AEC SUPPLEMENTAL AUTHORIZING LEGISLATION, FISCAL YEAR 1964

HEARING

BEFORE THE

SUBCOMMITTEE ON LEGISLATION

OF THE

JOINT COMMITTEE ON ATOMIC ENERGY

CONGRESS OF THE UNITED STATES

EIGHTY-EIGHTH CONGRESS

FIRST SESSION

ON

AEC SUPPLEMENTAL AUTHORIZING LEGISLATION

FISCAL YEAR 1964

OCTOBER 31, 1963

Printed for the use of the
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AEC SUPPLEMENTAL AUTHORIZING LEGISLATION, 1964

(S. 2267 and H.R. 8971)

THURSDAY, OCTOBER 31, 1963

CONGRESS OF THE UNITED STATES,
SUBCOMMITTEE ON LEGISLATION,
JOINT COMMITTEE ON ATOMIC ENERGY,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to call, in room AE–1, the Capitol, Hon. Chet Holifield (chairman of the subcommittee) presiding.

Present: Representatives Holifield, Hosmer, Bates, Morris, and Anderson; and Senator Pastore.

Also present: John T. Conway, executive director, Edward J. Bauser, assistant director, Jack R. Newman, staff counsel, Jack Rosen, staff consultant, Robert L. Hart, General Accounting Office consultant.

Representative HOLIFIELD. The Subcommittee on Legislation begins hearings this morning in executive session on S. 2267 and H.R. 8971, the AEC supplemental authorization bills for fiscal year 1964, which were introduced by Senator Pastore and me, by request, on October 29 and 30, 1963, respectively.

These bills were proposed by the Atomic Energy Commission and transmitted to the Joint Committee by letter of October 16. This letter and its attachments, including an analysis of the bill, will be included in the record at an appropriate point.

We will also include in the record copies of the bills as introduced, and a letter of October 24, signed by General Luedecke, concerning increased operating costs for fiscal year 1964 in connection with the weapons program.

(The bills and related correspondence follow:)

U.S. ATOMIC ENERGY COMMISSION,
Washington, D.C., October 16, 1963.

Hon. JOHN O. PASTORE,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States.

DEAR SENATOR PASTORE: Transmitted herewith are copies of letters which we have today sent to the Speaker of the House of Representatives and the President of the Senate proposing amendments to Public Law 88–72 authorizing appropriations to the Atomic Energy Commission for 1964.

We are also attaching copies of the proposed amendment to the act and an analysis of each construction project. Classified data sheets will be transmitted under separate cover.

Sincerely yours,

ROBERT E. WILSON,
Acting Chairman.

U.S. Atomic Energy Commission,
Washington, D.C., October 16, 1963.

Hon. John W. McCormack,
Speaker of the House of Representatives.

Dear Mr. Speaker: We submit herewith a proposed amendment to Public Law 88–72 which would increase authorization for appropriations to the Atomic Energy Commission in accordance with section 261 of the Atomic Energy Act of 1954, as amended, in the amount of $17,945,000. The specific proposed amendments to Public Law 88–72 are as follows:

Section 101. Plant or facilities acquisition or construction would be amended by striking the figure "$172,562,000" and inserting in lieu thereof the figure "$190,507,000".

Section 101(d) would be amended by the addition of 12 proposed new construction projects.

Authorization of appropriation of funds enumerated above would commit the Government to expenditures totaling $17,945,000. It is estimated that of these expenditures $3 million would be incurred in fiscal year 1964, $6 million in fiscal year 1965, $6 million in fiscal year 1966, and $2,945,000 in fiscal year 1967. Since the programs covered by these funds represent a continuation of existing programs, this legislation would not affect total Government employment nor total costs of personal services of Government employees. The Bureau of the Budget has advised that this legislative proposal is in accord with the President's program.

Sincerely yours,

Robert E. Wilson,
Acting chairman.

Proposed Bill for Authorization of Appropriations Pursuant to Section 261 of the Atomic Energy Act of 1954, as Amended, and for Other Purposes

A BILL To amend Public Law 88–72 to increase the authorization for appropriations to the Atomic Energy Commission in accordance with section 261 of the Atomic Energy Act of 1954, as amended, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 101 of Public Law 88–72 is hereby amended by striking the figure "$172,562,000" and inserting in lieu thereof the figure "$190,507,000."

Sec. 2. Section 101(d) of Public Law 88–72 is amended by adding at the end thereof:

"Project 64–d–10, occupational health laboratory, Los Alamos Scientific Laboratory, New Mexico, $1,650,000.

"Project 64–d–11, high temperature chemistry facility, Los Alamos Scientific Laboratory, New Mexico, $1,435,000.

"Project 64–d–12, plutonium research support building, Los Alamos Scientific Laboratory, New Mexico, $655,000.

"Project 64–d–13, radiochemistry building, Lawrence Radiation Laboratory, California, $5,900,000.

"Project 64–d–14, hazards control addition, Lawrence Radiation Laboratory, California, $1,000,000.

"Project 64–d–15, plant engineering and services building, Lawrence Radiation Laboratory, California, $1,400,000.

"Project 64–d–16, west cafeteria addition, Lawrence Radiation Laboratory, California, $255,000.

"Project 64–d–17, craft shop addition, Lawrence Radiation Laboratory, California, $200,000.

"Project 64–d–18, development laboratory, Sandia Base, New Mexico, $3,780,000.

"Project 64–d–19, explosive facilities, Sandia Base, New Mexico, $540,000.

"Project 64–d–20, classified technical reports building addition, Sandia Base, New Mexico, $500,000.

"Project 64–d–21, control point additions, Nevada Test Site, $630,000."

U.S. ATOMIC ENERGY COMMISSION ANALYSIS OF PROPOSED AMENDMENTS TO PUBLIC LAW 88-72

64-d-10 *Occupational health laboratory, Los Alamos Scientific Laboratory, New Mexico, $1,650,000*

This project provides for facilities designed to upgrade the research and development capabilities and the physical plant of the laboratory and to afford needed permanent laboratory and office space.

This building provides 26,500 gross square feet of laboratory, office, and related space to provide additional needed space for the weapons-supported industrial hygiene and radiation effects work groups and to relieve the crowded conditions in the biomedical laboratory.

