National Laboratory. These programs will also gain an important research tool with the completion of the Ames Research reactor, scheduled for about April of 1963. Further, it is necessary if we are to revitalize our nuclear, atomic, and classical physics programs that we make newly developed high-performance, low-energy accelerators available to highly qualified research groups over the next several years.

Senator HILL. Might I interrupt you there for 1 minute?

Our good friend here, Senator Pastore, is a member of the Joint Committee on Atomic Energy, as you gentlemen well know, and he

understands all of this. He understands the language, the vocabulary, and the whole thing. You and I are not on that Joint Committee.

Senator HRUSKA. No, sir.

Senator HILL. I am not on that, either.

When you speak of high-energy physics research, what do you have in mind?

#### HIGH ENERGY PHYSICS PROGRAM

Dr. SEABORG. I have in mind the research utilizing the bombarding particles generated in accelerators to the point where they have energies of 1 billion electron volts or more. That would be roughly my definition.

These particles are accelerated to high energies and strike targets to make a number of interesting elementary particles, mesons, hyperons—strange particles, if you will—that are being studied in the laboratories having high-energy accelerators, and by our people, and by visiting scientists who come to these laboratories to carry on the work.

The study of these fundamental particles, produced in connection with the nucleus, is felt to possibly hold the key to the structure of the nucleus and to the strong forces that hold the nucleus together.

Dr. WILSON. We have a new and very expensive tool which throws a lot of light on this.

Senator PASTORE. Now, my good friend from Alabama, you have not only heard from the Chairman of the Atomic Energy Commission, but you have heard from a Nobel Prize winner.

Senator HILL. I must say this: We feel very proud to have him here with us, very proud.

Dr. SEABORG. I could expound on high-energy physics at length, but you might not get on with the rest of your hearing.

Senator HILL. I said our friend here on my right from Rhode Island was a member of the joint committee, and therefore he understands all of this. I might have added that he is so smart he would have understood it, anyway. [Laughter.]

Senator PASTORE. You notice I am very discreetly silent.

Senator HILL. Of course, silence means consent. That is, he agrees.

Dr. SEABORG. I think it might be smart for us to say that we go along with that. [Laughter.]

Senator HILL. It would be. That is right.

Senator Hruska, as we go along Senator Pastore and I have not hesitated to ask any questions. If you have some, please state them.

Proceed, Mr. Chairman.

Senator HRUSKA. If I don't ask any questions, Mr. Chairman, it is to be assumed I fully understand it. [Laughter.]

Senator HILL. All right.

#### OTHER RESEARCH PROGRAMS

Dr. SEABORG. However, I would like to interpolate here that, although we have stopped to discuss the high-energy nuclear physics program, a program that we consider to be very important, we are very proud of our program in the other areas of physical research, including the low-energy physics program, and the chemistry and the materials program. We think we are carrying on a very outstand-

ing program in our laboratories, and in the universities where we are supporting this research.

#### CONTROLLED THERMONUCLEAR PROJECT

Our program of research in controlled thermonuclear reactions continues essentially at experience levels. This effort is now generally recognized as being a long-term one which, while directed toward the harnessing of the tremendous energies released in controlled thermonuclear reactions, is also, as a byproduct, you might say, greatly increasing our knowledge of plasma physics. We are hopeful, for example, that the model C Stellarator, which is essentially complete, at the Forrestal Research Center, will make a major contribution in the solution of some of the many problems attendant upon reaching the objectives of this research program. We fully expect that equally significant achievements will continue to be made by our groups at Berkeley, Livermore, Los Alamos, and Oak Ridge.

#### BIOLOGY AND MEDICINE

We propose to spend about \$71.4 million in 1963 for research in the medical and biological sciences. The resumption of full-scale weapons testing by both the Soviet Union and ourselves has required an intensification of our efforts on radiation and fallout research. The committee may be interested in experiments recently conducted at the Nevada Test Site which involved mounting a fast burst reactor on a 1,500-foot tower—almost three times as high as the Washington Monument—in an effort to duplicate some of the radiation conditions experienced from the nuclear detonations in World War II at Nagasaki and Hiroshima. We are presently in process of analyzing the results of this experiment. Our proposed 1963 program also entails increased effort in oceanographic research to learn more of the effects of radiation on marine life and marine biology.

Senator PASTORE. May I ask a question?

Senator HILL. Go ahead.

#### DUPLICATION IN RESEARCH ON FALLOUT

Senator PASTORE. One of the matters that has concerned us considerably, Doctor, has been the question of duplication with regard to this research in radiation and fallout, particularly what we are doing in the AEC and what the Public Health Services are doing as well. Can you illuminate the record at all on this question of duplication?

Are we working in sufficient liaison and cohesion so that we are not duplicating and wasting money?

Dr. SEABORG. Yes, we are working in close liaison.

Up until this point, the Atomic Energy Commission has been carrying on the more basic research, the fundamental research, in biology related to the effects of radiation.

Senator HILL. But you are working in close collaboration and cooperating with the U.S. Public Health Service?

Dr. SEABORG. Yes, we are.

Senator HILL. You see, the Public Health Service really has the primary and basic responsibility in a sense for the health of the people, that is, so far as the Federal Government is concerned, and then, in

addition thereto, they have a relationship with the State health departments that has been built up through many years in their work in tuberculosis and venereal diseases and cancer and many other diseases, so they are in a position in a sense to marshal your health department, and your local municipal and county health units, and all of these agencies that you may need. But you say now you are working in the closest cooperation with them.

Dr. SEABORG. Yes, we are.

Senator HILL. And you find that cooperation fruitful and that there is a good relationship there between you?

Dr. SEABORG. Yes, I would rate it as such.

Senator HILL. You would rate it as such?

Dr. SEABORG. Yes, sir.

#### FEDERAL RADIATION COUNCIL

Senator PASTORE. You are a member of the Radiation Council, are you not, Doctor?

Dr. SEABORG. Yes.

Senator PASTORE. Could you give us a thumbnail explanation of what its function is and what it supervises and what advice it gives?

Dr. SEABORG. Well, it is a coordinating body that actually has put most of its time, since my experience with it, on questions connected with fallout and the limits, the safe limits, of exposure due to fallout. It is advisory to the President through its Chairman, who is the Secretary of the Department of Health, Education, and Welfare.

Senator PASTORE. Do all the departments that are engaged in this research in this particular field have to report to you?

Dr. SEABORG. To that committee?

Senator PASTORE. To that Council?

Dr. SEABORG. No, I wouldn't say those agencies who were doing research in the field, such as this fundamental research, report to the Council.

Senator PASTORE. How about the health services?

Dr. SEABORG. Do you mean the institutes, for example, and their fundamental research? I don't think it would be accurate to say that they report to the Federal Radiation Council in these areas.

It isn't really, at this time anyway, a body for coordinating the results of this fundamental research. That is handled more directly between the agencies involved; after all, there are only a few and also it is done in the natural way by the publication of results of research in the scientific journals. In some cases the Federal Council for Sciences and Technology, of which I and the other agency heads responsible for research are members, coordinates research which is of a Government-wide character.

Senator PASTORE. You have made the blank statement, Doctor, that there is no duplication. How do you document that statement?

Dr. SEABORG. I don't mean to say there is no duplication in basic or fundamental research in biological sciences. I do think, however, we have built-in mechanisms in science through the method of publication, which in large measure prevent duplication. It would be to the disadvantage of a scientist to work on something that someone else has discovered and published. I think this is the best insurance we have against duplication in fundamental research.

Senator PASTORE. But you don't have any overall watchdog agency of Government that coordinates this entire effort, the entire panorama of our Government?

Dr. SEABORG. In the fundamental research area?

Senator PASTORE. No; I am not talking about that, but I am talking about these activities in regard to radiation.

Dr. SEABORG. The more practical activities with regard to radiation are coordinated through the Federal Radiation Council.

Senator PASTORE. They are, that is what I was getting at.

Dr. SEABORG. Yes.

Senator HILL. That Council is the Council of which Dr. Russell Morgan of Johns Hopkins—

Dr. SEABORG. He is not a member of that Council. He is chairman of an advisory committee.

Senator HILL. To the Surgeon General. Is he Chairman of the Advisory Committee to the Surgeon General?

Dr. SEABORG. Yes, sir.

Senator HILL. Could you supply us the names of the members?

Dr. SEABORG. The members of the Federal Radiation Council?

Yes; we can.

(The information referred to follows:)

#### MEMBERSHIP OF FEDERAL RADIATION COUNCIL

NOTE.—The membership of the Council as of August 31, 1962, was as follows:

Anthony J. Celebrezze, Secretary, Department of Health, Education, and Welfare, Chairman; Arthur J. Goldberg, Secretary of Labor; Glenn T. Seaborg, Chairman, Atomic Energy Commission; Luther H. Hodges, Secretary of Commerce; Orville L. Freeman, Secretary of Agriculture; Roswell L. Gilpatric, Deputy Secretary of Defense.

In addition, the Special Assistant to the President for Science and Technology, Dr. Jerome B. Wiesner, or his designee, is authorized to attend meetings, participate in the deliberations of, and to advise the Council.

#### FALLOUT FROM TESTS

Senator HILL. Now, in connection with the recent nuclear tests by the Russians, there has been certain fallout. Some of that fallout has been in Wisconsin and in that area, and as we know Wisconsin is a great dairy State that produces a lot of milk up there. The question comes now about warning those people, if they need to be warned, or advising those people, telling them just what is the effect of that fallout, whether you are getting nearer a danger point or you are not getting to the danger point, and if you are getting to a danger point, what should be done.

Dr. SEABORG. That function has been under the Public Health Service.

#### COOPERATION WITH PUBLIC HEALTH SERVICE

Senator HILL. Well, now, do you cooperate with the Public Health Service? In other words, you may have some information they would not have.

Dr. SEABORG. Yes; we do.

Senator HILL. You might be very, very helpful in giving them such information and service in this matter where they could best judge as to what that fallout is and the nature of the fallout and how dangerous or otherwise that might be; is that right?

Dr. SEABORG. That is right, and that is an example of where the coordination is through the Federal Radiation Council.

Senator HILL. The coordination comes through the Federal Radiation Council?

Dr. SEABORG. Yes, in this case.

Dr. WILSON. All the methods of determining and analyzing radiation effects from different sources have been worked out by our Commission, but the Public Health Service makes the surveys of milk and things like that, based on those methods.

Senator HILL. Based on your methods?

Dr. WILSON. Yes.

Senator HILL. And if they need further information of any kind or anything that you think they should have, but do not have, then they come to you; is that right?

Dr. WILSON. That is right.

Senator HILL. It would be their business to advise the people of Wisconsin, very likely, through the State Health Department of Wisconsin?

Dr. WILSON. That is right.

Senator HILL. And the State health department, of course, has its contacts right on through the city and county health units, so you reach practically all the people; is that right?

Dr. WILSON. That is right.

Senator HILL. I think what is in Senator Pastore's mind, and in my mind, is that we want to make sure that insofar as possible the Federal Government is watching this fallout, and has accepted the responsibility.

Dr. SEABORG. Yes.

Senator HILL. And that it has an agency or agencies that are meeting this responsibility to alert, inform, and warn, if need be, our people, wherever they may be, whether they are in Wisconsin, Rhode Island, Alabama, Nebraska, wherever they may be.

Dr. SEABORG. Yes; I think you can be assured that the Government does have this capability and is exercising it.

Senator HILL. And the Government does have this capability and, more important, you think the Government is also meeting its responsibility?

Dr. SEABORG. Yes; it is meeting its responsibilities.

Senator HILL. All right; good.

Senator PASTORE. I wonder if the doctor can answer the question, in order to allay the fears on the part of a lot of people, I mean if he is in position to answer it, as to whether or not as a result of our recent tests, based on the status of them at the present time, we have reached a point that is injurious to the health of the American public?

Dr. SEABORG. In my opinion, we have not reached a state where the fallout from these tests is injurious to the health of the American public.

Dr. WILSON. We set some very low standards, much below the health hazard point, to guide our domestic industry, and particularly in building reactors and things like that.

Senator PASTORE. We haven't reached that point either?

Dr. WILSON. We are just about up to some of the very low points in certain very restricted areas, but it is not any hazard.

Senator PASTORE. There is no hazard, then, today, you say, in the United States anywhere from these fallouts?

Dr. WILSON. In our opinion.

Senator PASTORE. In your opinion no hazard anywhere in the United States from these fallouts?

Dr. WILSON. The answer is, "There is not in our opinion."

Now, of course, right near the Nevada test site there may be some restricted areas that are now barred, where this does not apply.

Senator PASTORE. We understand.

Senator HILL. Wherever there is any hazard, I judge from your answer to Senator Pastore, wherever there is any hazard as of now that is restricted area?

Dr. SEABORG. Yes.

Senator HILL. Like in the old days, you gentlemen don't remember, when we used to go on the rifle range. When I got ready to shoot they had a restricted area, because you didn't know where that bullet was going.

Senator PASTORE. At least they let you shoot. They wouldn't even let me shoot. [Laughter.]

Senator HILL. How about you, Senator Hruska?

Senator HRUSKA. Of course I came after that.

Senator HILL. Any other questions?

All right, Mr. Chairman.

#### TRAINING, EDUCATION, AND INFORMATION

Dr. SEABORG. I will now go to training, education, and information.

Our 1963 budget provides for the continuation of the activities designed to stimulate training in nuclear science and engineering, in order that we may be assured of the trained manpower so essential if we are to exploit the promise that atomic energy holds for our civilization. This stimulation is effected through grants of equipment to colleges and universities, the offering of courses and institutes in specialized fields of atomic energy, and by providing fellowships to students of promise that they may pursue their education at higher levels in the fields of nuclear engineering and science and in medicine and biology. It is also vital that the results of our research be disseminated throughout the scientific and industrial communities. To this end, the Commission will continue its activities in the support of technical publications and museums and exhibits. It is estimated that the cost of conducting these training and informational activities will total about \$15.2 million in 1963.

#### FELLOWSHIPS

Senator HILL. Mr. Chairman, how many of these, I suppose you call them fellowships, do you not, for these trainees—how many trainees do you expect to train this next fiscal year?

Dr. SEABORG. Well, this breaks down into a number of different areas, but I think Dr. Poor probably has those statistics with him.

Dr. POOR. The total figure, of course, is quite variable from year to year.

Senator HILL. I am thinking about now for 1963 for which we are making appropriations.

Dr. POOR. I see. The total estimate for AEC fellowships and institute participants is somewhere in the neighborhood of 1,100 people that would be in the stream.

The number of AEC fellows is in the neighborhood of about 280.

Senator HILL. How many will you be paying for, I say paying for, or will we be making a contribution to their education, this year?

Dr. POOR. We will be making some contribution to this larger number in the neighborhood of a thousand.

Senator HILL. About a thousand. That would be about the overall, about a thousand?

Dr. POOR. Yes.

Senator HILL. Let me ask you this, Doctor. How long a period of time would these traineeships be for on the average?

Dr. POOR. The majority of these are for relatively short periods, Senator Hill. The great bulk of these are high school and college science teachers who go through the 4- to 8-week seminars and institutes or the 4-week special training courses in nuclear science and the use of isotopes. The smaller number in the fellowship program are graduate students who are given assistance that will carry them through the postgraduate period in rather specialized areas of interest to the AEC, such as health, physics, nuclear engineering, and so forth. These fellowships are not automatically renewed, but each one judged on its own merits.

Senator HILL. I see.

All right, Mr. Chairman.

#### ISOTOPES DEVELOPMENT

Dr. SEABORG. While this program is relatively small—a little over \$7 million in 1963—as compared to the other programs undertaken by the Commission, the research and development that we are conducting under it, in my judgment, can lead to results which may have far-reaching consequences on this Nation's technology and economy. Our principal mission is developing new radioisotopes technology in the national interest, such as very sensitive means for measuring air pollution, for crime detection, and for more efficient exploration and management of water resources. While we have experienced the successful use of isotopic power sources at remote and underwater locations, a continuing, aggressive effort is required to insure its availability for powering lunar instruments, space satellites and military devices in remote locations and under the oceans.

#### FOOD IRRADIATION PROGRAM

Senator HRUSKA. Mr. Chairman, before that subject is passed over, is this the category in which there was some discussion in the House about the marine products development irradiator and two mobile irradiators for food preservation?

Dr. SEABORG. Yes; that comes under this part of our budget.

Senator HRUSKA. It comes under this item of \$7,462,000 as approved by the House, as I remember it. That was your request, and there was a reduction there of \$362,000 by the House. This is an item about which Senator Saltonstall had expressed some interest, and there was a discussion of the item in the House. At that time, the authorization bill was still in conference, maybe it still is, I don't know.

Senator PASTORE. It is going to come to conference, but these projects are in the bill and I don't think these projects are a subject of conference.

Senator HRUSKA. It is not a subject of conference in the authorizing legislation, as I understand it.

Senator PASTORE. That is right.

Senator HRUSKA. The Joint Committee has been favorably inclined toward the item.

Senator PASTORE. So is Mr. Cannon, who said the only reason they dropped it out was for the reason the authorization bill had not been passed as yet.

Senator HRUSKA. He had a different reason. He said it was un-budgeted.

Senator PASTORE. On page 15717 of the Congressional Record of August 16, he says,

We would have been glad to include items on which the gentleman is interested had they been authorized. I trust in the future the legislative bill can have earlier attention.

#### LETTER FROM JOINT COMMITTEE ON ATOMIC ENERGY

Now, the House passed the authorization bill, and we have passed it, too. It is true we are going into conference, but that item is not in conference. I have a letter here along the same lines, and I am glad you are bringing it up, Mr. Hruska, because I was going to bring it up at the end. This is addressed to Lister Hill, from Chet Holifield, the chairman of the Joint Committee on Atomic Energy and myself—I signed it, too—with reference to this item, as Project 63-J-2 in marine products development irradiator, \$600,000. I think that is the one that Mr. Saltonstall is interested in, together with Congressman Bates, and then there is project 63-J-3, two mobile irradiators, \$700,000. Two of them together come to a figure of \$1,300,000, is that correct?

Dr. SEABORG. Yes, that is all under the capital budget, not the operating budget.

Senator PASTORE. I know. But your operating budget would have to be raised a little bit, too?

Dr. WILSON. Not very much, because they won't be ready for operation in this budget year.

Senator PASTORE. Well, this letter says:

We respectfully request that your subcommittee increase the construction funds by \$1,300,000 and the operating fund by \$1,400,000 in order to provide the necessary support for these two projects.

You say that is not necessary.

Senator HRUSKA. The operating part is not necessary for fiscal year 1963?

Dr. SEABORG. It wouldn't require that much in fiscal year 1963.

#### AMOUNT REQUIRED FOR FOOD IRRADIATION

Senator PASTORE. About how much would it require, if we put it in? If we decided to put in these two projects, how much would we need to increase the operating budget? It is now \$516,000. You have \$516,000?

Mr. McCARTHY. As we went to the House our budget had \$300,000 for operating funds for food irradiation under the isotopes program. The House report says that \$516,000 shall be applied to the food irradiation program, so in our operating budget we have \$516,000 at the present time. We have nothing in the capital budget for the food program.

Senator PASTORE. How much would you need in the operating budget in the event we approve the increase for the machines in fiscal year 1963?

Dr. SEABORG. I think part of the confusion here, Senator Pastore, is that this is about what we asked for 1963 back at the time when the program also included these irradiators. You now probably couldn't get them operating in fiscal year 1963.

Senator PASTORE. Will you give me a figure? You have \$516,000 and this letter says bring it up to \$1,400,000, leaving a difference of \$884,000. Is that too big or too small, or just right? We need to be a little more precise.

Dr. SEABORG. Yes, sir; we will furnish it.

Senator PASTORE. I would like to get it precisely. If you can't give a precise figure now, please put it in the record.

Dr. SEABORG. I think we had better put it in the record.

Senator PASTORE. You should tell us what you actually can use, taking into account exactly what the situation is going to be.

(The information referred to follows:)

#### FOOD IRRADIATION PROGRAM

The transportable irradiators and the marine products development irradiator will require 12 to 18 months for design and construction. If funds were to be available for these projects in fiscal year 1963, the current laboratory research program should be increased during the year to assure full use of these facilities when they become available. Such research would entail accelerated efforts in such areas as preservation factors, total dose, and dose rate requirements, storageability conditions, packaging, dosimetry systems, wholesomeness, and simulated shipping requirements. The provision of an appropriate level of effort and a coordinated pursuit of the various program elements would require additional operating funds of \$800,000 in fiscal year 1963 under the isotopes development program category and \$200,000 under the biology and medicine program category. The following table summarizes the funding.

#### *Food irradiation program*

	Presently in budget	Additional amount	Total estimate
Isotopes development program.....	\$516,000	\$800,000	\$1,316,000
Biology and medicine program.....	200,000	200,000	400,000
Total.....	716,000	1,000,000	1,716,000

#### AMOUNT REQUIRED

Dr. SEABORG. I think the complexity is partly due to the fact that we are well into fiscal year 1963 now, and we can't be sure how soon those reactors could be operating. It wouldn't be the total figure that you have suggested but it would be some fraction of that, reduced, of course, by what is already in the budget.

Senator PASTORE. What I want the AEC to do is to calculate as best they can just about when these three reactors would be ready, and then extrapolate how much it would cost in the operating budget and put that in the record. It should be as modest as possible.

Please do that, because this is not an easy job when we go to conference.

Dr. SEABORG. We will do that.

Senator PASTORE. I mean try to be as accurate as you possibly can be, just a round figure won't do.

Dr. SEABORG. All right.

Mr. LUEDECKE. We will submit it right away.

Senator HILL. Any other questions?

Senator HRUSKA. No. That covers it very well.

#### LETTER FROM LOUISIANA STATE UNIVERSITY

Senator HILL. In that connection, I want to say that Senator Ellender, who is a member of this subcommittee, is very interested in this matter. Unfortunately, he had to be at another committee meeting this afternoon and could not be here. He let me have a copy of a letter he received, under date of February 14 last, from Dr. John A. Hunter, president of Louisiana State University, and I will put this letter in the record at this point in full, but I want to read two paragraphs because I think they sum up the situation we are confronted with.

Dr. Hunter says, in writing to Senator Ellender:

After many months of negotiations the AEC contract was initiated on January 12, 1962, and ironically, during that same week a news release stated "In a stunning setback to the AEC-managed civilian food irradiation program, the Budget Bureau has refused to clear any funds for the program beyond June 30." This equipment was purchased and installed with LSU funds in view of the possibilities that AEC sponsorship through research contracts could defray a portion of the operating costs.

Then Dr. Hunter continues:

Another point of interest is that this civilian food irradiation program is being curtailed at the same time that retail sales of irradiated food is being permitted in Canada and consumer distribution of irradiated potatoes is being allowed in Russia while no irradiated foods are consumed in the United States. It would seem as though competing nations will increase the technological gap in this area if the irradiation program is eliminated just as it is reaching full implementation.

You are going to give us those figures?

Dr. SEABORG. Yes, sir.

Senator HILL. Do you have any further comment to make on this letter?

Dr. SEABORG. No, sir.

Senator HILL. Unless there is some objection, we will put the letter in the record at this point, as well as the letter from the Joint Committee on Atomic Energy that has been referred to.

(The letters referred to follow :)

LOUISIANA STATE UNIVERSITY, AND  
AGRICULTURAL & MECHANICAL COLLEGE,  
Baton Rouge, February 14, 1962.

Senator ALLEN J. ELLENDER,  
Senate Office Building, Washington, D.C.

DEAR SENATOR ELLENDER: Louisiana State University is now organizing a laboratory which pursues academic and research programs in the many atomic energy application fields. Emphasis is placed on projects having economic significance to Louisiana agriculture, industry, medicine, and natural research development.

A major piece of equipment being installed in this laboratory is a cobalt 60 gamma irradiator valued at \$45,000. The first project using this equipment is being sponsored by the Atomic Energy Commission. This project has a goal to investigate the low-dose pasteurization of Louisiana shellfish. If this project is successful there is a large potential expansion and better quality product to be distributed from the Louisiana fishing industry.

After many months of negotiations the AEC contract was initiated on January 12, 1962, and, ironically, during that same week a news release stated "In a stunning setback to AEC-managed civilian food irradiation program the Budget Bureau has refused to clear any funds for the program beyond June 30." This equipment was purchased and installed with LSU funds in view of the possibilities that AEC sponsorship through research contracts could defray a portion of the operating costs.

Another point of interest is that this civilian food irradiation program is being curtailed at the same time that retail sales of irradiated food is being permitted in Canada and consumer distribution of irradiated potatoes is being allowed in Russia while no irradiated foods are consumed in the United States. It would seem as though competing nations will increase the technological gap in this area if the irradiation program is eliminated just as it is reaching full implementation.

Several other Louisiana products, e.g., strawberries and fruits, may have enhanced marketability by radiation treatments and lack of Atomic Energy Commission financial support will materially hamper these investigations.

It is believed you would be interested in the LSU Nuclear Science Center collaborations with the AEC Division of Isotopes Development and the potential gains that may be denied Louisiana industry and LSU if the AEC-managed civilian food irradiation program is abolished at this time.

Sincerely yours,

JOHN A. HUNTER, *President.*

CONGRESS OF THE UNITED STATES,  
JOINT COMMITTEE ON ATOMIC ENERGY,  
August 29, 1962.

HON. LISTER HILL,  
Chairman, Public Works Appropriations, Committee on Appropriations, U.S. Senate.

DEAR MR. CHAIRMAN: In connection with H.R. 12900, the public works appropriations bill for fiscal year 1963, we request that your subcommittee give consideration to two AEC programs especially recommended by the Joint Committee on Atomic Energy.

Based upon detailed hearings by the Subcommittee on Research, Development, and Radiation which specifically looked into and ascertained the scientific requirements and the hearings of the Subcommittee on Legislation, the Joint Committee added two projects to the AEC authorization bill for the coming fiscal year in order to provide necessary support for the AEC food irradiation program:

Project 63-j-2, marine products development irradiator, \$600,000;

Project 63-j-3, two mobile irradiators, \$700,000.

We respectfully request that your subcommittee increase the construction funds by \$1,300,000 and the operating funds by \$1,400,000 in order to provide the necessary support for these two projects, considered meritorious by the Joint Committee after careful and detailed hearings.

In its report on the authorization bill, the Joint Committee also recommended that funds be provided in order to encourage the start of two new reactors using the "design assistance" concept authorized by this year's authorization bill. The AEC has indicated that it has funds available for one such project, and we believe that an additional \$5,500,000 would provide the necessary funds for a second project. We therefore request that your subcommittee add \$5,500,000 to the operating funds for AEC.

With regard to the construction funds requested for the Stanford Linear Accelerator, we request that no cut be made in funds needed for obligations during fiscal year 1963.

We sincerely appreciate your consideration of these matters.

Sincerely yours,

CHET HOLIFIELD,  
*Chairman.*  
JOHN O. PASTORE,  
*Vice Chairman.*

Senator PASTORE. I am told by the staff, Mr. Hill, that our Joint Committee on Atomic Energy, at page 103 of the hearings on research and development of food irradiation, held on March 6 and 7, 1962, went into this matter very thoroughly and agrees with the contents of that letter.

Senator HILL. Good.

All right. You may proceed, Dr. Seaborg.

#### CIVILIAN APPLICATIONS OF NUCLEAR EXPLOSIVES

Dr. SEABORG. I was about to start on civilian applications of nuclear explosives.

I am pleased with the progress we are making in our program to demonstrate that nuclear explosives can play useful roles in scientific and other civilian pursuits. The Project Gnome detonation last December at Carlsbad, N. Mex., clearly indicates the feasibility of producing radioisotopes by this means. As a result, we are programming another detonation—Project Coach—to further develop this technique. In July we conducted an excavation experiment—Project Sedan—at the Nevada test site. While we are still analyzing the results of this experiment, I have little doubt but that nuclear explosives will become an important tool in major excavation projects. I am confident that the \$10 million we propose to spend in 1963, as well as past expenditures under this development program, will be returned manyfold when the use of nuclear detonations, for peaceful purposes becomes an accepted technique.

#### PROGRAM DIRECTION AND ADMINISTRATION

The foregoing summarizes the operating budget for the technical programs of the Commission. I would, at this point, like to say a few words on the budget estimate which covers the needs of the Commission to properly direct and administer these programs. In 1963 we are requesting about \$64 million for this purpose. This represents an increase of about \$3.5 million over the amount spent in 1962.

From our appearances before your committee over the years, I am sure you are familiar not only with the growing size but more particularly with the greatly increasing technical complexities of our atomic energy operation. The research and development activities of the Commission being undertaken to meet a variety of civilian and mil-

itary needs have increased markedly. Our regulatory and licensing responsibilities which were practically nonexistent a relatively short time ago, when atomic energy was solely a Government enterprise, have reached sizable proportions and are still growing with the emergence of a private atomic industry. Moreover, as our development problems directed toward national objectives, increase in difficulty and importance, there is an increase in the complexity of contractual arrangements to assure that our expenditures are effectively employed in meeting our program goals and objectives. This also has resulted in staffing demands and numbers of employees over and above those presently employed by the Commission. Accordingly, the amount proposed for this program in 1963 provides for an increase of 222 employees over the staffing level provided in the 1962 budget. The Commission strongly believes that this requested increase is most reasonable in light of its expanded administrative responsibilities.

HOUSE ACTION ON PROGRAM DIRECTION AND ADMINISTRATION

Senator PASTORE. How did the House treat you?

Dr. SEABORG. They cut the proposed increase by about a half.

Mr. McCARTHY. They reduced a million and a half from the total request without any designation as to how it was applied, but it would mean, in effect, that we would have to reduce employees, from the increase requested, in order to live with the cut made by the House.

Senator HILL. You mean reduce employees you now have?

Mr. McCARTHY. No, from the requested increase.

Senator HILL. Those that you contemplate and feel you have a need for?

Mr. McCARTHY. That is correct, sir.

Senator PASTORE. Are you asking for restoration?

Mr. McCARTHY. We are asking for restoration of the full amount.

Senator PASTORE. Why?

Mr. McCARTHY. Our requested increase in 1963 was approximately \$31½ million. Of that amount, \$2.1 million is attributable to the salaries item of this program. Of that, about \$1.6 million is required for the increase requested in the ending strength, that is the 222 additional employees. In addition, to provide for the increase in average salary by reason of administrative in-grade salary increases there would be required \$400,000, and the balance would cover such items as overtime. We have quite a bit of overtime due to resumption of testing which is part of the increase in fiscal year 1963.

EFFECT OF REDUCTION OF \$1,500,000

So we feel that if we had to take the cut of a million and a-half, or reduce the requested increase by about a half, we would have to reduce our requested increase in personnel by half.

Senator PASTORE. The House went into this quite thoroughly and then they made a cut and you come back here for a hundred percent restoration. Now, from my experience, and I don't know what the experience of my colleagues has been, but they will agree with me it is usually difficult to get these cuts restored unless you have some new evidence indicating that the House was indiscriminate in making a cut. That is what I think you have to put in the record at this point.

You have to give us what harm this would cause if this amount is not restored. It is a cut by the House, and the House took action, and you now come to us for us to restore it in toto. It is not an easy thing to do; it is an easy thing to ask, but not an easy thing to get.

I would like to have the record clear on this point.

When you are asking for restoration of funds, you have got to be very particular that you make sure that you give us arguments which will be convincing. You have just said here that by the cut you might lose one-half of the 222.

I would like to know, What damage does this cause the program?

Am I correct, Mr. Chairman?

Senator HILL. You are absolutely right, because, you see, even though we put the money in that doesn't give you the money. We have to go to a conference committee of the House; in that conference committee they have to be persuaded they were wrong in cutting you, and we were right in putting in the additional money, and to do that you have to present your case, you have to make it good and strong because their disposition naturally, that is human nature, is to stand by their former action.

Dr. SEABORG. This is an area that we have taken very seriously. It is an area that we think is very critical if we are going to carry on our direction of this complicated program efficiently.

Senator PASTORE. When you say program, what program are we talking about? Is this space?

Dr. SEABORG. It covers the direction and administration of everything, including space.

Senator PASTORE. Have you been losing men to NASA?

Dr. SEABORG. No, it isn't a question of losing men. It is a question of needing an increase in the overall total of people to guide and direct these programs.

Dr. WILSON. Part of it is due to the regulatory activity which we have beefed up quite a little, as you know, this past year. It is bound to grow as reactors and other nuclear industries are built in different parts of the country. The reactors and the other plants have to be inspected and passed upon for safety.

This regulatory activity takes a substantial proportion of this increase, and will be expected to increase over the next few years in spite of everything we can do.

Senator PASTORE. Are you saying categorically you cannot live with a cut of one-half of 222 employees?

Dr. SEABORG. I do not know whether we could say that. We would have to live with it. I would say it would be one of the places that would hurt us most in terms of the effect of a reduction of that much money.

#### GROWING RESEARCH PROGRAM

Our research program has been growing and that has to be supervised. There has been continued growth in physical research, biological research, reactor development, our space nuclear propulsion program, our SNAP program, increased emphasis on the safety program; new requirements for officers at the Nevada test site, and so forth. All of these require expansion in people to direct and supervise them.

We have not expanded our management teams at all commensurate with the growth in our program in recent years.

Senator PASTORE. I would hope that you gentlemen, who are just as much imbued with the responsibility to the public interest and responsibility to the taxpayer as we are, that you would review it with a very sharp pencil and come back with a minimum figure, in view of the action of the House; I mean, give us the rockbottom figure that you think you actually need to carry on this work.

After all, this is all predicated on an estimate. The House has heard you completely, and they have decided you do not need quite that amount, and you come back here and you say that the House is wrong and you are right.

Now, the House is not going to change its judgment.

What you ought to do is to review this completely and submit the rockbottom figure with which you think you can live and do your job effectively, because to come in with the same evidence and the same statement, with the same figure after the House has heard and acted upon it, does not get very far.