	Unit cost	Item cost	Total cost
Details of cost estimate:			
(a) Engineering, design, and inspection, at 11 percent of construction costs			$138,000
(b) Land and land rights			0
(c) Construction costs			1,294,000
Improvements to land		$15,000	
Building (26,500 gross square feet)	[1] $35.50	940,955	
Utilities		10,000	
Equipment		328,045	
Fixed lab equipment $180,045			
Specialized lab equipment $110,000			
Furniture and special equipment $38,000			
(d) Contingencies at 15 percent of other costs			218,000
Total project cost			1,650,000

[1] Breakdown of space by type and unit cost:

Laboratory, 11,988 square feet at $56.43	$676,483
Office, 3,440 square feet at $22	75,680
Shop, 970 square feet at $28	27,160
Service, utility, storage, and corridor areas, 10,102 square feet at $16	161,632
Total. 26,500 square feet	940,955

The average space unit cost is $35.50.

64-d-11 *High-temperature chemistry facility, Los Alamos Scientific Laboratory, New Mexico, $1,435,000*

This project provides for facilities designed to upgrade the research and development capabilities and the physical plant of the Laboratory and to afford needed permanent laboratory and office space.

This facility provides 23,000 gross square feet of laboratories, shops, offices, and related space to supplement an existing crowded laboratory facility that is inadequate for both present and anticipated programs and to replace an old, inadequate wooden structure.

	Unit cost	Item cost	Total cost
Details of cost estimate:			
(a) Engineering, design, and inspection, at 9 percent of construction costs			$100,000
(b) Land and land rights			0
(c) Construction costs			1,145,000
Improvements to land		$3,500	
Buildings (23,000 gross square feet)	[1] $31.70	729,600	
Utilities		5,000	
Removal cost (dismantling and removing one 1-story frame building)		12,500	
Equipment		394,400	
Fixed laboratory equipment $80,400			
Induction furnaces 80,000			
High-pressure measurement system 55,000			
Other special laboratory equipment 165,000			
Office and health equipment 14,000			
(d) Contingency, at 15 percent of other costs			190,000
Total project cost			1,435,000

[1] Breakdown of space by type and unit cost:

Laboratory, 10,000 square feet, at $47	$470,000
Office, 3,800 square feet, at $22	83,600
Shop, 2,400 square feet, at $28	67,200
Service, utility, storage, and corridor areas, 6,800 square feet, at $16	108,800
Total, 23,000 square feet	729,600

The average space unit cost is $31.70.

64-d-12 *Plutonium research support building, Los Alamos Scientific Laboratory, New Mexico, $655,000*

This project provides for facilities designed to upgrade the research and development capabilities and the physical plant of the Laboratory and to afford needed permanent laboratory and office space.

This building provides 18,600 gross square feet of office and drafting space, a machine shop, change rooms, and related areas to replace two inadequate wooden structures which are overcrowded, deficient both in space requirements and design, high in maintenance costs, and inefficient due to present dispersion of services and support activities.

	Unit cost	Item cost	Total cost
Details of cost estimate:			
(a) Engineering, design, and inspection, at 11 percent of construction costs			$56,500
(b) Land and land rights			0
(c) Construction costs:			512,500
Improvements to land		$2,500	
Buildings (18,600 gross square feet)	$23.90	445,000	
Utilities		5,000	
Removal cost (dismantling and removing 2 1-story frame buildings)		18,500	
Equipment		41,500	
Office and health equipment $15,000			
Moving existing machine shop and fixed monitor equipment $26,500			
(d) Contingency, at 15 percent of other costs			86,000
Total project cost			655,000

64-d-13 *Radiochemistry building, Lawrence Radiation Laboratory, California, $5,900,000*

This project provides a facility designed to upgrade research and development capabilities and the physical plant of the Laboratory and to afford needed permanent laboratory and office space.

This building provides 83,700 gross square feet of light laboratories, offices and related areas to relieve an existing severe shortage of space within the Chemistry Division and to remove people from trailers and other inadequate facilities.

	Unit cost	Item cost	Total cost
Details of cost estimate:			
(a) Engineering, design, and inspection, at 11 percent of construction costs			$534,000
(b) Land and land rights			0
(c) Construction costs			4,830,000
Improvements to land		$25,000	
Buildings (83,700 gross square feet)	[1] $44.60	3,733,000	
Utilities		185,000	
Equipment		887,000	
Laboratory furniture $310,000			
Fume hoods 193,000			
Mass spectrometer 154,000			
8-channel counting system 40,700			
Other equipment 189,300			
(d) Contingency, at 10 percent of other costs			536,000
Total project cost			5,900,000

[1] Cost above normal due to heavy shielding, special cooling, laboratory services (compressed air, gas, low conductivity water, demineralized water), and all interior partitions are concrete for shielding purposes.

64–d–14 *Hazards control addition, Lawrence Radiation Laboratory, California, $1,000,000*

This project provides a facility designed to upgrade research and development capabilities and the physical plant of the laboratory and to afford needed permanent laboratory and office space.

The addition provides 18,960 gross square feet of light laboratories, offices, and related areas to provide permanent office and needed additional laboratory space to meet the increased programmatic demands for hazards control efforts. The personnel are presently located in severely overcrowded, technically inadequate facilities which are dispersed throughout the site.

	Unit cost	Item cost	Total cost
Details of cost estimate:			
(*a*) Engineering, design, and inspection at 12 percent of construction costs			$93,000
(*b*) Land and land rights			
(*c*) Construction costs			775,000
Improvements to land		$7,000	
Buildings (18,960 gross square feet)	[1] $31.00	588,000	
Utilities		50,000	
Equipment		130,000	
Laboratory furniture $75,000			
Fume hoods $30,000			
Miscellaneous laboratory equipment $25,000			
(*d*) Contingency at 15 percent of other costs			132,000
Total project cost			1,000,000

[1] Unit cost based on recent experience at Livermore.

64–d–15 *Plant engineering and services building, Lawrence Radiation Laboratory, California, $1,400,000*

This project provides for a facility designed to upgrade research and development capabilities and the physical plant of the laboratory and to afford needed permanent laboratory and office space.

This building provides 37,730 gross square feet of offices, drafting rooms, and special use rooms such as data processing and vaults for plant engineering and construction, plant services, inventory, security, and AEC field engineering. The personnel are presently crowded in substandard World War II barracks and trailers.