Dr. WILSON. The general manager has cut the requests that came in from the various divisions and offices, and the Budget Bureau has cut our request, and we are now getting to the place where it really hurts.

Senator PASTORE. Of course, the deficit goes up and up, and if we let it get out of hand—

Dr. SEABORG. We will certainly look at it again. But our feeling is that we are talking about a million and a half dollars which, if we can have our budget increased by this amount, will enable us to save more than that in the overall \$3 billion program. I think that is another way of stating the case.

(See p. 53 for letter later submitted.)

Senator HILL. You ought to make that strong, if the Senator will yield. I have before me your amendment with the justification therefor. As I say, Senator Pastore, this may mean a good deal more to Senator Pastore than it does to me, but you have this statement, for instance:

to meet the increasing demands in the research and development areas caused by substantial growth in the scope and volume of research in the physical science, life sciences, reactor development including the space nuclear propulsion and Plowshare.

#### SPACE NUCLEAR PROPULSION

What do you mean, What is that space nuclear propulsion? There is nothing too secret about it?

Dr. SEABORG. No. That refers to the ROVER program, that is, the nuclear rocket program.

Senator HILL. The nuclear rocket. That is where you are going to use nuclear energy to put that rocket in orbit?

Dr. SEABORG. Into space, perhaps beyond the moon.

Senator HILL. Beyond the moon.

Dr. SEABORG. Yes, and that program has been expanding very much in recent years, and is expanding again in 1963.

That is an example where more and stronger direction is needed in order to carry it on efficiently. This is also true in the other programs.

Senator HILL. You mean you have reached a point now where if that is really going to pay off as it should, to get the dividends it

should, you have got to enlarge and expand, which means you have to have more people; is that right?

Dr. SEABORG. Yes, although we are talking here of people at the management end. We, of course, have more people in the laboratories.

Senator HILL. Administrative people.

Dr. SEABORG. We are requesting more administrative people, with better than half of them having technical education and background. These are scientist administrators. We need a great number of them.

Senator HRUSKA. Mr. Chairman, would you yield?

Senator HILL. One other point along this very line, while reading this. You speak of increased emphasis on the expanded scope of the nuclear safety program. I think you referred to that earlier, protection from these reactors that are coming in. But now this next one, growth of activity now underway and contemplated at the Nevada test site near Las Vegas, what does that mean?

Dr. SEABORG. A part of that growth has to do with the space nuclear propulsion program.

We have our test reactors for the nuclear rocket at that site, and that is a new development. An increase in our operation has taken place within the last 2 or 3 years, and it is growing even larger. It is partly in connection with the supervision of that activity at the site that this refers to.

Dr. WILSON. There is also the weapons testing at that site.

#### WEAPONS TESTING AT NEVADA TEST SITE

Senator HILL. Your next clause is increase in weapons activities. What does that mean?

Dr. WILSON. This refers to the need for more supervision at the Nevada test site, partly because of weapons tests.

Mr. LUEDECKE. The weapons activities referred to here mean the weapons testing at the Nevada test site.

Dr. WILSON. Not administrative.

Senator HILL. At the Nevada grounds?

Mr. LUEDECKE. Yes, sir.

Senator HILL. Are we making much progress in these nuclear weapons?

Mr. LUEDECKE. Yes, sir; I think we are. I don't know whether the chairman would care to comment on it.

Senator HILL. What do you say?

Dr. SEABORG. We have learned a lot from testing, and we have made great progress in nuclear weapons.

Senator HILL. Nuclear weapons?

Dr. SEABORG. Yes, sir.

Senator HILL. You think that old rifle I spoke of would soon be out of date? You never would get close enough in with a bayonet.

Dr. WILSON. That is right.

Senator HILL. You will never get close enough with a bayonet.

Dr. SEABORG. No.

Senator HILL. I apologize in deference to my friend here, go ahead, Senator.

## TRANSFER OF PERSONNEL FROM RAW MATERIALS PROGRAM

Senator HRUSKA. No apology is necessary, Mr. Chairman.

I notice in the summary of estimates by category, there is a reference made to \$1.7 million in the 1962 costs associated with personnel that are budgeted under program direction and administration in fiscal 1963. In prior years they had it under the raw materials program. Are you familiar with that?

Dr. SEABORG. Mr. McCarthy, why don't you respond?

Mr. McCARTHY. Yes, sir.

Senator HRUSKA. If the matter has been covered in the House and considered by them, I do not want to go into it and clutter up the record.

Mr. McCARTHY. It has been considered, and putting these people on a comparable basis is the reason that the footnote is shown here. In 1962 they were budgeted under the raw materials program, and the amount has been pulled forward in all 3 years into this program, and the House did consider this, in the review of the budget.

Senator HRUSKA. Of course, there was a reduction in the raw materials program.

Mr. McCARTHY. That is correct. The offset was back there.

Senator HRUSKA. I thought that might be along the line you were trying to develop, Senator. They might find some basis upon which to have a difference between the showing made here and the House.

Senator PASTORE. That is right.

Senator HRUSKA. If it has been covered that serves my purpose.

Senator HILL. That is all right.

Mr. McCARTHY. All 3 years are on a comparable basis, so our increase in 1963 does take that into account.

Senator HILL. When you go over this record, Mr. Chairman, you make these points just as specific and as strong as the facts will justify.

Dr. SEABORG. Yes. That from which you read was page—

Senator PASTORE. Page 17.

Senator HILL. Seventeen.

Dr. SEABORG. Seventeen from which you read, but we will go over it again and strengthen it.

Senator HILL. All right, sir.

Dr. SEABORG. I will go on to construction then.

## CONSTRUCTION BUDGET

I would now like to summarize briefly our fiscal year 1963 fund requirements for plant acquisition and construction. Our budget requests an appropriation of \$332,345,000 for this purpose. Almost half of this amount or about \$162.5 million is required to complete the funding of four projects authorized and partially funded in prior years. The projects and the amounts budgeted in 1963 for each are the new production reactor, \$43 million; Stanford accelerator, \$95 million.

Senator HILL. That is Stanford University?

Dr. SEABORG. Yes, sir. It is the linear accelerator at Stanford.

Advanced test reactor at Idaho, \$13.5 million; and the gas-cooled reactor at Oak Ridge, \$11 million. In addition, the estimates provide \$42.6 million for projects designed to improve our special nuclear

materials productive capability and to add needed safety features to the production complex. Under our weapons program \$56.6 million is estimated to meet the facility needs of the weapons, production, development, and testing installations. Under the reactor development program, in addition to the \$24.5 million for the advanced test reactor and gas-cooled reactor referred to above, obligations are estimated at \$53.4 million. The major items included in this amount are \$20 million for an organic power and heat industrial reactor, \$10 million for the project ROVER development and test plants, and \$5 million for facilities to house the lithium-cooled reactor experiment at Arco, Idaho.

Under the physical research program, projects other than the Stanford accelerator will require about \$37.2 million, of which \$9.5 million is required to complete financing of projects underway to improve the Princeton-Penn accelerator (\$4 million) and the bevatron accelerator (\$2.5 million) and \$3 million for the ZGS accelerator under construction at Argonne National Laboratory. The balance of \$27.7 million for new projects includes \$7.5 million for a transuranium processing plant at the Oak Ridge National Laboratory. This project represents an adjunct to the high flux isotope reactor presently under construction at Oak Ridge and is required to meet the objectives of the Commission's heavy elements research program. The remaining obligations estimated under the physical research program will provide laboratories and accelerator and reactor improvements to permit effective utilization of existing facilities and staff capabilities at the Commission's various research installations.

The balance of the Commission's construction obligations, somewhat under \$8 million, will provide laboratory facilities for our biomedical research activities and community facilities for the AEC-owned town of Los Alamos.

#### CONCLUSION

That concludes my summary of the Commission's operating and plant budget request for 1963. You have before you our formal submission requesting restoration of certain of the reductions to our budget estimates made by the House bill. We have also, in that statement, set forth the basis upon which we are requesting restoration. The General Manager and other staff members of the Commission are here with me and we will be most pleased to answer any questions you may have on our programs generally, or on the specific items for which we are requesting that you consider restoration of funds to our budget.

#### STANFORD LINEAR ACCELERATOR

Senator PASTORE. Would you want us, Doctor, to raise these questions with the General Manager or with you, I mean on some of these restorations, or would you prefer to do it now?

I am addressing myself particularly to the Stanford linear accelerator. The House cut you by \$60 million, is that right?

Mr. LUEDECKE. Yes, sir.

Senator PASTORE. Is it absolutely necessary to restore that?

Mr. LUEDECKE. Our budget recognized that we would not obligate in fiscal year 1963 all the \$95 million. The request based on the policy

of the Bureau of the Budget for full funding of any project, and in accordance with their policy—

Senator PASTORE. But if the amount of \$60 million were not restored, whatever work you can do within 1963 would not be deterred or deferred in any way?

Mr. LUEDECKE. That is correct.

#### ROAD FROM LAS VEGAS TO TEST SITE

Senator PASTORE. Now, coming to the item for the road from Las Vegas to the Nevada test site, you will recall originally the Commission asked for \$10 million to build that road, and then an agreement was worked out with the State of Nevada whereby they would make a contribution of about \$1 million, which would be about the same as the road program.

Mr. LUEDECKE. That is right.

Senator PASTORE. The House cut that and said you look to NASA for the balance.

Mr. LUEDECKE. That is right.

Senator PASTORE. What would happen if you had to look to NASA for the balance?

Mr. LUEDECKE. I do not know, Senator Pastore. The Bureau of the Budget is following the principle of one-agency funding and feels the road should be funded by one agency, the AEC. Our interest, of course, is getting the road built.

Senator PASTORE. In other words, this road needs to be built, does it not?

Mr. LUEDECKE. That is right.

Senator PASTORE. You have had a lot of accidents there, and we have gone through this quite thoroughly, and if we should juggle as to what contribution should come out of which department, we are only delaying the building of this road, are we not?

Dr. WILSON. That is right. The road is important.

Senator PASTORE. If the road were not restored, could you go along and make your commitment or couldn't you? What would be the status of the program?

Dr. WILSON. We couldn't unless we got the money from NASA.

Dr. SEABORG. I do not think we could start the road if the overall program were cut.

Mr. LUEDECKE. We would be unable to make a commitment.

Senator PASTORE. In other words, this whole matter would be deterred.

Mr. LUEDECKE. Unless we could prevail upon NASA to provide the money.

Senator PASTORE. I hope my colleagues understand that we had quite an extensive hearing on this question of the road. There have been quite a number of accidents between Las Vegas where people are compelled to live, and the Nevada test site, and we had done this on several other installations before.

They came before our committee to get \$10 million to build a four-lane highway.

Dr. WILSON. It is to make a two-lane into a four-lane highway.

## ACTION BY HOUSE REQUIRING CONSTRUCTION BY NASA

Senator PASTORE. And they had a suggestion that we authorize all of the \$10 million. Many of us on the committee felt that after all the State of Nevada had an obligation here, too, and the State of Nevada, under the present agreement as we have worked it out now, should put up about what it would have to put up under the interstate program. So she was willing to put up \$1 million, and we were appropriating the \$9 million.

What happened in the House is they cut it in half not just because it was not justified, but because they claim now that because NASA is conducting some experiments at the Nevada site, they should pay for half of the road.

Dr. WILSON. About half of the increase in traffic is due to NASA activity coming in and increasing the ROVER site, but nowhere near half of the total traffic is due to NASA, and it seems kind of unreasonable to ask them to pay half of this four-lane highway.

Mr. McCARTHY. I might say, Mr. Chairman, since this involved another agency beside ours, we put this problem to the Bureau of the Budget. They have been looking at the problem involved. They did advise us that we should appeal this on the basis of their policy of having a single agency fund the project.

Senator PASTORE. You mean after the House took its action?

Mr. McCARTHY. After the House took its action.

Senator PASTORE. After the House took its action is what I want in the record, you went back to the Budget Bureau and they explained to you that they wanted it funded under one agency.

Mr. McCARTHY. Yes.

Senator PASTORE. That is what I wanted in the record.

That is all I have to ask at this moment, Mr. Chairman.

## REDUCTION IN COOPERATIVE POWER DEMONSTRATION PROGRAM

I am told by the staff that there was a \$3 million cut in the cooperative demonstration.

Mr. McCARTHY. Yes, sir.

Senator PASTORE. You are asking for restoration on that?

Mr. McCARTHY. Yes. Do you want to answer that, Dr. Pittman?

Senator PASTORE. Why doesn't Dr. Pittman answer that. Will you explain to the committee what it means.

Dr. PITTMAN. I am sorry, but I did not hear the question.

Mr. McCARTHY. The reduction in the cooperative power demonstration program.

Dr. PITTMAN. Excuse me, I did not hear the question.

Senator PASTORE. The House cut \$3 million from the design assistance cooperative program.

Dr. PITTMAN. Yes, sir.

Senator PASTORE. You are asking for restoration of that figure?

Dr. PITTMAN. Yes, sir.

Senator PASTORE. As a matter of fact, the Joint Committee itself is asking for an additional 5½ million.

Dr. PITTMAN. Yes, sir.

Senator PASTORE. You are familiar with that?

Dr. PITTMAN. I have heard that; yes, sir.

## EFFECT OF \$3,000,000 REDUCTION

Senator PASTORE. Will you please explain to us what the \$3 million cut does to you and what it does to the program?

Dr. PITTMAN. The power demonstration program, of which this \$3 million is a part, is the program upon which we depend to get the large power reactors that are demonstrating the economics of nuclear power, built.

We had approximately \$19.8 million available, including the \$3 million, and I would like to correct this if I am a little wrong on the figure, please, sir.

Out of that \$19.8 million there was to come about \$2 million which we expect will come in as a request for a power demonstration reactor for a process heat unit up in the Northeast.

That left us approximately \$17.8 million. We have just put out an invitation in which we are offering to the utility industry the possibility of building reactors with our assisting them in research and development and in the design aspects of the reactor.

We expect that there will be at least one and, possibly, two proposals as a result of that invitation.

While we do not know, since we have not yet gotten the proposals, exactly how much will be involved, we would expect that it would be in the order of \$6 to \$8 million each—say, \$7 million each for these proposals. That would be \$14 million of the \$17.8 million that I indicated we would have available.

If the \$3 million is taken out, we would not be in a position to accept, if the process heat proposal comes in, one of the other proposals that we expect to get from our invitations.

In addition to that, there is a complicating factor in that this \$19.8 million figure that I indicated we had available is available only if the Southern California Edison proposal turns out not to be a valid proposal. In other words, if they are not able to get a site.

If the Southern California Edison people are able to find a satisfactory site and, as you know, they have been looking for this for some time, then we are committed to a development program for \$6 million, which must come out of this.

So if that goes through, plus the \$3 million reduction that was made by the House, we would have available only enough for one additional proposal, whereas we expect to get two.

## GOVERNMENT FUNDS IN DEMONSTRATION POWERPLANTS

Dr. WILSON. I should make the point that the amount of money we are putting into these big demonstration plants, which are very important to the future of atomic power, is only about 10 percent of the total cost. This is to build a \$70 million plant, with \$7 million assistance from us, just to get them over the top and cover some of the extra building costs of building the first of a kind, and the various problems that come in connection with that.

Dr. PITTMAN. Senator, I feel probably this is the most important part of our civilian power program at this moment. It is necessary that these reactors get built so that we can get over the hump, so to speak, of the civilian power program which Dr. Wilson said was so close.

Senator PASTORE. The Joint Committee went further, they wanted an additional \$5.5 million more in this design program, assistance program, in order to accelerate our cooperative venture.

Dr. WILSON. If the Southern California Edison proposal comes through, which we were not very hopeful of a month ago, but are now more hopeful of, and if we are going to get the amount of design assistance we need, we do need \$5 or \$6 million more.

Senator PASTORE. Isn't it true that they are promising that they will find a new site or they have found one?

Dr. PITTMAN. The recent information we have from them, sir, is they are getting to the point where they think that a site will be available. Whether it is a new site or whether they will be able to get the site at Camp Pendleton that they have been previously looking at, is not completely clear.

Dr. SEABORG. They are looking for a site farther north on the Camp Pendleton Reservation.

Dr. PITTMAN. That is right.

Senator PASTORE. If we take this money out, of course, that brings it to a standstill.

Dr. PITTMAN. No. We would have money for that.

Dr. SEABORG. That project has first priority.

Dr. PITTMAN. That has first priority, but what would happen if we do not get the \$3 million we asked for, we would be only able to accept one proposal from our invitation, and I certainly hope to get two or possibly three, although the third is somewhat questionable.

Dr. SEABORG. These are design assistance proposals that we are hopeful of.

Dr. PITTMAN. These are for building 400-megawatt, commercial-scale plants, and I believe two of them will be built, and I believe that will be the most important thing that would be done this year in our program.

Senator PASTORE. This is really the promise of a peaceful atom in this particular field and, as Dr. Wilson has already pointed out, this is not wholly financed by Government funds. It is only about 10 percent of the cost of the venture; 90 percent of the cost comes from private industry.

Dr. PITTMAN. That is right. It is only for the design assistance, assistance toward design.

Dr. SEABORG. It would also include some research and development.

Senator PASTORE. That is all, Mr. Chairman.

Senator HILL. Any questions?

Senator HRUSKA. I have no questions.

#### REDUCTION OF \$10 MILLION IN PHYSICAL RESEARCH PROGRAM

Senator HILL. Mr. Chairman, in your operating expenses the House cut you \$10 million in the physical research program. Is there anything you would like to add to that? You have asked for restoration of the \$10 million. We have covered that, I know, to a certain extent in some of these others, but is there anything else you would like to add on that subject?

Dr. SEABORG. Well, I would say that we are very anxious to have this restored. This is needed in order to finance research in the areas

of low-energy nuclear physics and chemistry, metallurgy and materials, and so forth.

These are areas that I personally feel are very important, and which we have not supported at a sufficiently high level in recent years. Our budget has not increased as it should have, and we made an attempt to do it this year, through the budget we requested. We hope to bring the support up in these areas to what I think would be the proper levels, and to what the Commission thinks would be the proper levels.

Senator HILL. Give me an illustration of what you have in mind when you speak about these areas.

Dr. SEABORG. This part of the budget supports the chemistry program in such fields as the transuranium elements, much basic research in chemistry, and supports the work in research on materials and metallurgy which I consider to be very important. In fact, this can be even a bottleneck. Problems in the areas of materials and metallurgy might even be a bottleneck in our space program, for example, and in our civilian nuclear power programs.

This budget supports the operations of many facilities, and I might particularly single out the new facilities, the support of which would be hurt if this \$10 million was cut. These would include instruments such as the new 88-inch cyclotron at the Lawrence Radiation Laboratory, the Argonne Laboratory accelerator, the Ames research reactor, the Brookhaven research reactor, the new high-flux isotope reactor at Oak Ridge, some new tandem van de Graaffs, one at Oak Ridge and one at Argonne; the new Oak Ridge cyclotron; the operation of computers like the one at Brookhaven, and so forth.

I would say in a way this is the backbone of our research program. It is the part that is related most closely to atomic energy.

Atomic energy, as we have succeeded in applying it, is based on the low-energy nuclear physics.

Senator HILL. You mean you are going to harness it and use it, so to speak? This is important.

Dr. SEABORG. It is important that we continue research in the area of low-energy nuclear physics.

#### TRANSURANIUM ELEMENTS

Dr. WILSON. Dr. Seaborg passed lightly over the transuranium elements. He just mentioned them, but there are 10 brandnew elements which have been discovered in the last 15 years, mostly by Dr. Seaborg and his coworkers, and that is a thing that never happened before in the history of the world, to discover 10 elements in a short period of time like that.

Dr. SEABORG. And to make them.

Dr. WILSON. And make them. They are very hard to make and it is very difficult research work, but they are extremely important to us, and to neglect that field, I think, would just be a crime.

Senator HILL. A crime?

Dr. WILSON. A crime. Yes.

Senator HRUSKA. Of course, there is an increase of \$30 million over last year, isn't there?

Dr. WILSON. The increase is mostly in high-energy physics, because we are having to operate more large accelerators.

Senator HRUSKA. That is not in this field?

Dr. SEABORG. Let us analyze the figures because I think there might be a chance for misunderstanding there.

The stipulation was made in the House report that the reduction must not apply to the high-energy physics program and, therefore, if we subtract the amount for the high-energy nuclear physics in both years, the increase would be from \$112 million for all other physical research to about \$135 million, if we received the budget we requested.

If \$10 million were cut out of it, the increase would be from about \$112 million to about \$125 million.

Senator HRUSKA. So if the high—

Dr. SEABORG. That would be an increase of about \$13 million out of \$112 million, or close to 10 percent.

Now, the cost of doing research increases by perhaps, 6 or 7 percent each year, so that the increase in actual research done would be very small, if that cut were allowed to stand.

It would mean, for example, that a number of these new machines that I have talked about, that are coming into operation, could not be operated at their best efficiency.

#### REVIEW OF CONTROLLED THERMONUCLEAR PROGRAM

Senator HRUSKA. Well now, in its report, the House has language which expressed a desire that an early decision be made on the five different concepts being explored, and so on. Is that relevant to this discussion?

Dr. SEABORG. That is relevant; yes. That, however, would not affect the budget very much in 1963.

Dr. WILSON. We think that it should be done, but it cannot be done in 1963.

Dr. SEABORG. This is something that we are looking into carefully. That is, we are reviewing the five approaches on the controlled thermonuclear program. That program, of course, is only a part of the total that I am talking about here. But I do not believe that realistically a very significant change could be effected in that during fiscal 1963. We ourselves are concerned about it, and are having a close look at the controlled thermonuclear research program.

Senator HRUSKA. That is all I have.

#### CAFETERIA AT ARGONNE NATIONAL LABORATORY

Senator HILL. Mr. Chairman, there is one other small item, and that is your cafeteria at the Argonne National Laboratory, where you ask for \$1.5 million.

You now ask for a restoration. The House cut you \$500,000, and you ask for a restoration of \$250,000.

How necessary is this cafeteria, and how necessary is that \$250,000?

Dr. SEABORG. Mr. Luedecke.

Mr. LUEDECKE. Mr. Chairman, since we have been before the House, we have received our title I design on this building, and we have

sharpened our pencils very closely and looked at it again, and believe that the proper approach would be at \$1,250,000.

Senator HILL. How badly do you need it?

Mr. LUEDECKE. We need it—

Senator HILL. The House cut it all out.

Mr. LUEDECKE. No.

Dr. SEABORG. They cut half a million out of a million and a half.

REQUEST FOR RESTORATION OF \$250,000 FOR CAFETERIA

Senator HILL. What you are asking is restoration of the \$250,000—not for the full half million, but \$250,000?

Dr. SEABORG. That is right.

Mr. LUEDECKE. We believe that is based on a sound estimate.

Senator HILL. You do not think you could go forward on an effective and efficient basis with \$1 million, and if you did, you would not have what you need; is that right?

Dr. SEABORG. That is right.

Mr. LUEDECKE. We would have to degrade the quality to such a point where it would not be proper.

Senator HILL. I see. In other words, you think good business would dictate that you put the other \$250,000 in there?

Mr. LUEDECKE. I believe this is right, sir, and this is based on better information than we had when we went before the House committee.

Senator HILL. Senator Kefauver, any questions?

Senator KEFAUVER. I believe not, Mr. Chairman.

Senator HILL. Senator Pastore, any questions?

Senator PASTORE. No questions.

Senator HILL. Senator Hruska?

Senator HRUSKA. Yes. What is there about this cafeteria that makes it cost \$1,250,000? Is it gold-plated?

Dr. WILSON. It is a new cafeteria in a new area which is now being expanded. Mr. Derry.

Mr. DERRY. Well, the estimate of the cafeteria is based on 36,000 square feet of space, and the building is estimated at a cost of \$22.60 a square foot.

The overall cost of the cafeteria is about \$35 a square foot. Now, this includes equipment, engineering, and a contingency of roughly 9½ percent.

Mr. WILSON. What he wanted to know is where and why was this increase needed. Maybe you are not the one to answer that.

Mr. DERRY. The increase from \$1 million to \$1,250,000?

Senator HRUSKA. No.

Mr. DERRY. We have a cafeteria which was built back in 1947 or 1948, out of some quonset huts, and built as a temporary expedient in the older section of the laboratory. We also created a small cafeteria, a small eating space, out of one wing of the physics laboratory, but the physics laboratory has grown to the point where this space is needed for laboratory space, and there is presently an inadequate eating facility at the Argonne Laboratory.

Senator HRUSKA. How many people does it serve?

Mr. DERRY. The new one will serve roughly 2,400 people over a 1½-hour period. It is being built for about 950 seats, and over about a 1½-hour period we feel we can serve about 2,400 people. The total population of the site is about 5,000.

Mr. LUEDECKE. Also it will be in a separate area.

Mr. DERRY. Yes.

Mr. MCCARTHY. I think one point also should be made. As we built new laboratory buildings in a new area, the small cafeteria Mr. Derry referred to is the only one readily accessible to them. It is about 2 miles to the main cafeteria from the new area. This project provides a cafeteria in the same area where we have been building up new laboratory buildings and makes it readily accessible to the people in that area.

Mr. DERRY. This is the permanent laboratory area.

#### PRESENT AVAILABILITY OF CAFETERIA SPACE

Senator HILL. What was the nature of your present cafeteria so far as construction is concerned?

Mr. DERRY. There are two cafeterias, one in the older area that has about 450 seats, and the one temporarily located in one wing of the physics building. It seats about 350 people, but there is inadequate space, and it is an inadequate facility. The other laboratory buildings—that is, the physics building, the reactor engineering building, and the reactor technology building—do not permit food-serving facilities because of the nature of the activities carried on in them.

Senator PASTORE. Why can you take a cut of a quarter of a million when you cannot take a cut of a half million?

Mr. DERRY. Well, we cannot take a cut of a half million because if we did we would not have a facility that would be adequate to meet the needs of the laboratory. We would have to redesign completely.

Senator PASTORE. Do you have the designs on it?

Mr. DERRY. The title I design is completed now. This new estimate of \$1,250,000 is based on our completion of the conceptual or rather the title I design, preliminary design drawings, so we know what we want to build. We know almost precisely the square footage; we know what equipment is required, so this estimate is a good estimate, \$1,250,000.

Senator PASTORE. Would you have to come back for more?

Mr. DERRY. No; we will not.

Senator HILL. Would this cafeteria serve any other purpose? Could it be used as an auditorium?

Mr. DERRY. This is purely a service facility.

Senator HILL. Purely a service facility.

Mr. DERRY. The House indicated that purely a service facility be provided, and that is all that is being provided.

Senator HILL. You spoke of one of your two cafeterias, as I understood it, as being in sort of a wing of a building.

Mr. DERRY. Yes, sir.

## NEED FOR WING ON PHYSICS BUILDING

Senator HILL. Do you have a definite purpose and need for that wing?

Dr. WILSON. We do.

Mr. DERRY. For laboratory space.

Senator HILL. What do you use that wing for if you did not have this?

Mr. DERRY. For laboratory space, physics laboratory.

Dr. WILSON. Physics laboratory.

Senator HILL. Do you have a definite need for that?

Dr. WILSON. Yes.

Dr. SEABORG. Yes; the physics work has expanded to a point where that new space is needed.

Senator HILL. Then the other cafeteria, you say, is some 2 miles?

Dr. SEABORG. It is about 2½ miles.

Senator HILL. Two and one-half miles?

Dr. SEABORG. They have to leave the laboratory. They have to leave their regular laboratory areas.

Senator HILL. I see.

Senator PASTORE. How many people do we have employed at Argonne?

Dr. WILSON. About 5,000.

Senator HILL. 5,000?

Senator HRUSKA. Do they serve only lunches there?

Mr. DERRY. No; they serve three meals; breakfast, lunch, and partial dinner, because people are usually working early and working late, so there is a need for three meal services.

Senator HRUSKA. Staggered shifts?

Mr. DERRY. In some places; yes, sir.

Senator HILL. What is the nearest town to the Argonne Laboratory?

Mr. DERRY. La Grange, I guess.

Dr. SEABORG. It is only a small town.

Mr. DERRY. Chicago is 25 miles away.

Senator HILL. Twenty-five miles out of Chicago?

Dr. SEABORG. That would be to the center of Chicago, the Loop, but there are towns closer than that.

Dr. WILSON. About 8 miles.

Dr. SEABORG. Downers Grove is about 10 miles.

Senator HILL. There is no other cafeteria nearby?

Mr. DERRY. No, sir; there is not, no other facilities. You either eat in these cafeterias or you carry your own lunch.

Senator HILL. Are there any other questions, Senator Pastore?

Senator HRUSKA?

Senator HRUSKA. That is all.

Senator HILL. How about you, Senator?

Senator KEFAUVER. I have no questions.

Senator HILL. Anything you would like to add or any members of the staff would like to add?

## REDUCTION IN SPECIAL NUCLEAR MATERIALS

Senator KEFAUVER. Mr. Chairman, I would like to ask, I know it has been explained, but the reduction in special nuclear materials which they do not ask for restoration of the House cut or reduction, what about that?

Dr. SEABORG. No; actually we did not explain that.

Senator HILL. You mean \$3.3 million?

Senator KEFAUVER. Yes.

Mr. LUEDECKE. In looking it over, Senator, we felt we could accept it without jeopardizing any of our programs, so we decided not to appeal.

Senator KEFAUVER. What are special nuclear materials?

Dr. WILSON. Materials for weapons.

Dr. SEABORG. They include U<sup>235</sup>, plutonium, and tritium.

Dr. WILSON. We have been reviewing our weapons budgets and stockpile composition in the last month or two, and we decided we could absorb that.

Senator KEFAUVER. You could absorb it. Very well.

Senator HILL. Are there any other questions, Senator?

Is there anything you would like to add, gentleman?

Dr. SEABORG. No; I do not think so.

Senator HILL. If, after you leave us this afternoon you have any further thoughts about anything you wish to add, I wish you would send us a memorandum, and if you have anything that has been left out in anyway, anything you would like to add, General, you may do so.

Mr. LUEDECKE. Thank you, sir. We will get the other things for the record quite promptly.

Senator HILL. How about our Nobel Prize winner?

Mr. Chairman and gentlemen, we want to thank you all very, very much.

Dr. SEABORG. Thank you.

Senator HILL. It has been good having you. Thank you very much.

(See p. 40)

The following letter later was submitted:

U.S. ATOMIC ENERGY COMMISSION,  
Washington, D.C., September 5, 1962.

HON. LISTER HILL,  
Chairman, Atomic Energy Committee—TVA Subcommittee of the Subcommittee  
on Public Works, Committee on Appropriations, U.S. Senate.

DEAR SENATOR HILL: During the course of hearings before your subcommittee on August 30, 1962, the Commission was asked to review its request for restoration of the \$1,500,000 reduction made by the House in the \$64,111,000 estimate for "Program direction and administration" for 1963, to determine whether a lesser amount would meet our requirements. The Commission submitted its request for restoration of the \$1,500,000 as shown in the document attached to our letter of August 27, only after most careful consideration of our needs. You will note that on a number of the reductions made by the House, the Commission has not requested restoration. We have, however, as suggested by your committee, again carefully reviewed the need for restoration of the \$1,500,000.

In connection with preparing financial plans for our various offices and divisions for fiscal year 1963, which would become effective after passage of the 1963 appropriation act, we have had a number of requirements from our field offices and headquarters divisions which cannot be met from our intended allocation

to them from the \$64,111,000 budgeted under "Program direction and administration." While recognizing that some of these needs could not be met within the budget estimates as submitted, a further reduction of \$1,500,000 would, we feel, have a drastic effect on our planned program.

As we noted in the course of the hearings, of the \$3,480,000 increase requested over our 1962 base level, \$1,662,000 represents the salary costs of the 222 additional personnel we have requested by the yearend of 1963 (for 167 man-years of employment). Other costs associated with the additional employment requested, such as travel and other support costs in addition to the salary item mentioned above, would amount to \$761,000. Thus, the amount for this increase in man-years would be \$2,423,000.

The balance of the increase being requested, approximately \$1 million, is comprised of \$382,000 in salary costs attributable to personnel on the rolls as of last June 30, and some \$664,000 for new or one-time items in 1963. The average salary for personnel on the rolls as of last June 30 increases in 1963 mainly by reason of administrative within-grade salary increases and normal promotions. New or one-time items in 1963 included in the increase are:

## Field:

Space requirements at San Francisco (Palo Alto area office)-----	\$32,000
Additional requirements at Nevada operations office (rental of space, guard service, communications, etc.)-----	158,000

## Headquarters:

Move of regulatory group to Washington (rental of space, guard service, communications, etc.)-----	132,000
Annualization of communications services costs-----	165,000
Annualization of rental of space for Atlanta, Ga., and Denver, Colo., compliance offices-----	12,000
Costs for automatic data processing services-----	165,000

<b>Total</b> -----	<b>664,000</b>
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Apart from these items, all other support costs remain about the same in our 1963 requests as experienced in 1962. We feel these items within the \$1 million increase are as firm as can be estimated at this time and that no reduction can be made in them.

This then leaves for consideration the increase in personnel requested and the \$2,423,000 associated with them. Of the total number of 222 additional positions requested, 178 positions are for AEC operations and 44 for regulatory functions. The increase of 44 employees for the regulatory staff represents the minimum necessary to meet the estimated regulatory workload increase in fiscal year 1963. The increase of 178 positions for AEC operations breakdown is as follows:

Additions for Nevada Test Site (required for onsite supervision of and service to programs at Nevada Test Site, primarily Rover and weapons test programs)-----	71
Additions to health and safety capability-----	38
Additions for management and review of increased reactor activities----	25
Additions for programmatic supervision and service to Rover program----	44

During the course of our hearings we identified the majority of these needs for additional personnel and we believe, upon further review, that they are urgently needed.

I hope the data herein gives you the basis for the increase requested by us in "Program direction and administration" and provides you the information needed to support our requested restoration of the House reduction of \$1,500,000.

A copy of this letter is being transmitted to the chairman, House Appropriations Committee.