	Unit cost	Item cost	Total cost
Details of cost estimate:			
(*a*) Engineering, design, and inspection at 12 percent of construction costs			$131,000
(*b*) Land and land rights			0
(*c*) Construction costs			1,096,000
Improvements to land		$8,000	
Buildings (37,730 gross square feet)	[1] $27.90	1,053,000	
Utilities		9,000	
Equipment		16,000	
Removal cost less salvage (building 142 demolition)		10,000	
(*d*) Contingency at 14 percent of other costs			173,000
Total project cost			1,400,000

[1] Unit cost based on recent experience at Livermore.

64–d–16 *West cafeteria addition, Lawrence Radiation Laboratory, California, $255, 000*

This project provides needed expansion in laboratory service facilities commensurate with the upgrading of direct program and administrative plant.

This addition provides 6,740 gross square feet for adequate serving and eating space for the present load and for the increasing number of employees assigned to this section of the site as permanent facilities are constructed to replace the temporary World War II structures.

	Unit cost	Item cost	Total cost
Details of cost estimate:			
(a) Engineering, design, and inspection at 10 percent of construction costs			$20,000
(b) Land and land rights			0
(c) Construction costs			201,000
Improvements to land		$1,000	
Buildings (6,740 gross square feet)	$24.70	166,300	
Utilities		3,000	
Equipment		30,700	
Hot and cold food servers $5,300			
Tables (60) 5,000			
Install and relocate equipment 3,500			
Chairs (225) 3,300			
Rodar freezer 2,650			
Stainless steel counter 2,600			
Dining room condiment stands 1,300			
Other equipment 7,050			
(d) Contingency at 15 percent of other costs			34,000
Total project cost			255,000

64–d–17 *Craft shop addition, Lawrence Radiation Laboratory, California, $200,000*

This project provides for the needed expansion of laboratory service facilities commensurate with the upgrading of direct program and administrative plant.

This addition provides for a 10,800-gross-square-foot extension of the laboratory electrical shop, supply storage, and additional lumber storage to make possible the assignment of permanent work space to the laboratory staff of electricians, the isolation of noisy electric motor repair activities, and the provision of additional space for maintenance supplies. The present area is severely overcrowded and partially in a temporary, substandard World War II structure.

	Unit cost	Item cost	Total cost
Details of cost estimate:			
(a) Engineering, design, and inspection at 11 percent of construction costs			$17,200
(b) Land and land rights			0
(c) Construction costs			156,500
Improvements to land		$2,600	
Buildings (10,800 gross square feet)	$13.75	148,500	
Utilities		3,000	
Equipment		1,000	
Removal cost less salvage		1,400	
(d) Contingency at 15 percent of other costs			26,300
Total project cost			200,000

64–d–18 *Development laboratory, Sandia Base, N. Mex., $3,780,000*

This project provides for a facility designed to upgrade the research and development capabilities and the physical plant of the laboratory, and to afford needed additional space.

This building provides 76,000 gross square feet of laboratory office and related areas. It affords the additional laboratory space necessitated by the growth over recent years in the percentages of engineering staff and technical assistants within a constant laboratory employment total, as well as by the increased equipment space needed per technical person which has resulted from advanced equipment developments and more stringent weapons design tolerances.

	Unit cost	Item cost	Total cost
Details of cost estimate:			
(*a*) Engineering, design and inspection at 10 percent of construction costs			$300,000
(*b*) Land and land rights			0
(*c*) Construction costs			2,990,000
Improvements to land		$2,000	
Building (76,000 gross square feet)	$33.70	2,558,000	
Utilities		30,000	
Equipment		400,000	
Space simulation chamber $75,000			
High pressure and temperature system 60,000			
Magnetic systems 60,000			
Mass spectrometer 55,000			
High-vacuum system 45,000			
X-ray diffraction apparatus 20,000			
Small apparatus—Hoods, cabinets, and benches 85,000			
(*d*) Contingency at 15 percent of other costs			490,000
Total project cost			3,780,000

64–d–19 *Explosives facilities, Sandia Base, N. Mex., $540,000*

This project provides for a facility designed to upgrade the research and development capabilities and the physical plant of the laboratory, and to afford needed additional space.

This facility provides 4,200 gross square feet for an explosives chemistry laboratory and a preparation facility. They will be separated for safety and continuity of operations and will provide the additional space needed to analyze explosive materials in larger quantities as well as to adapt standard explosive charges to specific design characteristics.

	Unit cost	Item cost	Total cost
Details of cost estimate:			
(*a*) Engineering, design, and inspection at 10 percent of construction costs			$43,000
(*b*) Land and land rights			0
(*c*) Construction costs			428,000
Chemistry facility:			
Improvements to land		$5,000	
Building (2,400 gross square feet)	[1] $50.00	120,000	
Utilities		25,000	
Equipment		65,000	
Subtotal		215,000	
Preparation facility:			
Improvements to land		13,000	
Building (1,800 gross square feet)	[1] 44.40	80,000	
Storage magazines		5,000	
Utilities		60,000	
Equipment		55,000	
Subtotal		213,000	
(*d*) Contingency at 15 percent of other costs			69,000
Total project cost			540,000

[1] High unit cost per square foot is due to special construction and equipment for safe operation of these facilities.

64–d–20 *Classified technical reports building addition, Sandia Base, N. Mex., $500,000*

This project provides for a facility designed to upgrade the research and development capabilities and the physical plant of the laboratory, and to afford needed additional space.

This building provides 10,200 gross square feet of library, reading room, vault, and office space which will permit the centralizing of all of the classified technical books and reports which are essential to the laboratory's scientists and engineers. Thousands of such valuable documents are dispersed in hundreds of safes and files throughout the site. This results in wasted time and effort, duplication of research and development work previously performed by others, loss of information through individual disposal actions, and general inefficient use of technical staffs and facilities.

	Unit cost	Item cost	Total cost
Details of cost estimate:			
(a) Engineering, design, and inspection at 10 percent of construction costs			$40,000
(b) Land and land rights			0
(c) Construction costs			403,000
Building (10,200 gross square feet)	$28.30	$288,500	
Utilities		37,500	
Equipment (library stacks)		65,000	
Miscellaneous		12,000	
(d) Contingency at 13 percent of other costs			57,000
Total project costs			500,000

64–d–21 *Control point additions, Nevada test site, Nevada, $630,000*

This project provides for facilities designed to increase the underground testing capability of the weapons laboratories by upgrading control point facilities at the Nevada test site. The project provides for a communications building and for device handling and storage facilities.