Sincerely yours,

GLENN T. SEABORG, *Chairman.*

## COMMITTEE RECESS

Senator HILL. The committee will stand in recess.

(Whereupon, at 4:30 p.m., Thursday, August 30, 1962, the subcommittee recessed to reconvene at 2:30 p.m. Friday, August 31, 1962.)

# PUBLIC WORKS APPROPRIATIONS FOR 1963

FRIDAY, AUGUST 31, 1962

U.S. SENATE,  
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,  
Washington, D.C.

The subcommittee met, pursuant to notice, at 2:35 p.m., in room 37, U.S. Capitol, Hon. Lister Hill (chairman of the subcommittee) presiding.

Present: Senators Hill and Hayden.

## TENNESSEE VALLEY AUTHORITY

STATEMENT OF AUBREY J. WAGNER, CHAIRMAN, ACCOMPANIED BY A. R. JONES, MEMBER OF THE BOARD; L. J. VAN MOL, GENERAL MANAGER; CHARLES J. McCARTHY, GENERAL COUNSEL; G. O. WESSENAUER, MANAGER OF POWER; E. P. ERICSON, ASSISTANT TO THE GENERAL MANAGER (BUDGET AND PLANNING), AND MISS MARGUERITE OWEN, WASHINGTON REPRESENTATIVE

### OPENING STATEMENT BY THE CHAIRMAN

Senator HILL. The committee will kindly come to order. Chairman Wagner, we are happy to have you here with us.

Mr. WAGNER. Thank you.

Senator HILL. You have been here in the past, and we welcome you back. We are glad to have you.

You, Mr. Jones, we are glad to have you, sir.

We will place your budget estimates in the record and, Mr. Chairman, you may proceed in your own way, sir.

(The information referred to follows:)

### BUDGET REQUESTS AND JUSTIFICATION

#### PREFACE

The Tennessee Valley Authority is a corporation wholly owned by the Federal Government. It is an independent agency under a Board of Directors responsible to the President and the Congress. It was created by the Congress in 1933 for the unified conservation and development of the resources of the Tennessee Valley. TVA is charged with the responsibility for developing the Tennessee River for navigation, flood control, and the generation of electric power; for chemical research and the production of experimental fertilizers useful in agriculture and national defense; and for guiding, in the national interest, the comprehensive resource development and economic growth of the Tennessee Valley region in cooperation with the States and their subdivisions and agencies.

*Summary of budget financed from appropriations*

Continuing construction of Melton Hill Dam and Reservoir near Oak Ridge, Tenn. (p. 9)-----	\$1,689,000
Continuing construction of a new lock at Wheeler Dam, Ala. (p. 12)-----	4,953,000
Beginning construction of a new lock at Gunter'sville, Dam, Ala. (p. 12)-----	3,244,000
Navigation channel improvements on the Tennessee and Hiwassee Rivers (p. 13)-----	929,000
Rehabilitation of and additions to chemical facilities-----	6,793,000
Beginning construction of an addition to the chemical engineering building at Wilson Dam, Ala. (p. 65)-----	1,500,000
Beginning construction of the Beech River multipurpose water control system (p. 101)-----	2,500,000
Additions and replacements of other facilities; administrative and general expenses applicable to acquisition of assets-----	2,697,000
Program expenses: navigation and flood control operations, fertilizer research and demonstrations, cooperative valley development-----	10,766,000
<b>Total proposed appropriation-----</b>	<b>35,071,000</b>

*Summary of budget financed from power proceeds and bonds*

Continuing construction of Melton Hill Dam and Reservoir near Oak Ridge, Tenn. (p. 9)-----	\$8,306,000
Beginning construction of an additional 900,000-kw steam-electric generating unit (p. 27)-----	8,158,000
<b>Continuing construction of:</b>	
Widows Creek steamplant, unit 8 (Alabama)-----	18,377,000
Colbert steamplant, unit 5 (Alabama)-----	3,352,000
Paradise steamplant, units 1 and 2 (Kentucky)-----	27,656,000
Bull Run steamplant, unit 1 (Tennessee)-----	24,730,000
Wheeler hydro units 9 to 11 (Alabama)-----	1,506,000
Transmission system facilities-----	37,000,000
Additions and replacements of other facilities, coal land and rights, changes in inventories, deferred charges, and administrative and general expenses applicable to acquisition of assets-----	5,618,000
<b>Power operating expenses-----</b>	<b>166,061,000</b>
<b>Total-----</b>	<b>300,764,000</b>

Proceeds from power operations in 1963 are estimated at \$283,517,000; proceeds from borrowings at \$49,500,000; and other power proceeds at \$701,000. Payments to the Treasury are estimated at \$48,500,000—\$38,500,000 as a dividend (return on the appropriation investment in the power program), and \$10 million as a reduction in the appropriation investment in the power program.

*Summary of budget financed from nonpower proceeds*

Fertilizer program operating expenses-----	\$19,814,000
Cooperative valley development program expenses-----	245,000
Reimbursable services-----	8,328,000
Multipurpose reservoir operating expenses recovered-----	358,000
<b>Total-----</b>	<b>28,745,000</b>

Nonpower proceeds for the year are estimated at \$28,598,000, of which \$19,264,000 is from the fertilizer program, \$246,000 is from the cooperative valley development programs; \$8,328,000 represents reimbursement from other agencies; and \$760,000, other miscellaneous receipt items.

Summary of budget financed from appropriations (for fiscal years ending June 30, 1961, 1962, and 1963)

	1961 actual	1962 estimate	1963 estimate
ACQUISITION OF ASSETS			
Navigation, flood control, and power program:			
Multipurpose dam: Melton Hill Dam and Reservoir.....	\$4,792,333	\$8,286,000	\$1,689,000
Navigation facilities:			
New lock at Wheeler Dam.....	3,397,906	7,956,000	4,953,000
New lock at Guntersville Dam.....	2,158	176,000	3,244,000
New lock at Wilson Dam.....	2,490,280	-762,000	
Rehabilitation of original lock at Wheeler Dam.....	726,189	6,184,000	336,000
Additions and improvements at existing navigation facilities.....	187	5,000	929,000
Additions and improvements at existing flood control facilities.....	63,398	37,000	
Power supply facilities: Kingston steamplant, units 1 to 9.....	534,139		
Additions and improvements at existing multiple-use facilities.....	830,294	752,000	1,021,000
Investigations for future facilities.....	90,708	82,000	113,000
Distribution of administrative and general expenses.....	187,840	424,000	410,000
Total navigation, flood control, and power program.....	13,115,432	23,140,000	12,695,000
Fertilizer, agricultural, and munitions program:			
Chemical facilities.....	2,196,663	3,115,000	8,293,000
Distribution of administrative and general expenses.....	32,126	35,000	45,000
Total fertilizer, agricultural, and munitions program.....	2,228,789	3,150,000	8,338,000
Cooperative valley development programs: Beech River multipurpose water control system.....			
			2,500,000
General service activities:			
General facilities.....	115,687	949,476	757,000
Distribution of administrative and general expenses.....	10,874	10,000	15,000
Total general service activities.....	126,561	959,476	772,000
Total acquisition of assets.....	15,470,782	27,249,476	24,305,000
EXPENSES			
Navigation, flood control, and power program:			
Navigation operations.....	386,569	2,417,000	461,000
Flood control operations.....	403,391	379,000	460,000
Multipurpose reservoir operations.....	2,738,169	2,844,000	3,149,000
Topographic mapping.....	178,191	136,000	90,000
Distribution of administrative and general expenses.....	204,578	247,000	228,000
Total navigation, flood control, and power program.....	3,930,898	6,023,000	4,388,000
Fertilizer, agricultural, and munitions program:			
Fertilizer, agricultural, and munitions development.....	3,375,354	3,587,000	3,960,000
Distribution of administrative general expenses.....	129,414	139,000	152,000
Total fertilizer, agricultural, and munitions program.....	3,504,768	3,726,000	4,112,000
Cooperative valley development programs:			
Cooperative valley development.....	1,200,821	1,549,000	2,146,000
Distribution of administrative and general expenses.....	65,109	75,000	95,000
Total cooperative valley development programs.....	1,265,930	1,624,000	2,241,000
General service activities: Maintenance of bridges financed by others on TVA dams.....			
	9,607	7,000	25,000
Total general service activities.....	9,607	7,000	25,000
Total expenses.....	8,711,203	11,380,000	10,786,000
INVENTORIES AND PROPERTY TRANSFERS			
General service activities:			
General inventories.....	30,762		
Property transfers.....	-45,920		
Total inventories and property transfers.....	-15,158		
Total budget financed from appropriations.....	24,166,827	38,629,476	35,071,000

Summary of budget financed from appropriations (for fiscal years ending June 30, 1961, 1962, and 1963)—Continued

	1961 actual	1962 estimate	1963 estimate
FINANCING			
Appropriation.....	\$20,520,000	\$38,203,000	\$35,071,000
Balance brought forward.....	4,073,303	426,476	
Balance carried forward.....	-426,476		
Total financing.....	24,166,827	38,629,476	35,071,000

Summary of budget financed from power proceeds and bonds (for fiscal years ending June 30, 1961-63)

	1961 actual	1962 estimate	1963 estimate
ACQUISITION OF ASSETS			
Navigation, flood control, and power program:			
Multipurpose dam: Melton Hill Dam and Reservoir.....	\$3,067,005	\$8,294,000	\$8,306,000
Power supply facilities:			
Kinston steamplant, units 1-9.....	8,669		
Widows Creek steamplant, unit 7.....	5,073,277		
Widows Creek steamplant, unit 8.....	7,988,005	22,037,000	18,377,000
Colbert steamplant, unit 5.....	27,809,876	23,964,000	3,352,000
Paradise steamplant, units 1-2.....	60,636,029	79,738,000	27,656,000
Bull Run steamplant, unit 1.....	217,210	11,079,000	24,730,000
Additional steam unit.....		20,000	8,158,000
Wilson hydro, units 19-21.....	8,468,278	2,122,000	26,000
Wheeler hydro, units 9-11.....	7,246,136	9,408,000	1,506,000
Transmission system facilities.....	25,529,669	34,000,000	37,000,000
Coal land and rights.....	273,698	1,500,000	800,000
Additions and improvements at existing power facilities.....	2,129,297	1,335,000	1,182,000
Investigations for future facilities:			
Current.....	96,409	206,000	191,000
Reclassification of prior years' costs.....	99,158		
Undistributed reduction based on possible delays and savings.....		-20,000,000	
Distribution of administrative and general expenses.....	1,907,566	1,916,000	1,995,000
Total acquisition of assets.....	150,550,282	175,619,000	133,279,000
EXPENSES			
Navigation, flood control, and power program:			
Power operations.....	144,166,798	146,295,000	161,337,000
Allocation of multipurpose reservoir operations.....	1,847,435	1,904,000	2,112,000
Distribution of administrative and general expenses.....	2,391,535	2,483,000	2,612,000
Total expenses.....	148,405,768	150,682,000	166,061,000
INVENTORIES AND DEFERRED CHARGES			
Navigation, flood control, and power program:			
Power inventories.....	-3,106,967	148,000	1,469,000
Deferred charges.....	110,893	68,000	-45,000
Total inventories and deferred charges.....	-2,996,074	216,000	1,424,000
Total budget financed from power proceeds and bonds.....	295,959,976	326,517,000	300,764,000
FINANCING			
Balance brought forward.....	51,651,593	5,538,606	44,310,606
Proceeds from borrowings.....	49,708,000	148,531,000	49,500,000
Current proceeds:			
Power operations.....	250,676,005	262,257,000	285,517,000
Sale of retired plant.....	385,205	420,000	324,000
Miscellaneous receipts.....	510,177	623,000	377,000
Total current proceeds.....	251,571,387	263,300,000	286,218,000
Payments to Treasury:			
Reduction of appropriation investment.....	-10,000,000	-10,000,000	-10,000,000
Dividend (return on appropriation investment).....	-41,432,398	-36,542,000	-38,500,000
Total payments to Treasury.....	-51,432,398	-46,542,000	-48,500,000
Balance carried forward.....	-5,538,606	-44,310,606	-28,764,606
Total financing.....	295,959,976	326,517,000	300,764,000

Summary of budget financed from nonpower proceeds (for fiscal years ending June 30, 1961-63)

	1961 actual	1962 estimate	1963 estimate
<b>EXPENSES</b>			
Navigation, flood control, and power program: Multipurpose reservoir operations.....	\$265,059	\$346,000	\$358,000
Fertilizer, agricultural, and munitions program:			
Fertilizer, agricultural, and munitions development.....	16,450,549	20,384,000	19,354,000
Distribution of administrative and general expenses.....	437,239	456,000	460,000
Total fertilizer, agricultural, and munitions program.....	16,887,788	20,840,000	19,814,000
Cooperative valley development programs: Cooperative valley development.....		12,000	245,000
General service activities:			
Reimbursable services.....	4,507,566	5,350,000	8,228,000
Distribution of administrative and general expenses.....	69,295	75,000	100,000
Total general service activities.....	4,576,861	5,425,000	8,328,000
Total expenses.....	21,729,708	26,623,000	28,745,000
<b>INVENTORIES</b>			
Fertilizer, agricultural, and munitions program: Chemical inventories.....	1,416,342	-775,000	
Total budget financed from nonpower proceeds.....	23,146,050	25,848,000	28,745,000
<b>FINANCING</b>			
Balance brought forward, including continuing fund.....	4,383,433	2,760,211	2,666,211
Current proceeds:			
Navigation operations.....	104,832	4,000	4,000
Multipurpose reservoir operations.....	265,059	346,000	358,000
Fertilizer, agricultural, and munitions development.....	15,952,368	19,413,000	19,264,000
Cooperative valley development.....	38,437	17,000	246,000
Reimbursable services.....	4,576,861	5,425,000	8,328,000
Sale of retired plant and miscellaneous receipts.....	585,271	549,000	398,000
Total current proceeds.....	21,522,828	25,754,000	28,598,000
Balance carried forward, including continuing fund.....	-2,760,211	-2,666,211	-2,519,211
Total financing.....	23,146,050	25,848,000	28,745,000

## Selected data for major projects

	Fiscal year construction started	Nameplate generating capacity and service dates		Actual to June 30, 1961 (net)	Budget			Administrative and general expenses, total project	Estimated incidental income, fiscal year 1962-63	Estimated total cost
		Capacity, kilowatts	Service dates		Fiscal year 1962	Estimated				
						Fiscal year 1963	To complete			
<b>FINANCED FROM APPROPRIATED FUNDS</b>										
Multipurpose dam: Melton Hill.....	1961		July 1963.....	\$5,244,161	\$8,286,000	\$1,688,000	\$41,839	\$250,000	\$11,000	\$15,500,000
Navigation locks: Rehabilitation of original lock at Wheeler Dam.....	1961		June 1962.....	726,833	6,184,000	336,000	-----	145,000	-----	7,391,833
New lock at Wheeler Dam.....	1961		April 1963.....	3,032,886	7,956,000	4,953,000	108,114	350,000	-----	17,000,000
New lock at Gummersville Dam.....	1962		June 1965.....	19,715	176,000	3,244,000	12,735,285	325,000	-----	16,500,000
New lock at Wilson Dam.....	1957		November 1959.....	37,073,809	-762,000	-----	-----	642,992	-----	36,954,801
Power supply facilities: Kingston steamplant, units 1-9.....	1951	1,440,000	January, April, June, July 1954; February, March, May, August, December 1955.....	196,871,221	-----	-----	-----	1,328,629	-----	198,199,850
Total for projects underway in 1963 or completed during fiscal year 1961.....				243,568,625	21,840,000	10,222,000	12,885,238	3,041,621	11,000	291,546,484
<b>FINANCED FROM POWER PROCEEDS AND BONDS</b>										
Multipurpose dam: Melton Hill, units 1-2.....	1961	72,000	July, September 1963.....	3,059,212	8,294,000	8,306,000	502,788	350,000	12,000	20,500,000
Power supply facilities: Widows Creek steamplant, unit 7.....	1958	500,000	February 1961.....	70,370,381	22,037,000	18,377,000	12,941,876	935,733	-----	71,506,114
Widows Creek steamplant, unit 8.....	1961	500,000	October 1964.....	8,351,124	23,964,000	3,352,000	36,972	590,000	57,000	62,200,000
Colbert steamplant, unit 5.....	1960	500,000	October 1962.....	35,627,028	79,738,000	27,656,000	7,165,553	500,000	20,000	64,550,000
Paradise steamplant, units 1-2.....	1960	1,300,000	November 1962; October 1963.....	67,038,447	11,079,000	24,730,000	87,687,704	1,200,000	98,000	183,000,000
Bull Run steamplant, unit 1.....	1962	900,000	November 1965.....	303,295	20,000	8,138,000	90,822,000	1,000,000	-----	125,000,000
Additional steam unit.....	1963	2,900,000	Winter of 1966-67 <sup>2</sup> .....	-----	20,000	-----	-----	-----	-----	2,920,000
Wilson hydro, units 19-21.....	1959	162,000	December 1961; January, March 1962.....	18,384,470	2,122,000	28,000	-----	258,500	-----	20,990,970
Wheeler hydro, units 9-11.....	1960	97,200	September, November 1962; January 1963.....	8,740,008	9,408,000	1,506,000	45,992	300,000	-----	20,000,000
Total for projects underway in 1963 or completed during fiscal year 1961.....				213,273,995	156,652,000	92,111,000	196,202,885	6,084,233	187,000	667,747,084

1 Actual.

2 Preliminary.

## GENERAL STATEMENT

Mr. WAGNER. Mr. Chairman, we come before you today with a request for TVA's appropriation for fiscal year 1963.

This request is for an appropriation of \$35,071,000.

The purposes to which it will be applied are described in detail in the budget program which is in the printed booklet before you.

I might mention some of the major items that—

Senator HILL. Do that, by all means.

Mr. WAGNER (continuing). Are in this budget.

## MELTON HILL DAM AND RESERVOIR, TENN.

There is an item of \$1,689,000 included in the appropriation request to continue the construction of Melton Hill Dam and Reservoir on the Clinch River near Oak Ridge, Tenn.

The lock at this project will come into service by July 1963, and the two generating units will be ready for service in July and September 1963. Melton Hill will be the newest addition to our system of multiple purpose dams and reservoirs.

It will extend the navigation channel on the Clinch River a distance of about 38 miles up to the city of Clinton, and will make possible further development of that area through the recreation opportunities it will provide, through the opportunities for industrial growth provided by the navigation channel, and, of course, through some 80,000 kilowatts of electric power that it will add to the dependable capacity of our system.

There is another item—

Senator HILL. As I remember, this committee started that project, put the first item in the bill for that construction, isn't that right?

Mr. WAGNER. That is correct; yes, sir.

## EXPENDITURES TO DATE

Senator HILL. How much has been expended up to date, Mr. Chairman, do you recall?

Mr. WAGNER. Actual expenditures through June 30, 1962, totaled \$21.7 million of which \$11.1 million was derived from appropriations by the Congress and \$10.6 million from TVA power proceeds. The request in 1963 includes the \$1,689,000 of appropriated funds which I have mentioned, and the project will also require funds from power proceeds amounting to \$8,306,000.

Senator HILL. Those will be from the power proceeds?

Mr. WAGNER. That is right.

Senator HILL. And not out of the Treasury?

Mr. WAGNER. That is correct. The power portion of this project will be paid for from power proceeds.

## NEW LOCK AT WHEELER DAM, ALA.

There is another item of \$4,953,000 for continuing the construction of a new lock at Wheeler Dam in northern Alabama.

This lock will have chamber dimensions of 110 by 600 feet, the same as the one just being completed downstream at Wilson Dam, the same dimensions as the locks further downstream at Pickwick and Ken-

tucky Dams. It is a part of the program of enlargement and expansion of navigation facilities required to accommodate the transportation needs of this growing region.

Senator HILL. How much has been put into this construction up to date?

Mr. WAGNER. Actual expenditures through June 30, 1962 totaled \$10.9 million. Expenditures budgeted in 1963 will essentially complete it.

Senator HILL. That is what I thought. This will be the end, won't it? I mean, so far as appropriations, it is pretty much the end?

Mr. WAGNER. There may be a little work to be done next year, as frequently happens when these projects are scheduled for completion in a certain year. Essentially all the money will have been spent by the end of 1963 but in 1964 there may be a final expenditure of a few hundred thousand dollars.

Senator HILL. A few odds and ends.

Mr. WAGNER. For cleaning up. That situation, for instance, exists at Wilson Dam now where we are just winding up construction on the new lock that was substantially completed the last fiscal year.

#### NEW LOCK AT GUNTERSVILLE DAM, ALA.

There is another item of \$3,244,000 for beginning construction of a new lock at Guntersville Dam, Ala.

Through June 30, 1962, \$81,000 has been spent for planning and design but the funds requested for 1963 will begin the construction of the lock, which will help to extend farther upstream the larger lockage capacity which, as I said, is necessary to meet the growing needs of the region.

Senator HILL. What is your overall estimate of the cost?

Mr. WAGNER. \$16.5 million for the Guntersville lock.

Senator HILL. This will begin the construction?

Mr. WAGNER. Yes, sir; that is correct; the \$3,244,000 is for beginning onsite construction. The lock will be put in service in June of 1965.

I may have failed to mention that the Wheeler lock just downstream will be in service in April of 1963.

#### CHEMICAL FACILITIES, MUSCLE SHOALS, ALA.

There is another item of \$6,793,000 for the rehabilitation of and additions to chemical facilities in our fertilizer and munitions development plant at Muscle Shoals.

You, Senator Hill, will remember much better than I the history of this installation and the part that it had in the initial creation of TVA, since you were here and participated in the debates and in the actions of the Congress which led to its incorporation in the TVA program.

Senator HILL. I know something of the history and I heard it discussed and have read many things about it.

Mr. WAGNER. You were here at the time when the facility was turned over to TVA.

Senator HILL. That is correct.

Mr. WAGNER. And its utilization was incorporated into TVA's areas of responsibility.

Senator HILL. That is right.

Mr. WAGNER. You will recall that some of the facilities we have been using were constructed as far back as World War I. They become outmoded and worn out, and in order to continue an efficient operation they are being replaced. This is a program which was started some time ago.

#### PHOSPHOROUS FURNACE

One of the items included is a new and modern phosphorous furnace which will be completed in 1963 at a total cost of about \$3 million.

This will not only permit us to do a more efficient job in the production of fertilizers but it will add to the defense capabilities of the plant by giving us a more dependable supply of elemental phosphorous. Incidentally, it will let us operate the phosphate end of our operation at savings of about \$250,000 a year.

#### NITRIC ACID PLANT

Also there are included funds for continuing the construction of a new modern nitric acid unit.

Senator HILL. Excuse me one minute. You speak of that phosphate plant. You mean your new plant will save you \$250,000 in your production a year?

Mr. WAGNER. Yes, sir; that is correct.

Senator HILL. That is due to new inventions, new—

Mr. WAGNER. Yes, sir. This is a modern rotating furnace which makes more efficient use of electricity and of the materials that are put into it, and there will be savings in labor costs, too as the new furnace will replace some old units that are now fully depreciated and expensive to operate and maintain.

Senator HILL. You spoke of the national defense. Amplify that a little bit, will you?

Mr. WAGNER. Well, two of the basic ingredients that go into fertilizer are nitrogen and phosphorous, and it so happens that both of them are also useful in the production of munitions. Phosphorous is used in incendiaries, in smokescreens, and in other munitions.

During World War II a very substantial percentage, about 60 percent, of the phosphorous requirements of our Armed Forces were furnished by the facility at Muscle Shoals.

TVA's fundamental research in the use of phosphorous and phosphates in fertilizer production is also useful, of course, in their application to munitions and for other defense purposes. A very important ingredient of nerve gas has a phosphorous base and has been produced in facilities located at Muscle Shoals.

There are also included funds for a new pressure-type nitric acid unit which will enable us to make nitric acid of 65 to 70 percent strength as compared with the 42-percent strength acid that is produced under the old facilities we have been using.

Senator HILL. Sixty-five percent? That high?

Mr. WAGNER. Sixty-five to seventy percent; yes, sir.

This unit will, when completed, cost about \$2.5 million, and because of the improvements in design and operation incorporated it will enable us to save \$160,000 a year in the operation of the nitric acid facilities.

#### PAN GRANULATOR

There also are included funds for completing the construction of a new facility to make granular nitrogen-containing fertilizer—a pan granulator we call it.

This is a new method for producing fertilizers in small pellets or granules.

Farmers prefer these because they are less dusty and easier of application. They maintain a better condition.

At the present the greater part of the commercial ammonium nitrate production is granulated in prilling towers. A prilling tower costs \$1 million to \$1.5 million and can produce just one kind of high-nitrogen fertilizer. We are adapting an old granulation principle here to produce a variety of granular fertilizers in a piece of equipment which will cost not \$1 million or \$1.5 million, but around \$150,000.

Of course there are other features incorporated in a plant to make granular fertilizers, whether a prilling tower or a pan granulator is used so the complete cost of the TVA granulation plant is about \$2.6 million. This is about \$1 million less than it would be if prilling towers were used, and it will permit annual savings of about \$250,000.

#### AMMONIUM POLYPHOSPHATE PLANT

There are also funds here for the construction of a plant to make ammonium polyphosphate. This is a new fertilizer, and is a most versatile and extremely promising fertilizer. In the first place, it is more concentrated than any fertilizer now on the market. It contains 76 percent plant food, and you will recall from your own experience and from work that has been previously done in this plant, the importance of high-analysis fertilizers in reducing costs of transportation and the costs of application on the land. This fertilizer also is completely water soluble which means that it is extremely useful in the manufacture of liquid fertilizers.

I would like particularly to point out that development of the process for making ammonium polyphosphate fertilizer was possible because we had previously been able to develop superphosphoric acid, and that, in turn we discovered through the use of the electric furnace process in the production of phosphorous and phosphoric acid.

The normal commercial method of making phosphoric acid is by what is commonly called the wet process. The wet process technology would not have opened up the possibilities leading to ammonium polyphosphate.

Since ammonium polyphosphate is water soluble it is useful in making liquid fertilizers.

#### PROBLEMS WITH LIQUID FERTILIZERS

One of the problems with many liquid fertilizers is that salt crystals and impurities settle out from them and make a material which has

particles in it of sufficient size to clog nozzles on distribution equipment.

When used in the manufacture of liquid fertilizers, both the superphosphoric acid and the ammonium polyphosphate fertilizer which we shall produce in this new demonstration scale plant hold impurities in solution so that a clear and completely liquid fertilizer is available. In fact, they can be used in the preparation of fertilizers which will contain substantial amounts of wet process acid and still perform this same function.

Now, one of the advantages of this development is that wet process phosphoric acid is generally cheaper than electric furnace acid. Therefore, the more wet process acid it is possible to use in making high analysis liquid fertilizers of good quality, the lower is their cost of production. But again, this whole line of discovery was possible because we could first identify these materials and develop them with the electric furnace process acid.

There are other advantages to this new material, advantages in storage and in transportation, which I won't elaborate on, but let me say that it opens up a new field of fertilizer production.

Senator HILL. With economy to the farmers.

Mr. WAGNER. Yes, sir; with economies to the farmers.

#### NITRIC PHOSPHATES

There is another new series of materials that we propose to begin making, too. These are the nitric phosphates. They offer a basically and inherently cheaper way to make fertilizers because they produce phosphatic fertilizers by treating rock phosphate with nitric acid, and the nitric acid itself not only produces a reaction which makes the phosphate available as a plant nutrient but contains nitrogen which is in itself a plant food and is therefore available in the final product at minimum cost.

The use of this nitric phosphate process will permit cost reductions up to 10 percent in the manufacture of fertilizers of certain formulations.

Now, developments in our laboratories and in our research work since we prepared this budget document have shown that we can incorporate facilities to make both of these fertilizers, ammonium polyphosphate and the nitric phosphates in a single plant, and this is what we plan to do, to make a combination plant.

It will save about \$900,000 as compared with the cost of two separate plants, one to make each of the two things.

These new fertilizers get to the farmers—and information about their use and their usefulness gets to farmers—through our various education programs with which you are familiar.

#### STATES IN TEST DEMONSTRATION PROGRAMS

Senator HILL. You have 31 States now in your test demonstration programs?

Mr. WAGNER. Yes, sir; that is correct.

Senator HILL. Thirty-one?

Mr. WAGNER. Yes; that is correct.

We have participating in this program of getting the fertilizer to the farmers and the testing and developing of new uses for them, some

93 distributors across the United States, with about 1,700 dealers, so it is quite an extensive program.

#### SEMINAR IN FACILITIES AT MUSCLE SHOALS

On the 7th and 8th of August, Senator, we conducted a technological seminar in the facilities at Muscle Shoals, inviting representatives of the fertilizer industry and others interested in the use of fertilizers to come and see some of these new processes demonstrated, to hear papers presented by our chemists and to consult with them.

A total of 366 representatives came to this seminar from about 37 States, and 51 of them from foreign countries. There were 167 different organizations in the United States which sent representatives to the meeting.

Senator HILL. Organizations such as?

Mr. WAGNER. Land-grant colleges, fertilizer manufacturers and distributors, the editors of fertilizer magazines, plant food magazines, and so on.

Here is a map, Senator, which shows where these people came from, and the number who came. I think it illustrates the fact that this program is of more than regional significance. It is of direct significance to the whole United States.

Senator HILL. You had representatives from practically every State of the Union?

Mr. WAGNER. From 37 of the States.

Senator HILL. Thirty-seven of the States?

Mr. WAGNER. Yes sir; that is correct.

Senator HILL. And people in the fertilizer business and land-grant colleges and other institutions and organizations interested in fertilizers, is that right?

Mr. WAGNER. Interested in fertilizer and in agriculture, yes, sir; that is correct.

#### ROYALTY-FREE USE OF PATENTS

As you know, the processes we develop are patented, but these patents are made available to anyone for use on a nonexclusive royalty-free basis, and in this way the benefits of the research get into practical application in plants which provide the bulk of the fertilizers used in the country.

At present, for example, 207 companies hold 307 licenses to use TVA developments in 304 different plants that are scattered throughout the United States.

Senator HILL. You speak of companies, those companies whose business is the production of fertilizer?

Mr. WAGNER. Yes, sir; production of fertilizers and chemicals; that is correct.

Senator HILL. And chemicals.

Mr. WAGNER. Yes, sir.

Now, TVA, as you know, has stressed the importance of greater concentration in the fertilizers, higher plant food content, and we believe that largely as the result of the kind of programs that I have described, the plant food content of the average fertilizer used in the United States rose from about 20 percent in 1940 to about 32 percent in 1960.

## PRICES OF FERTILIZERS

I would like also to point out that the average retail price of fertilizers has held fairly steady in recent years.

In terms of the cost per unit of plant food, which takes into account the greater concentration, the price in 1960 was actually 16 percent lower than in 1952, and to give you a measure of the significance of this fact, if the price had remained at 1952 levels, fertilizers would have cost farmers \$260 million more in 1960 than they actually did cost.

Senator HILL. \$260 million more in 1 year's time?

Mr. WAGNER. Yes, sir; that is correct. The farmers, like many other groups, are caught in what is called the cost-price squeeze and any actions which can be taken should be taken to help farmers hold their costs down, improve their economic position, and reduce the amount of assistance that may be necessary to grant them from other quarters and for other purposes.

I have a chart here, Senator, which shows this reduction of cost of plant nutrients as compared with the costs of other items that go into farming operation.

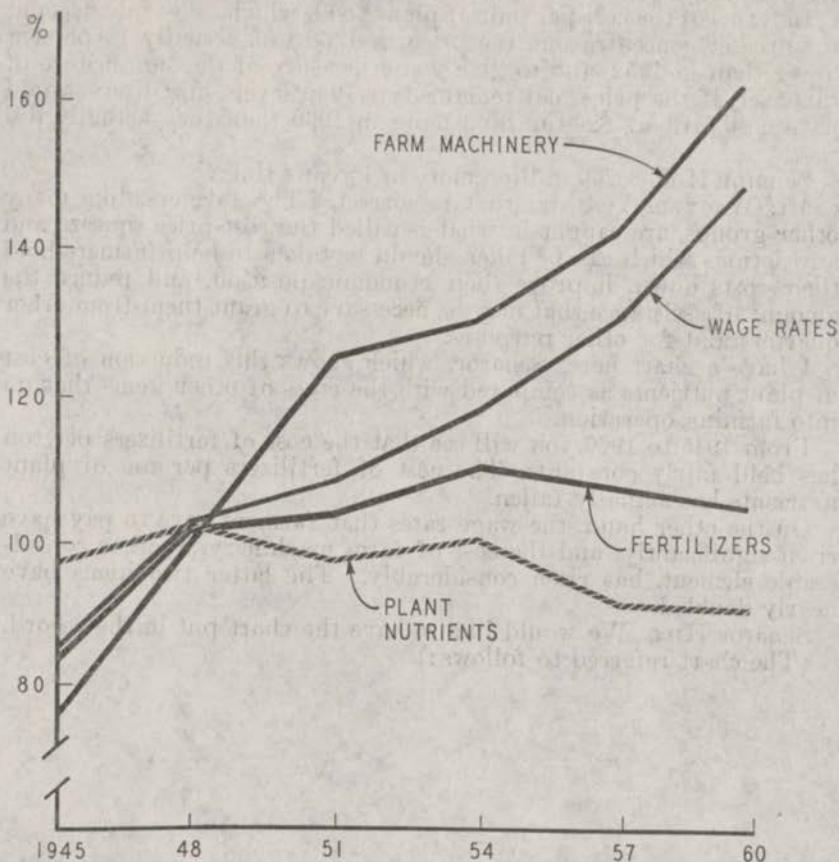
From 1945 to 1960 you will see that the cost of fertilizers per ton has held fairly constant. The cost of fertilizers per ton of plant nutrients has actually fallen.

On the other hand, the wage rates that farmers have to pay have risen significantly, and the cost of farm machinery, another considerable element, has risen considerably. The latter two items have nearly doubled.