The communications building included in this project will provide 11,000 sq. ft. containing a radio control room, microwave terminals, offices, frame and equipment room, storage space, and equipment maintenance space to meet the complex communications requirements at control point 1. The device storage and handling buildings provide 10,320 square feet for underground explosive magazines, a device storage building, a handling building, a warehouse, and paved roads to each building.

	Communications building	Device storage and assembly building	Total cost
Details of cost estimate:			
(a) Engineering, design, and inspection at 10 percent of construction costs	$21,600	$28,400	$50,000
(b) Land and land rights			
(c) Construction costs	216,000	283,400	499,400
Improvements to land	3,000	61,500	
Buildings	209,000	208,900	
Utilities	2,000	8,000	
Equipment	2,000	5,000	
(d) Contingency at 15 percent of other costs	37,400	43,200	80,600
Total project costs	275,000	355,000	630,000

ATOMIC ENERGY COMMISSION,
Washington, D.C., October 24, 1963.

Hon. JOHN O. PASTORE,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States.

DEAR SENATOR PASTORE: The chairman's letter of October 16, 1963, transmitted to you a proposed amendment to Public Law 88–72, authorizing additional appropriations for fiscal year 1964. In addition to the changes in our construction program, the current budget for operating expenses is being revised to provide additional funds to the weapons program for fiscal year 1964. Weapons program operating costs would be increased by $94,641,000, from $688,328,000 to $782,969,000. This increase is being met by downward revisions in the fiscal year 1964 estimates for certain other programs and by use of unobligated balances of fiscal year 1963 funds as now indicated by our year-end reports.

The proposed changes in both the construction program and in operating expenses are in keeping with the safeguards actions the President has directed the Commission to take under the conditions of the Nuclear Test Ban Treaty.

Attached is a summary of changes in the operating program amounts.

Sincerely yours,

(Signed) A. R. LUEDECKE,
General Manager.

OPERATING EXPENSES

Program and Financing

[In thousands of dollars]

	In budget	Revised estimate	Increase(+) or decrease(−)
Program by activities:			
Operating costs:			
1. Raw materials	335,771	324,843	−10,928
2. Special nuclear materials	480,471	480,471	
3. Weapons	688,328	782,969	+94,641
4. Reactor development	530,548	530,548	
5. Physical research	219,077	219,077	
6. Biology and medicine	76,973	76,973	
7. Training, education, and information	17,194	17,194	
8. Civilian applications of—			
Isotopes	9,260	9,260	
Nuclear explosives	15,100	15,100	
9. Communities	10,081	10,081	
10. Program direction and administration	73,415	73,415	
11. Security investigations	8,000	6,950	−1,050
12. Cost of work for others	6,800	6,240	−560
Total program costs	2,471,018	2,553,121	+82,103
Change in selected resources	36,040	53,252	+17,212
Total obligations	2,507,058	2,606,373	+99,315
Financing:			
Unobligated balance brought forward	−54,058	−150,873	−96,815
Advances and reimbursements from non-Federal sources (revenues applied)	−29,500	−32,000	−2,500
New obligational authority (appropriation)	2,423,500	2,423,500	

SUMMARY OF CHANGES—OPERATING EXPENSES, FISCAL YEAR 1964

Raw materials, −$10,928,000

The decrease of $10,928,000 results from:

1. An estimated decrease in deliveries of 355 tons of U_3O_8 costing $5.8 million from domestic procurement as a result of certain mill operators rescheduling their deliveries during the 1964–66 period as a result of the stretchout program.

2. An estimated decrease in deliveries of 200 tons of U_3O_8 costing $5.1 million as a result of a rescheduling of deliveries by Canada.

Weapons, $94,641,000

The amended fiscal year 1964 budget estimate for weapons provides for increased underground testing and other safeguards. The net increase of $94,641,000 includes an increase of $109,762,000 to: (1) maintain a readiness capability for atmospheric test; and (2) to conduct increased underground test to yield additional new information applicable to development of weapons which when applied to weapons production will greatly enhance the capabilities of the Armed Forces. The increased test requirements are offset by a decrease of $15,121,000 in other phases of the weapons program.

Security investigations, —$1,050,000

The reduction in the amended fiscal year 1964 budget is due primarily to a reduced unit cost of investigations performed by the Civil Service Commission based on billing rates furnished by that agency.

Cost of work for others, —$560,000

The decrease of $560,000 principally reflects a reduction in the estimated sale of heavy water from 75 to 50 tons. This reduction of 25 tons costing $700,000 is based on more current information and is partially offset by minor increases in several categories.

Revenues, —$2,500,000

The increased revenues are principally the result of increased sales of source and special nuclear materials.

[S. 2267 and H.R. 8971, 88th Cong., 1st sess.]

A BILL To amend Public Law 88-72 to increase the authorization for appropriations to the Atomic Energy Commission in accordance with section 261 of the Atomic Energy Act of 1954, as amended, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 101 of Public Law 88-72 is hereby amended by striking the figure "$172,562,000" and inserting in lieu thereof the figure "$190,507,000".

SEC. 2. Section 1101(d) of Public Law 88-72 is amended by adding at the end thereof:

"Project 64-d-10, occupational health laboratory, Los Alamos Scientific Laboratory, New Mexico, $1,650,000.

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"Project 64-d-21, control point additions, Nevada Test Site, $630,000."

Representative HOLIFIELD. H.R. 8971 and S. 2267 contain 12 new construction projects which are proposed to be added to the AEC fiscal year 1964 Authorization Act, which became law on July 22. The 12 new projects amount to $17,945,000. They are in partial implementation of the safeguards proposed in connection with the nuclear test ban treaty.

Because of the classified nature of the subject matter of these hearings, the subcommittee is meeting in executive session. However, at the conclusion of the hearings, the record will be reviewed for classification; classified matter will be deleted and the record will be published.

During these hearings we will receive testimony from the Atomic Energy Commission, the Directors of Los Alamos and Livermore Laboratories, and the Sandia Corporation.

Our first witness this morning will be Dr. Seaborg. Will you proceed please.

SAFEGUARDS UNDER THE NUCLEAR TEST BAN TREATY

Representative HOSMER. I would like for the purpose of the record to make a short statement. I view these hearings this morning as an implementation of part of the President's promises as to safeguards to reduce the risk and disadvantages of the test ban treaty.

Promises were in four general categories. One, to pursue a vigorous and continuous underground testing program. Two, to maintain our laboratories in a going condition manned by top-flight scientists. Three, to achieve and maintain a readiness for resumption of atmospheric testing under emergency conditions. And four, the improvement of the detection system in order both to monitor any possible violations and to achieve insofar as possible current information on whatever progress in weaponry may be made by the Soviet Union.

Insofar as the Congress is concerned I assume that the responsibility for overlooking these safeguards will rest in this committee. Insofar as the administration is concerned, they are spread between the AEC and the DOD.

At the moment I am not informed as to whether anybody has been placed in command of the overall responsibility for the elements of maintaining these safeguards which lie in both of these agencies.

Now insofar as the bill before us today is concerned, we deal with part of the capital investment required for some of the elements but not all of the four different safeguards. Under another move the commission has indicated a reallocation of some $94 million-plus with respect to the operational aspects of implementing the safeguards.

But I feel that somehow we are going to have to pull all these things together so that this committee has a proper review. There is in my own mind a discrepancy as to the extent of the effort. I have estimated that approximately a billion dollars will be needed in order to buy the capital items necessary to maintain these safeguards and it will require approximately a quarter of a billion dollars annually in operating moneys to keep them ready to go.

I wanted it understood that that is the frame of reference in which I would like to view the request that applies to a small portion of the total effort that we have before us today.

Thank you, Mr. Chairman.

Representative HOLIFIELD. You are welcome. Did you refer to the principles set forth in the letter of the President to Senators Mansfield and Dirksen under date of September 10?

Representative HOSMER. Yes, and also the letter of the Secretary of Defense at an earlier date to either the three-way committee [1] or

[1] The Senate Committees on Foreign Relations and Armed Services and the Senate members of the Joint Committee on Atomic Energy.

the Preparedness Subcommittee of the Senate Committee on Armed Services and the communications from the Joint Chiefs of Staff to the congressional committees reviewing the test ban treaty prior to the obtaining of consent of the Senate.

Representative HOLIFIELD. Would the gentleman like to have those two letters inserted in the record this morning?

Representative HOSMER. I think it would be well, and there may be more than those two involved. The information is contained in the report of the Senate Preparedness Subcommittee and in the report of the Senate Foreign Relations Committee on the test ban. Whatever material is appropriate I think we should put it in as background.

Representative HOLIFIELD. Without objection, the request is granted.

(The letters referred to above follow:)

THE DEPUTY SECRETARY OF DEFENSE,
Washington, D.C., August 23, 1963.

Hon. RICHARD B. RUSSELL,
Chairman, Committee on Armed Services,
U.S. Senate.

DEAR MR. CHAIRMAN: This letter responds to your letter of August 15 transmitting the motion adopted by the Preparedness Investigating Subcommittee on August 14 asking for information on the four safeguards that will be maintained by the administration in order to avoid injury to our national security in connection with the test ban treaty.

As the chairman of the subcommittee recognized in his colloquy with General Taylor on August 14 when the motion was under discussion, the matters referred to in the motion not only transcend the responsibilities of the JCS but also transcend the responsibility of the Department of Defense. For that reason, this reply has been prepared after obtaining advice from the Joint Chiefs of Staff and after consultation with the Atomic Energy Commission, the Central Intelligence Agency, and the Arms Control and Disarmament Agency.

When the motion was under discussion in the August 14 hearing of the Preparedness Investigating Subcommittee, it was recognized that the response, dealing with the four subjects, would have to be primarily in terms of the "criteria" or "standards" which are guiding the executive branch. I am glad to bring together here in one document the extensive assurances which have been given on the four subjects by the President, and by the Secretary of Defense and the Chairman of the Atomic Energy Commission. Furthermore, we have included here, or in a separate classified annex where appropriate, specific detail and explanation in an effort to be as fully responsive as time and circumstances permit.

Safeguard (a).—"The conduct of comprehensive, aggressive, and continuing underground nuclear test programs designed to add to our knowledge and improve our weapons in all areas of significance to our military posture for the future."

On this subject, the President, in his message of August 8, 1963, transmitting the treaty to the Senate, said: "The United States has more experience in underground testing than any other nation; and we intend to use this capacity to maintain the adequacy of our arsenal. Our atomic laboratories will maintain an active development program, including underground testing, and we will be ready to resume testing in the atmosphere if necessary. Continued research on developing the peaceful uses of atomic energy will be possible through underground testing." Later in the same message, the President referred to "our determination to maintain our own arsenal through underground tests." In his press conference last Tuesday, the President described the program of the last 2 years and added: "[W]e are going to continue to carry on, as I've said, a vigorous series of tests."

Secretary McNamara and Dr. Seaborg, in their testimony before the Senate Foreign Relations Committee on August 13 and 14, reiterated these points and elaborated on them. General Taylor, in his testimony on August 15 before the same committee, testified that the President's position on this matter had been effectively communicated.

The underground test program will expand over that currently programed for fiscal year 1964. Details of the program are set forth in the separate, classified annex.

The Government will apply the following criteria, or standards, in the area of underground testing:

The underground test program will be comprehensive. Therefore, it will be revised to include as many as feasible of the objectives of the tests which we would otherwise do under conditions of unrestricted testing.

The underground test program will be vigorous. It will proceed at a pace that will exploit to the fullest the capabilities of existing AEC and DOD weapons laboratories. If these capabilities are proved to be inadequate to meet established requirements, they will be expanded.

The underground test program will be a continuing program designed to insure the highest practicable rate of progress in nuclear technology.

The standards established governing the type and magnitude of tests to be conducted will not be more restrictive than the spirit of the treaty limitations.

Safeguard (b).—"The maintenance of modern nuclear laboratory facilities and program in theoretical and exploratory nuclear technology which will attract, retain, and insure the continued application of our human scientific resources to these programs on which continued progress in nuclear technology depends."

There are three major facilities in which programs in theoretical and experimental nuclear warhead design technology are currently conducted and seven major DOD laboratories engaged in nuclear weapons effects research. The AEC facilities operating under contract with the Atomic Energy Commission are—

Los Alamos Scientific Laboratory, Los Alamos, N. Mex.
Lawrence Radiation Laboratory, Livermore, Calif.
Sandia Laboratory, Albuquerque, N. Mex.

The major DOD laboratories are—

Air Force Cambridge Research Laboratory, Bedford, Mass.
Air Force Weapons Laboratory, Kirtland Air Force Base, N. Mex.
Armed Forces Radiobiological Research Institute, Bethesda, Md.
Ballistics Research Laboratory, Aberdeen, Md.
Naval Ordnance Laboratory, White Oak, Md.
Naval Radiological Defense Laboratory, San Francisco, Calif.
Nuclear Defense Laboratory, Edgewood, Md.