Senator HILL. We would like to have the chart put in the record. (The chart referred to follows:)

## FARM PRODUCTION COSTS

1947-49 AVERAGE = 100



PERCENTAGE OF PLANT FOOD IN FERTILIZERS

Mr. WAGNER. To move on from the fertilizer program—

Senator HILL. I want to say this before you move on, it seems to me that you bring us a most gratifying story of the progress you have made with reference to fertilizer.

Mr. WAGNER. Thank you very much. We hope it has been.

Senator HILL. When we first began talking about doing something about fertilizer years ago, what did we have, Mr. Jones?

Mr. JONES. About 10 to 12 percent.

Senator HILL. Ten percent?

Mr. JONES. Ten percent, or thereabouts.

Senator HILL. About 10 percent. It was about 2-8-2 wasn't it, as you say? About 900 percent of everything in that sack was inert matter, matter that was not worth anything at all, but you had to pay to handle it, or ship it. You had all the costs on it, but it was not any good to you.

I think this is a tremendously interesting and gratifying story that you have told here.

Mr. WAGNER. Thank you.

We have other developments still in the laboratory that I have not mentioned which I think give real promise of even further and very substantial progress in this field.

Senator HILL. Not only has the farmer benefited tremendously but the people in the fertilizer business.

Mr. WAGNER. Yes, sir.

Senator HILL. They have derived great benefits themselves; isn't that true?

Mr. WAGNER. Yes, sir; that is correct.

Senator HILL. As you know, they looked askance at this program in the beginning, but they have certainly benefited just as the farmers have benefited tremendously.

Mr. WAGNER. Yes, sir.

Senator HILL. That is a very fine and very gratifying, wonderful story.

#### DEMAND FOR NITRATE IN WORLD WAR I

You spoke about that section 124. You remember the first naval battle of World War I was not fought up in the North Sea or in the Atlantic Ocean near the European shores; it was fought off the coast of Chile, as British battleships intercepted German gunboats, trying to bring out ships carrying Chilean nitrate.

They had to send all the way to Chile to get the nitrate, and the United States was sending to Chile to get her nitrates.

This is really a tremendous story you have told here this afternoon, a wonderful story.

#### WATER CONTROL SYSTEM IN BEECH RIVER WATERSHED

Mr. WAGNER. Another item in this appropriation request is one for \$2.5 million to begin the construction of a multiple purpose water-control system in the Beech River watershed.

Now, this is a part of the tributary area development program which I described in some detail last year before this committee, and I won't impose on your time to repeat that complete description today.

This is a program in which TVA works very closely with the local people and with their governments in smaller areas in the Tennessee Valley, in a program of total economic development—a program to mobilize and utilize all of the resources that are available to the best extent possible, to improve the economic status of that area.

It is not a new program. You, Senator Hill, described it in some detail on the Senate floor in 1953 when we called it, I believe, the small watershed program, and you recognized it then very eloquently as a method for securing the maximum participation of local people, of local groups, and the maximum development of a region's resource and its potential, with a minimum of Federal dollars.

Now, while the program is not new, this is the first time that we have asked for funds for construction of water control facilities, and there are some new ideas here.

In this program, water is regarded as but one of many resources which may contribute something to economic growth in an area.

Development of the tributary water course may or may not be needed or may or may not be justified in the individual cases. And so I say the water resources are examined just as we examine the agricultural resource, the forest resource, the industrial potential, and the recreation potential to see if their development can make a contribution commensurate with the cost.

#### FORESTRY INDUSTRY

We have been working with the people in the Beech River area for a decade on this total program of resource development and I think it is interesting that in this period, in the past 10 years, the people have planted 18,500 acres of trees, which is about 10 percent of the area of this watershed.

These trees will help to control erosion and to put land back into productive use, and they are useful in that respect. But they were planted primarily to stimulate economic growth in the area.

Landowners in this area, through the stimulation of a forestry program, are helping to supply the wood for new and expanding wood using industries, and in 10 years the value of wood products produced in this area has risen from \$345,000 to a million and a quarter dollars.

Senator HILL. What is that new industry largely?

Mr. WAGNER. Lumber, pulpwood, the furniture industry, plywood industry, and dimension timbers, this sort of thing.

#### EMPLOYMENT IN FOREST INDUSTRIES

Employment in forest industries in the Beech River area has risen from 260 to 500 in this 10-year period, and the payrolls have grown from \$50,000 to \$410,000.

So that while the trees that have been planted helped to control erosion and improve land use, they are viewed by the people in the area as building a resource base which will provide a lasting foundation for economic growth.

There have been very marked changes in the agricultural pattern of the region, too. Large acreages have been put into permanent pastures. Pastures have been fertilized and livestock is appearing. Twenty percent of the farmers are now livestock farmers. Ten years ago only 12 percent were.

These things which have been undertaken will promote the control of erosion and better use of land, but they were undertaken also because they made economic sense.

This was the way for farmers to get back on their feet, to get some production from their land and a higher utilization of their labor.

It is interesting to see what has happened on the farms of this tributary area.

#### FARM INCOME

There are 28 percent fewer farms now than there were 10 years ago, but the farms are getting larger. Net income per farm is up 108 percent. At the same time, fewer people are employed in farming; 52 percent were in agriculture in 1950, only 25 percent are in it now.

Now, these activities in agriculture—and they included the adoption of many other good farm practices, stripcropping, contour farming,

terracing when desirable, and so forth—these practices were all undertaken, and these improvements made for their own sakes, because they made economic sense, and let me say particularly that they were undertaken without anyone knowing at the time whether a program for control of the streams by construction of dams and reservoirs and channel clearing would ever be undertaken.

The people who have been coming off the farms are appearing in jobs in manufacturing, and in the 10-year period employment in manufacturing in this relatively small area, with a population of only a little more than 20,000, has risen from 500 jobs to 2,300 jobs, with an annual payroll of over \$5 million.

Senator HILL. Within what period of time?

Mr. WAGNER. A 10-year period.

Senator HILL. Ten-year period.

#### INCREASE IN PER CAPITA INCOME

Mr. WAGNER. The average per capita income in the area has risen from \$655 to \$1,030.

Senator HILL. Yes.

Mr. WAGNER. Now, these changes have been accomplished through use of all the resources available, and as this work has gone on we have also studied the water resource.

It became apparent that the water resource needed further development from the standpoint of agriculture. Some of the farmlands on the river bottoms flooded two or three times a year, and flood control structures would improve the picture there.

It has also developed that more water is needed for industry in the area than is available.

There is the possibility, too, that with a better agriculture water will be needed for irrigation. As the region has developed there is a demand for recreational facilities and small lakes would provide that.

So TVA has examined the water resource. We have found that a system of about 14 dams, 7 of them detention dams, 7 with permanent pools, would be an economically sound investment considering all of the benefits which might come from it. We have entered into an agreement with a local organization, the Beech River Watershed Development Authority, chartered by the State of Tennessee, whereby we will jointly build and operate this system of dams. The \$2.5 million appropriation request which I mentioned is to commence the construction.

#### TOTAL COST OF DEVELOPMENT PROGRAM

Senator HILL. What will be the overall cost?

Mr. WAGNER. The overall cost is estimated at \$6 million, and the plan is that the Beech River Watershed Development Authority under this agreement will, over a period of some 35 or 40 years, repay to TVA, and we to the Treasury, \$2 million of the \$6 million.

Income from which the Beech River Watershed Development Authority will make these payments will come from the benefits to be generated by the projects themselves.

## ENHANCED VALUE OF SHORELANDS

A principal source of income will be the enhanced value of the shorelands along the permanent reservoirs.

Now, let me amplify that.

In our own experience in TVA in relation to dams that we have already built, we found that land which, as farmland, could be purchased for a reservoir for \$25 or \$50 or \$75 or \$100 an acre, had brand-new values far in excess of its value as farmland when it became shoreline land.

It is valuable for industrial sites; it is valuable for homesites; it is valuable for the installation of recreation and resort facilities; it is valuable for the construction of summer-use cottages, and so on. These new uses are reflected in prices which people are paying for this land that amount to up to several thousand dollars per acre.

In some of the reservoirs which we have built, we own marginal strips of land. We sold tracts and recaptured some of this value. In other instances where we bought only flowage easements, these benefits accrued as windfall benefits to the property owner who just happened to be at a location where the expenditure of public funds to create a reservoir benefited him.

## INTEREST RATE ON LOAN

We have determined through comparison with our own records that the shorelands along these reservoirs in the Beech River area will increase substantially in value. These shorelands will be owned by the Beech River Watershed Development Authority which, as the values increase over a period of years, will sell or lease them and will use funds so obtained to help repay the \$2 million, and do so with interest, I might add.

Senator HILL. At what rate?

Mr. WAGNER. At 2 $\frac{5}{8}$  percent.

There will also be—

Senator HILL. How did you arrive at that 2 $\frac{5}{8}$  percent?

Mr. WAGNER. Well, the 2 $\frac{5}{8}$  percent is based on a computation of the average rate of interest payable by the Federal Government on its marketable obligations with original terms of maturity of 15 years or more.

That is the figure which, at the time this agreement was developed was suggested for use by the Bureau of the Budget in evaluating water control projects. It so happens that this computed average interest rate is about the same as the average rate of interest paid by the U.S. Treasury over the past 10 years.

Senator HILL. That is what I wanted to bring out. It is by the Bureau of the Budget and it is about the average through the years of the cost of money to the Federal Government; is that correct?

Mr. WAGNER. That is correct.

## SALE OF WATER

Now, the Beech River Watershed Authority will also sell water to the cities involved, to industries, and to farmers for irrigation, and this will make available additional money which will then be used to help liquidate part of the cost of the project.

Contributions will also be made by counties and cities, and the higher tax base that is created when the reservoirs are built will help make them possible.

The representatives of local government who have participated in development of the plan understand and agree that as this land increases in value it should be assessed at figures which reflect its higher value, and so while new taxes are not needed or proposed, the increased value of the land can be reflected in higher taxes that can be gathered, and a part of those taxes can be used to help liquidate the cost of the projects which made them possible.

#### BASIS FOR FORMULA FOR LOCAL CONTRIBUTION

Senator HILL. How did you arrive at the figure of \$2 million as a fair share for the local interests to pay?

Mr. WAGNER. Figures of this kind, Senator, are always subject to a variety of interpretations.

Senator HILL. Interpretations or opinions; both.

Mr. WAGNER. Both. I would not want to feel we are to be held to the formula that we used this time.

Senator HILL. That is the reason I asked my question, because if you do not make that very clear you might find that there will be others who will be back here in the next few years and saying, "Well, you did this here."

Mr. WAGNER. We think this is a new field and we believe that one of TVA's responsibilities is to pioneer in new fields, to see if we can find new and better ways to get things done that need doing.

#### FLOOD CONTROL ASPECTS OF PROJECTS

In this instance flood control's allocated share of the cost of the projects bears about the same relationship to the remaining costs as 2 to 1, as the \$4 million to the \$2 million, so, in general, roughly, the Federal contribution would correspond to the flood control value of these projects.

As I say, we try not to remain stationary in our thinking, and if we should find another area where tributary structures of this kind would be feasible we might want to propose a different method of financing, but we believe this is a fair method and relates generally to the benefits to be generated by the project.

In summary, the proposal here is that the local benefits generated by the project will be captured in the future as they develop, to help pay the cost of the project with interest.

Senator HILL. To help pay the cost.

Mr. WAGNER. That is about the story on the Beech River item.

Senator HILL. Before we leave the Beech River development, I would like to put in the record immediately following your testimony on the Beech River development, a letter I have here addressed to Senator Hayden, the chairman of the full committee, under date of February 26, 1962, from Gov. Buford Ellington, Governor of Tennessee, strongly supporting the project.

I also have a copy of the resolution by the board of directors of the Beech River Watershed Development Authority, Henderson and Decatur Counties, Tenn.

(The information referred to follows:)

TENNESSEE EXECUTIVE OFFICE,  
Nashville, February 26, 1962.

Re Beech River appropriation, Decatur and Henderson Counties, Tenn.

HON. CARL HAYDEN,  
Chairman, Senate Appropriations Committee,  
U.S. Senate, Washington, D.C.

DEAR SENATOR HAYDEN: President Kennedy has included in his budget for the 1963 fiscal year (to the Congress) the sum of \$2.5 million to be used by the Tennessee Valley Authority in developing the resources of the Beech River watershed in Decatur and Henderson Counties, Tenn. The State of Tennessee, through a number of agencies, has long been an active participant in developing plans and procedures for use in this demonstration area.

I urge that your committee give favorable consideration to the appropriation necessary to get this desirable project underway.

Sincerely yours,

BUFORD ELLINGTON, Governor.

RESOLUTION BY BOARD OF DIRECTORS, BEECH RIVER WATERSHED DEVELOPMENT  
AUTHORITY, HENDERSON AND DECATUR COUNTIES, TENN.

Whereas the people of Beech River in cooperation with representatives of the State of Tennessee and TVA have since 1954 been engaged in a joint demonstration program of comprehensive resource development in the Beech River area in Henderson and Decatur Counties, Tenn.; and

Whereas purposes of this demonstration include testing new approaches, methods, and administrative arrangements for achieving effective comprehensive unified resource development as well as the use and application of established methods for resource development; and

Whereas significant progress in many phases of resource development, including agriculture, forestry, industrial, educational, and municipal development have been achieved; and

Whereas at the request of the BRWDA, TVA has developed a plan for putting the wasted destructive waters of Beech River under control in a manner which will make an essential contribution to improving the economy of the area through flood control, water supply for municipal, industrial, and agricultural use and recreation; and

Whereas the BRWDA has reached basic agreement with TVA and State agencies on plans and programs for construction, operation, financing, and use of the water control system; and

Whereas BRWDA has agreed to repay \$2 million of the \$6 million construction cost of the water control system with interest and to assume responsibility for maintenance and development of full use of the system; and

Whereas the county courts of Decatur and Henderson Counties and cities of Lexington, Decaturville, and Parsons have passed resolutions endorsing the proposed water control system and have agreed to provide financial support to BRWDA for the construction, operation, and maintenance of the water control system; and

Whereas TVA has requested funds to start construction of this system in fiscal year 1963 and this request has been approved by the Bureau of the Budget and by the President of the United States, now, therefore, be it

*Resolved*, That the directors of the Beech River Watershed Development Authority respectfully request and urge favorable action by the House and Senate Appropriations Committees on funds requested for beginning construction of these works in 1963.

Adopted April 28, 1962.

BEECH RIVER WATERSHED DEVELOPMENT  
AUTHORITY.

FUNDS FOR NORMAL PROGRAM EXPENSES

Senator HILL. All right, Mr. Chairman, you may proceed.

Mr. WAGNER. Another major item in this budget is \$10,766,000 for our normal program expenses, navigation and flood control operations, fertilizer research and demonstrations, and so forth.

These are programs with which you are familiar.

Senator HILL. They are about the same as they have been over the past several years?

Mr. WAGNER. Generally the same character of work.

These are the principal items in this \$35,071,000 appropriation request.

POWER PROGRAM

In addition to the use of appropriations, of course, the construction and operation necessary to the continuance of our power program will be carried out.

This requires \$300,764,000 which will be obtained from power proceeds and the proceeds from the sale of bonds.

Senator HILL. None of that will come out of the Federal Treasury, none of that is in the appropriation, is that right?

Mr. WAGNER. That is correct. The \$300,764,000 is all derived from power proceeds and proceeds from the sale of revenue bonds.

PAYMENT INTO FEDERAL TREASURY

Senator HILL. How much will you pay into the Federal Treasury this year?

Mr. WAGNER. In fiscal year 1963 the payment will be \$48.5 million.

Senator HILL. \$48.5 million.

Mr. WAGNER. Yes, sir.

SEASONAL EXCHANGE OF POWER

Now, there is one recent development in this power field that I think you might like to hear a little about. We have just completed arrangements with power suppliers adjoining TVA on the southwest for a rather large seasonal exchange of power.

This is an arrangement which will help to hold down power costs in both areas, and we believe that it is a real economy and a real spur to the continuing effectiveness of low-cost power.

If you would like to hear something about that, I would like to ask Mr. Wessenauer to describe it in a little more detail and then answer any questions.

Senator HILL. I think that I have the picture myself, but I think it would be good for the record for Mr. Wessenauer to make a statement.

All right, Mr. Wessenauer.

Mr. WESSENAUER. Senator, the situation existing in the TVA system is that we have a large wintertime load primarily resulting from the extensive use of electricity for heating.

In the southwest, the power companies have a rather large summertime load as a result of extensive air conditioning in that area. That means that in the summertime TVA has capacity not being used and in the southwest they have capacity in the wintertime not being used.

This suggested that advantages to both could be obtained by TVA supplying power to companies to the southwest of us in the summertime from our temporary excess capacity and to get power back from the companies in the wintertime when they have temporary excess capacity.

The effect of that is to enable each group, TVA and the southwestern companies, to reduce the amount of generating capacity which each would otherwise have to provide. The agreement with the companies provides for the eventual exchange of about a million and a half kilowatts of power, TVA delivering that amount in the summertime, and the companies delivering to TVA a similar amount in the wintertime.