Efforts to "attract, retain, and insure the continued application of our human scientific resources" to the programs of these laboratories depend primarily on their authorized programs and their equipment and facilities.

The AEC laboratories have been conducting programs of research in chemistry, physics, metallurgy, computer technology, and biological sciences, in addition to their major efforts in the design and development of nuclear weapons. They are also conducting development and exploration in applied nuclear physics such as reactors, controlled thermonuclear reactions, peaceful uses of nuclear explosives, nuclear propelled rockets, and the development of a nuclear ramjet.

The DOD laboratories have been conducting programs of basic research in the nuclear weapons effects areas which have military applications. In addition to making effects measurements during nuclear test series, research includes studies of airblast effects on ground equipment and aerospace systems, initial nuclear radiation measurements, shielding effects, protective structures, biomedical effects, underwater effects, electromegnetic effects, and integrated effects and phenomena. To support all of these studies extensive simulation techniques and computer facilities are used.

These activities are expected to be more than sufficient to provide the necessary stimulus and challenge to attract and retain first-rate scientific talent.

The next most important requirement after the quality of the research program necessary to maintain laboratory vitality is the physical plant with which the scientists must work. A continuous program of upgrading equipment and facilities has been underway at these laboratories since their inception, and this program is planned to continue. The approximate capital investment at each of the laboratories at the end of the fiscal year 1963 was: Los Alamos, $226 million; Lawrence Radiation Laboratory, Livermore, $118 million; and Sandia, $122 million. The approximate capital investment in support of the weapons effects program of the seven major DOD weapons effects laboratories is $153 million.

Some important facilities are now under construction at the laboratories or are awaiting fiscal year 1964 appropriations. If additional facilities should be needed at these installations in order to carry out the vigorous and imaginative testing program which we have discussed, funds for such facilities will be requested.

In addition to program and facilities development, the laboratories have aggressive personnel development activities including provision for in-service training, sabbatical leave, and outside educational opportunities at affiliated universities.

The President, Secretary McNamara, and Dr. Seaborg have all expressed the firm commitment of the administration to maintaining the quality and the vitality of our weapons laboratories.

The President in his press conference last Tuesday referred specifically to the safeguard "that we should keep our laboratories activated and vital." He said, "I've already met with Dr. Foster and Dr. Bradbury; we have talked with others. We are going to do that."

Our standards in this area will be as follows:

> Adequate AEC and DOD budgets, modern facilities and positive personnel policies will be maintained and augmented as necessary in order to attract and retain competent scientists in nuclear and related fields.
>
> Broad and forward-looking research programs will be carried on which will attract and retain able and imaginative personnel capable of insuring the highest practicable rate of progress that can be attained in all avenues of potential value to our offensive and defensive posture.

Safeguard (c).—"The maintenance of the facilities and resources necessary to institute promptly nuclear tests in the atmosphere should they be deemed essential to our national security or should the treaty or any of its terms be abrogated by the Soviet Union."

The following steps are illustrative of what has been done and what is being done in this important area:

Improvement of test support facilities, including preparation and maintenance of off-continent support bases and test sites, is now underway. Approximately $55 million is now committed by AEC and DOD for fiscal year 1963 and fiscal year 1964 for improvements to Johnston Island to provide a partial oversea test capability.

To provide an airborne nuclear test capability, suitable for most weapons proof and development tests, the following needs are being satisfied: Diagnostic aircraft (being accomplished by AEC and DOD); instrumented device or weapon drop aircraft (being accomplished by AEC and DOD); sampler and other support aircraft available from the Air Force on short notice (being accomplished by DOD); suitable operating bases on Johnston Island for surveillance, weather, sampler, and sampler return aircraft (joint AEC–DOD construction underway), and in the Hawaiian area.

For a high-altitude nuclear weapons effects test capability the following steps are being taken: An oversea base at Johnston Island with adequate area and suitable facilities to support the tests, such as rocket launch pads, assembly areas, etc. (joint AEC–DOD construction underway); instrumented ships and aircraft available on short notice from the Navy and Air Force.

Further, the AEC and DOD test organization—the Nevada operations office and the Defense Atomic Support Agency, including a nucleus joint task force—will be maintained at strength. This task force will be somewhat larger than the standby unit currently maintained.

It is planned that the regular continuing laboratory programs will include development of those devices which may at some time require atmospheric testing; that the laboratories will be encouraged to carry their ideas and studies to the point where final device construction can be achieved in a time comparable to the time necessary to implement an actual atmospheric test should such tests be authorized; and that development of instruments needed for support of an atmospheric test program will be continued by the laboratories.

The President has assured the Nation that a high state of readiness to test will be maintained. In his television address on July 26, he announced, "[S]ecret preparations for a sudden withdrawal are possible, and, thus, our own vigilance and strength must be maintained, as we remain ready to withdraw and to resume all forms of testing, if we must." And in his message transmitting the treaty to the Senate he stated, "[W]e will be ready to resume testing in the atmosphere if necessary." He amplified the point in his press conference last Tuesday, stating, "Already we have begun to prepare Johnston Island for that unhappy eventuality, if it should occur. * * * [W]e are dredging the harbor, we're building some piers; there are * * * two dredges already out there, so I can assure you that we are going ahead very rapidly in that area."

The position was supported by Secretary McNamara before the Senate Foreign Relations Committee on August 13. Dr. Seaborg's remarks on August 14 were to the same effect.

On being asked how long after a treaty violation it would take the United States to begin testing, the Secretary of Defense gave the following reaction times as the objectives to be attained: Proof tests within 2 months from the decision to test, development tests within 3 months from the decision to test, and effects tests within 6 months from the decision to test. He explained that such an effects-tests readiness posture—the most difficult one to maintain—could be achieved by about a year from now.

With regard to logistics and finances, Secretary McNamara emphasized that it was important to keep up and expand the facilities on Johnston Island. He reminded that "we can provide a standby capability by utilization of the approximately $200 million in funds that the Atomic Energy Commission and the Defense Department have requested for fiscal 1964 for test purposes, and by possible supplements to those funds for further standby facilities.

The programs are designed to meet the following criteria with respect to the maintenance of a readiness-to-test posture:

> The readiness-to-test program will be established on a Government-wide basis in support of a plan common to all participating agencies. The required resources and facilities will be maintained in a state of readiness, or earmarked, so that plans can be implemented within the reaction times established.
>
> Reaction times for resumption of testing in the prohibited environments will be established and maintained within the constraints of military requirements and reasonable costs. Reaction times will vary for the broad categories of testing. As an immediate objective, we should be able to conduct proof tests of weapons in stockpile in about 2 months; operational systems tests in about 2 to 3 months; weapons development tests in about 3 months; and weapons effects tests in about 6 months.
>
> There will be provision for periodic updating of our test program plan and for checking our readiness to test.

Safeguard (d).—"The improvement of our capability, within feasible and practical limits, to monitor the terms of the treaty, to detect violations, and to maintain our knowledge of Sino-Soviet nuclear activity, capabilities, and achievements."

The United States now has substantial capabilities to detect, identify, and to some extent diagnose nuclear tests. These capabilities exist in the resources of our conventional intelligence community and in the resources of the atomic energy detection system (AEDS).

The role played by the intelligence community was discussed with the Senate Foreign Relations Committee on August 16 and with the Senate Preparedness Investigating Subcommittee on May 22 by Mr. McCone, Director of Central Intelligence. The intelligence community, under the direction of the U.S. Intelligence Board has increased its activities and will continue to increase its activities to cope with the new conditions under the treaty.

Secretary McNamara, in his testimony before the Senate Foreign Relations Committee on August 13, stated that: "Our examination concluded that the Soviet Union could obtain no major results by testing in the atmosphere and deep space or underwater without incurring high risk of detection and identification." He pointed out that "the only advantages of illegal testing in the three prohibited environments would be either to develop weapons with yields in the multimegaton range (since designs for weapons with yields up to 10 megatons or more can be checked by lower yield tests underground) or to determine the weapons effects of explosions which cannot be carried out at all, or not so well, underground. There will probably be no cost advantage to illegal testing in the prohibited environments because keeping the tests secret will add to the expense and difficulty of the experiments." In answer to a question about the future, Secretary McNamara referred to augmentations of the detection and identification system which have already been approved and to further augmentations which are under consideration—expanding upon the statement of the President in his message of August 8 transmitting the treaty to the Senate: "There is further assurance against clandestine testing in our ability to develop and deploy additional means of detection * * *."

Dr. Seaborg, in his summary before the same committee on August 14, said that "systems to detect possible violation of the treaty will be maintained and continually improved."

The administration—as indicated in the detailed testimony of Defense and ACDA officials before the Senate Preparedness Investigating Subcommittee on May 9 and 15—has under consideration proposals by which our present AEDS resources can be augmented to enhance our capabilities. The proposals now being reviewed are summarized in the separate, classified annex.

The standards for the program and plans are these:

The current capability of the United States to detect and identify nuclear tests conducted by the Sino-Soviet bloc will be improved to a degree which is both feasible and remunerative. (Specific proposals for this purpose are currently under consideration.)

A vigorous research and development program will be pursued in order to improve equipments and techniques for nuclear test detection and identification.

Convention intelligence sources will continue to complement the scientific intelligence techniques.

In conclusion, the following additional important factors must be borne in mind in connection with the concern about clandestine tests: First, the possibility of Soviet clandestine tests is lessened by the fact that they can test legally underground. Second, although there can be no guarantee that we will be able to identify all possible violations of the treaty, the Soviets cannot guarantee that we will not identify such violations. Put another way, the Soviets will never be sure of the threshold for successful evasion of our expanding and improving detection system. And, third, as the President stated in his message to the Senate of August 8, we are determined to maintain our own arsenal through underground testing and our readiness to resume atmospheric testing if the actions of others so require.

In summary, Mr. Chairman, I believe, and I trust you will agree, that the major decisions of policy have already been made and that executive action under these decisions is already going forward. I am assured—and I can assure you—that if further decisions and actions are needed, the President will take them.

Since the matters discussed above were also raised during the hearings before the Foreign Relations Committee on the test ban treaty, a copy of this letter is being furnished also to the chairman of that committee. In addition, since the contents of this letter are pertinent to an earlier inquiry from the Joint Committee on Atomic Energy, a copy is being furnished to the chairman of that committee as well.

Sincerely,

ROSWELL GILPATRIC.

THE JOINT CHIEFS OF STAFF,
Washington, D.C., August 23, 1963.

Hon. RICHARD B. RUSSELL,
Chairman, Committee on Armed Services,
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: In response to the request of your committee transmitted to the Secretary of Defense on August 15, the Joint Chiefs of Staff have developed criteria for testing the adequacy of plans and programs in support of the treaty safeguards included in their statement on the limited test ban treaty made to the Preparedness Investigating Subcommittee. These criteria, attached hereto, are necessarily general in language since additional study will be required to determine specific standards and programs for underground testing, for the stimulation of nuclear laboratory activities, for the standby preparations for nuclear tests in the atmosphere, and for the improvement of our capability to detect clandestine testing.

The Joint Chiefs of Staff recommended the inclusion of this statement of criteria in the letter of the Deputy Secretary of Defense dated August 23, which has been transmitted to you in further response to the request of August 15 mentioned above. They consider that the actions described in Deputy Secretary Gilpatric's letter meet the requirements as presently foreseen for implementing the safeguards proposed by the Joint Chiefs of Staff to reduce the risks and disadvantages of the test ban treaty.

We appreciate this opportunity to amplify for your committee our views on this important issue.

Sincerely yours,

MAXWELL D. TAYLOR,
Chairman, Joint Chiefs of Staff.

CRITERIA TO INSURE FULFILLMENT OF THE SAFEGUARDS PROPOSED BY THE JOINT CHIEFS OF STAFF WITH REGARD TO THE LIMITED NUCLEAR TEST BAN TREATY

Listed below are the four safeguards and the recommended criteria which should be employed in subsequent examination of programs designed to insure that each of the safeguards is fulfilled.

A. "The conduct of comprehensive, aggressive, and continuing underground nuclear test programs designed to add to our knowledge and improve our weapons in all areas of significance to our military posture for the future."

1. *Criteria.*—

(*a*) The underground test program should be comprehensive. Therefore, it should be revised to include as many as feasible of the objectives of the tests which we would otherwise do under conditions of unrestricted testing.

(*b*) The underground test program should be vigorous. It should proceed at a pace that will exploit to the fullest the capabilities of existing AEC and DOD weapons laboratories. If these capabilities are proved to be inadequate to meet established requirements, they should be expanded.