Except for an initial period, there is no exchange of money, simply exchanges of equal amounts of power.

#### CONSTRUCTION OF TRANSMISSION LINES

The arrangement will involve, however, some expenditures in order to bring it about, and we plan and the companies plan to establish new points of interchange by the construction of some extra high-voltage transmission lines.

Those TVA will build will be 500,000-volt lines. The highest voltage on the TVA system thus far is 161,000 volts, but in order to exchange these large amounts of power every season, we will be building lines to Memphis and to West Point, Miss., at the higher voltages, and the companies in turn will build lines to those points from their systems.

We think these arrangements will, as Mr. Wagner indicated, be very advantageous to the TVA area in that they will reduce our costs and make, in effect, more nearly full use of our existing capacity, and they should do the same thing for the companies to the southwest.

Senator HILL. It would be mutually advantageous to both parties?

Mr. WESSENAUER. That is correct.

## INCREASED POWER CAPACITY

Senator HILL. What percent of your power, productive capacity, is this million and a half which you speak of?

Mr. WESSENAUER. Well, at the present time we have about 12 million kilowatts, and by the time a million and a half kilowatts will be exchanged, we will have about 15 million kilowatts, so it will be about 10 percent.

Senator HILL. You think you would like to add anything on that?

Mr. WESSENAUER. I think you can realize, Senator, it avoids for us the building of a million and a half kilowatts of generating capacity which corresponds to the Kingston steamplant on which we spent nearly \$200 million. We will have to expend some money for transmission, however.

Senator HILL. But the transmission would not be anything comparable in cost to the building of that new steamplant, would it?

Mr. WESSENAUER. No, sir.

## TRANSMISSION COSTS

Senator HILL. Is there any estimate of what the transmission costs would be?

Mr. WESSENAUER. We do not have all the detailed designs so I do not have a figure.

Senator HILL. I see. But those costs will come out of your power revenues anyway?

Mr. WESSENAUER. That is correct.

Senator HILL. It wouldn't be appropriated out of the Treasury?

Mr. WESSENAUER. No, sir; it would come out of power revenue and the issuance of bonds.

## EXPENDITURES FROM NONPOWER PROCEEDS

Mr. WAGNER. Mr. Chairman, the only other thing I would like to mention is that in addition to the figures in the budget which I have given to you, there is a total of \$28,745,000 to be expended from non-power proceeds. This is largely from receipts from the sale of fertilizer to be used in the operation of the fertilizer program, and for certain reimbursable services: construction of a bridge across Pickwick Dam to be reimbursed by the Bureau of Public Roads; certain reimbursable mapping services—

Senator HILL. Mapping, did you say?

Mr. WAGNER. Mapping, yes, sir.

Senator HILL. Who reimburses you for that?

Mr. WAGNER. The Army Map Service and the U.S. Geological Survey.

Senator HILL. The Geological Survey.

Mr. WAGNER. Yes, sir. Then another item is to help with the construction and operation of the experimental gas-cooled reactor at Oak Ridge in which we are cooperating with the Atomic Energy Commission.

Senator HILL. You would be reimbursed there by the Atomic Energy Commission?

Mr. WAGNER. Yes, sir; that is correct.

## TOTAL BUDGET PROGRAM

These figures together make a total budget program of \$364,580,000. This completes what I would like to say about the budget and about the program.

We will, of course, be glad to answer any questions that you may have.

First let me ask Mr. Jones if he has anything to add.

Senator HILL. Mr. Jones, is there anything you would like to add?

Mr. JONES. Nothing, Senator, unless there are questions.

Senator HILL. Of that total figure of \$300 million, only \$35,071,000—

Mr. WAGNER. That is correct.

Senator HILL (continuing). Is to be appropriated out of the Treasury?

Mr. WAGNER. That is correct.

## HOUSE ACTION

Senator HILL. And the House allowed you the full budget estimate; isn't that right?

Mr. WAGNER. That is correct.

Senator HILL. Anything anybody else would like to add? Anything you would like to add, sir?

Mr. VAN MOL. No, sir.

Senator HILL. Nothing else then, Mr. Chairman?

Mr. WAGNER. I have nothing further, Senator.

Senator HILL. Mr. Wessenauer, anything you would like to add?

Mr. WESSENAUER. No, sir.

Senator HILL. Miss Owen?

Miss OWEN. No, Senator.

## PLANT FOOD CONTENT IN FERTILIZERS

Senator HILL. Again, I tell you the story that you told us of the progress you made in improving the plant food content of fertilizer is certainly a tremendously gratifying story which shows how you proved out the case for TVA in this whole field of fertilizer and fertilizer demonstrations.

You have done a good job and that is very, very fine.

As you go over the record, where you cite these different expenditures, such as your Melton Hill Dam and your Wheeler Dam and the lock at Wheeler Dam and the lock at Guntersville Dam I wish you would make sure that you put in how much money has been expended up to date, you see.

Mr. WAGNER. Yes, sir.

Senator HILL. So we will have that in the record. Also the date when the lock would come into operation.

Mr. WAGNER. We will be glad to supply that; yes, sir.

Senator HILL. All right. I certainly want to thank you very, very much. This has been a most informative and, as I say, a most gratifying presentation.

Mr. WAGNER. Thank you, Senator. It has been a pleasure to be here with you.

## BUREAU OF RECLAMATION

## OROVILLE DAM AND SONORA-KEYSTONE UNIT OF CENTRAL VALLEY PROJECT

Chairman HAYDEN. Senator Engle of California has written to me with reference to the Oroville Dam and the Sonora-Keystone unit of the Central Valley project. Since the hearings on the civil functions portion of this bill and the hearing on the reclamation part of the bill have been printed, I will ask to have the letter and enclosure inserted into this record.

Senator HILL. Without objection the matter will be inserted into the record.

(The information referred to follows:)

U.S. SENATE,  
COMMITTEE OF COMMERCE,  
August 24, 1962.

HON. CARL HAYDEN,  
Chairman, Senate Appropriations Committee,  
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: I had the privilege of testifying previously before your committee on both the Corps of Engineers budget on May 16 and the Bureau of Reclamation budget on May 28. For convenience copy of my statements are attached.

I should like now to supplement this testimony with respect to two items, in consideration of the public works appropriations bill as passed by the House.

The House reduced the budget request for Oroville Dam in California from \$15 to \$14 million, justifying the cut by an interest rate calculation based on the respective costs of money to the Federal and State governments (p. 38 of H. Rept. No. 2223). In my judgment, Mr. Chairman, the Bureau of the Budget's reasoning for using the 3½-percent rate rather than a 2½-percent rate as proposed by the House committee, is sound—simply because the original Oroville cost allocation was determined that way in the first place. I respectfully request that the budget amount of \$15 million be restored.

The other item I wish to mention is the "Reclamation" appropriation for investigation of the Sonora-Keystone unit of the Central Valley project in Tuolumne and Calaveras Counties. This investigation needs to be expedited and expanded to include upstream areas in Calaveras County because of its close relation to the New Melones project of the Corps of Engineers on the lower Stanislaus River. I enclose a copy of a letter from Acting Commissioner N. B. Bennett, Jr., of the Bureau of Reclamation, which explains the situation. I request that the Sonora-Keystone item be increased from \$161,000 to \$211,000. Thank you again for your sympathetic consideration of this program.

With kindest regards.

Sincerely yours,

CLAIR ENGLE, U.S. Senator.

DEPARTMENT OF THE INTERIOR,  
BUREAU OF RECLAMATION,  
Washington, D.C., June 20, 1962.

HON. JOHN J. McFALL,  
House of Representatives,  
Washington, D.C.

DEAR MR. McFALL: This is in response to your telephone request of June 18, 1962, for information in regard to the investigation of the Sonora-Keystone unit of the Central Valley project and the possibility of expanding the scope of that study to include upstream areas in the Stanislaus River Basin and the adjoining Calaveras County. You requested we advise you as to the amount of funds required in fiscal year 1963 to accomplish this.

The primary purpose of the Sonora-Keystone unit is to develop a plan for providing water service to the portion of Tuolumne County Water District No. 2 that is located between the Stanislaus and Tuolumne Rivers in the vicinity of the town of Sonora. This investigation was initiated this fiscal year with funds inserted by the Congress in the 1962 Public Works Appropriation Act. The

budget now before the Congress includes \$161,350 to continue the work leading to a feasibility report in fiscal year 1964.

The Sonora-Keystone investigation does not now encompass the upstream areas in the Stanislaus River Basin or the adjoining Calaveras County. It would not be possible to expand the investigation to include those other areas within the current budget request without serious detriment to the work underway and a considerable delay in completion of the Sonora-Keystone unit report. We estimate that in order to undertake this additional work beginning in fiscal year 1963, we could effectively utilize an additional \$50,000 that fiscal year.

Sincerely yours,

NEWCOMB B. BENNETT, JR.,  
*Acting Commissioner.*

### SOUTHWESTERN POWER ADMINISTRATION

Chairman HAYDEN. Mr. Fred V. Heinkel, president of the Missouri Farmers Association, Inc., has submitted to the committee a statement with reference to a proposal for a power transmission line from Creston, Iowa, to Fairport, Mo. Since the hearings on the Bureau of Reclamation and power marketing agencies portion of the public works appropriation bill have been printed, I will ask to have this statement inserted into the hearings on this portion of the bill.

Senator HILL. Without objections, the statement will be placed in the record at this point.

(The statement referred to follows:)

MISSOURI FARMERS ASSOCIATION, INC.,  
*Columbia, Mo., August 23, 1962.*

HON. CARL HAYDEN,  
*Chairman, Committee on Appropriations,  
U.S. Senate, Washington, D.C.*

DEAR MR. HAYDEN: Attached is a statement on a matter in the pending public works appropriation bill. I shall be grateful if you will call it to the attention of your committee and, if possible, include it in the published record of your proceedings.

With appreciation for your courtesy,  
Sincerely,

FRED V. HEINKEL, *President.*

#### STATEMENT OF FRED V. HEINKEL, PRESIDENT, MISSOURI FARMERS ASSOCIATION, COLUMBIA, MO.

The pending public works appropriation bill includes a provision which is vital to the Middle West and to the Nation. The proposal would grant the Department of the Interior authority to build a power transmission line from Creston, Iowa, to Fairport, Mo., to connect the upper Missouri River Valley power producing facilities with those in the southwestern area under the jurisdiction of the Southwest Power Administration.

At the present time the Government owns a 161 kilovolt line from the upper Missouri River area to Creston, Iowa, and rural electrification cooperatives own 161 kilovolt lines built with loans of Government funds from the southwest area to Fairport, Mo. The intervening distance is some 75 miles.

The United States is behind other nations in more ways than one. Notable is the failure to develop a national power supply. The Missouri Farmer, published by the Missouri Farmers Association, in April 1961 reported my views on this subject, and I am attaching a copy as a part of this statement.

The proposed line is a most important link in the ultimate development of this system as well as vital now to distribution of power to all the people of the Middle West. The Department of the Interior has negotiated contracts to distribute available power produced at facilities constructed with public funds on an equitable basis among all the people of the area, whether served by publicly or privately owned electrical distribution facilities.

It is my belief, and I think it is axiomatic, that expenditures of public funds should be for the benefit of all the people and not for a select group. The Federal Government has stepped into the power field only in those areas where private power companies have failed, or found it impossible, to render service. The rural areas of the country would never have had electricity except for the development of REA, which has proven to be a successful business venture as well as a major contributor to economic development of the Nation. Large hydropower plants were not possible without public financing. If the whole Nation is to enjoy maximum benefit from these expenditures, the Federal Government must assume the leadership and assure equitable use of these facilities.

Now, certain privately owned power companies have proposed that they be permitted to build and own this small link between two publicly owned facilities connecting two great installations of power producing facilities.

This is the oldest story in the power business. No private power company brought power to the rural areas of Missouri, and the farmers bought it themselves with funds for which they signed promissory notes and which they are paying off. A few years ago farmers in the State of Iowa needed additional electricity for the distribution systems they had built and owned, but no private power company offered assistance. The farmers appealed to the U.S. Congress and the line was provided to Creston, Iowa. The farmers are paying for the electricity and the cost of transmission over these lines. Now that the Government has provided all the power producing facilities and the distribution lines, the private companies are willing to come in and provide the last small link which is a "no-risk" venture for them, as the Government has already taken all the risk.

Over the years the Government has made many contracts with private power companies to transmit power over publicly owned and company lines to company customers and to public bodies. But this is a different situation. The line proposed is a vital connecting link between two publicly controlled power generating systems bound by existing contracts between the Government and power distribution facilities to supply power to customers of both private and public bodies. These contracts must be administered fairly under the law to assure maximum utilization and equitable distribution of power generated at these great plants.

The only way the Government can protect the interests of the people of the United States who paid for and own this great system is to own and control this connecting link.

The present administration is to be commended for progress made along the lines I have proposed. They have shown every willingness to cooperate in every practical way with private power companies as well as public bodies.

The present policies of the Department of the Interior and the proposal under discussion are fair to everybody.

Mr. Chairman, I hope the committee will approve the proposal as passed by the House and permit the Department to proceed without delay to the construction of this short final connection in this great power system.

The statement from the Missouri Farmer to which I referred is as follows:

[From the Missouri Farmer, April 1961, p. 5]

"LET'S HAVE NATIONWIDE POWER NOW

"(By Fred V. Heinkel)

"Why not connect all of the Nation's electrical power-producing plants together in a giant system that will bring the benefits of low-cost electricity to all?"

"How does this idea sound to you?"

"For years now, there has been support for this; yet not much progress has been made. There are probably 3,000 separate electrical systems in this country. And the United States is the only major industrial nation of the world that does not have an interconnected power system.

"The reason for this proposal, which was first made as early as 1926, is to make the most efficient use of all the means we have of generating electrical power. Much of the power-producing potential of our huge Federal dams goes to waste. At certain times of the year when the water supply is high, water must be dumped over the dam, unused. And at certain times of the day when power demand is low, the big turbines just idle along.

"Yet at the same time, in some other places of the country expensive fuel, which may have been shipped from distant coal mines, is being used to generate power.

"We have an example of what could be accomplished in the Tennessee Valley. There the TVA has harnessed the rivers and tied the hydroelectric plants in with coal-fired steam generating plants for a balanced and efficient production of power—to the benefit of that entire area. In the Pacific Northwest, the Bonneville Power Administration carries power from the Federal dams and private power companies to the consumers in that area.

"This same principle ought to be expanded to encompass the Nation.

"It could mean cheaper electricity across the board. Low cost power is important to our economy because to every one of us it is both a direct cost as reflected in our electric bill, and an indirect one in that electric power is used in the production of most every item we use.

"It would form the basis for supplying our growing power needs—the power demand on the rural electric cooperatives is doubling every 5 years.

"It would mean that to every person or industry, the cheapest source of power in the Nation would be as close as the nearest electric switch.

"It would mean that you, the consumer, would in effect have access to every power-producing source in the country.

"It would mean stand-by service for every community in the Nation. In the event of local or national emergency, it would be a simple matter to shunt the power from any plant to any community.

"If this is such a wonderful idea, then why haven't we made a broader application of it? Why, 35 years after it was first spelled out, hasn't this idea caught on?

"There are probably several reasons, but the primary one is because a powerful minority has resisted it—and I might say, bitterly resisted it.

"Like REA, TVA, and the various Federal power projects, this idea would benefit the public. But the same organizations which have battled so vigorously against these programs have also opposed the establishment of a network of transmission lines connecting and interconnecting powerplants and power markets. Led by the utility corporations, the opposition has largely thwarted attempts to make progress. Corporate utility power rates are governed by regulatory agencies and are based on each utility's cost of doing business. Under this pricing procedure, a utility company has little real incentive to become more efficient.

"Contrast this to a rural electric cooperative whose reason for existence is not to make a profit, but is to supply electricity at the lowest cost to its patron-owners.

"Thus it seems that if further progress is to be made, it will be up to the same people who took the lead 25 years ago when rural electric cooperatives were initiated. It can be hoped that as the public becomes more informed, it will also press for fulfillment of this idea.

"The new Secretary of the Interior, Stewart Udall, is a staunch advocate of the use of our resources for the benefit of the public. Shortly after taking office, he directed his Department to give immediate attention to 'enlarging regional cooperative pooling of generation and transmission facilities, and to planning for the early interconnection of areas served by the Department of the Interior marketing agencies with adequate common-carrier transmission lines.'

"I want to make this clear. At no time, to my knowledge, has anyone who supports this idea had any intention that it would be carried out strictly as a Federal project. Its aim is to provide a system in which corporate utilities, rural electric cooperatives, municipalities, and the Federal Government could cooperate in producing and supplying power to the Nation.

"Its primary purpose is to benefit the people. But there is no reason why it should not also benefit every organization connected with it—and thus strengthen our entire power industry and the Nation."

#### CONCLUSION OF HEARINGS

Senator HILL. The committee will stand in recess.

(Whereupon, at 3:30 p.m., Friday, August 31, 1962, the committee was recessed.)

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