(*c*) The underground test program should be a continuing program designed to insure the highest practicable rate of progress in nuclear technology.

(*d*) The standards established governing the type and magnitude of tests to be conducted should not be more restrictive than the spirit of the treaty limitations.

B. "The maintenance of modern nuclear laboratory facilities and programs in theoretical and exploratory nuclear technology which will attract, retain and insure the continued application of our human scientific resources to these programs on which continued progress in nuclear technology depends."

1. *Criteria.*—

(*a*) Adequate AEC and DOD budgets, modern facilities, and positive personnel policies should be maintained and augmented as necessary in order to attract and retain competent scientists in nuclear and related fields.

(*b*) Broad and forward-looking research programs should be carried on which will attract and retain able and imaginative personnel capable of insuring the highest practicable rate of progress that can be attained in all avenues of potential value to our offensive and defensive posture.

C. "The maintenance of the facilities and resources necessary to institute promptly nuclear tests in the atmosphere should they be deemed essential to our national security or should the treaty or any of its terms be abrogated by the Soviet Union."

1. *Criteria.*—

(*a*) The readiness-to-test program should be established on a Government-wide basis in support of a plan common to all participating agencies. The required resources and facilities should be maintained in a state of readiness, or earmarked, so that plans can be implemented within the reaction times established.

(*b*) Reaction times for resumption of testing in the prohibited environments must be established and maintained within the constraints of military requirements and reasonable costs. Reaction times will vary for the broad categories of testing. As an immediate objective, we should be able to conduct proof tests of weapons in stockpile in about 2 months; operational systems tests in about 2 to 3 months; weapon developments tests in about 3 months; and weapon effects tests in about 6 months.

(*c*) There must be provision for periodic updating of our test program plan and for checking our readiness to test.

D. "The improvement of our capability, within feasible and practical limits, to monitor the terms of the treaty, to detect violations, and to maintain our knowledge of Sino-Soviet nuclear activity, capabilities, and achievements."

1. *Criteria.*—

(*a*) The current capability of the United States to detect and identify nuclear tests conducted by the Sino-Soviet bloc must be improved to the extent it is both feasible and remunerative. (Specific proposals for this purpose are currently under consideration.)

(*b*) A vigorous research and development program must be pursued in order to improve equipments and techniques for nuclear test detection and identification.

(*c*) Conventional intelligence sources must continue to complement the scientific intelligence techniques.

THE WHITE HOUSE,
Washington, D.C., September 10, 1963.

Hon. MIKE MANSFIELD,
Hon. EVERETT MCKINLEY DIRKSEN,
U.S. Senate, Washington, D.C.

DEAR SENATOR MANSFIELD AND SENATOR DIRKSEN: I am deeply appreciative of the suggestion which you made to me on Monday morning that it would be helpful to have a further clarifying statement about the policy of this administration toward certain aspects of our nuclear weapons defenses, under the proposed test ban treaty now before the Senate. I share your view that it is desirable to dispel any fears or concerns in the minds of Senators or of the people of our country on these matters. And while I believe that fully adequate statements have been made on these matters before the various committees of the Senate by the Secretary of State, the Secretary of Defense, the Director of Central Intelligence, the Chairman of the Atomic Energy Commission, and the Joint Chiefs of Staff, nevertheless I am happy to accept your judgment that it would be helpful if I restated what has already been said so that there may be no misapprehension.

In confidence that the Congress will share and support the policies of the administration in this field, I am happy to give these unqualified and unequivocal assurances to the Members of the Senate, to the entire Congress, and to the country:

1. Underground nuclear testing, which is permitted under the treaty, will be vigorously and diligently carried forward, and the equipment, facilities, personnel, and funds necessary for that purpose will be provided. As the Senate knows, such testing is now going on. While we must all hope that at some future time a more comprehensive treaty may become possible by changes in the policies of other nations, until that time our underground testing program will continue.

2. The United States will maintain a posture of readiness to resume testing in the environments prohibited by the present treaty, and it will take all the necessary steps to safeguard our national security in the event that there should be an abrogation or violation of any treaty provision. In particular, the United States retains the right to resume atmospheric testing forthwith if the Soviet Union should conduct tests in violation of the treaty.

3. Our facilities for the detection of possible violations of this treaty will be expanded and improved as required to increase our assurance against clandestine violation by others.

4. In response to the suggestion made by President Eisenhower to the Foreign Relations Committee on August 23, 1963, and in conformity with the opinion of the Legal Adviser of the Department of State, set forth in the report of the Committee on Foreign Relations, I am glad to emphasize again that the treaty in no way limits the authority of the Commander in Chief to use nuclear weapons for the defense of the United States and its allies, if a situation should develop requiring such a grave decision. Any decision to use such weapons would be made by the United States in accordance with its constitutional processes and would in no way be affected by the terms of the nuclear test ban treaty.

5. While the abnormal and dangerous presence of Soviet military personnel in the neighboring island of Cuba is not a matter which can be dealt with through the instrumentality of this treaty, I am able to assure the Senate that if that unhappy island should be used either directly or indirectly to circumvent or nullify this treaty, the United States will take all necessary action in response.

6. The treaty in no way changes the status of the authorities in East Germany. As the Secretary of State has made clear, "We do not recognize, and we do not intend to recognize, the Soviet occupation zone of East Germany as a state or as an entity possessing national sovereignty, or to recognize the local authorities as a government. Those authorities cannot alter these facts by the act of subscribing to the test ban treaty."

7. This Government will maintain strong weapons laboratories in a vigorous program of weapons development, in order to insure that the United States will continue to have in the future a strength fully adequate for an effective national defense. In particular, as the Secretary of Defense has made clear, we will maintain strategic forces fully insuring that this Nation will continue to be in a position to destroy any aggressor, even after absorbing a first strike by a surprise attack.

8. The United States will diligently pursue its programs for the further development of nuclear explosives for peaceful purposes by underground tests within the terms of the treaty, and as and when such developments make possible

constructive uses of atmospheric nuclear explosions for peaceful purposes, the United States will seek international agreement under the treaty to permit such explosions.

I trust that these assurances may be helpful in dispelling any concern or misgivings which any Member of the Senate or any citizen may have as to our determination to maintain the interests and security of the United States. It is not only safe but necessary, in the interest of this country and the interest of mankind, that this treaty should now be approved, and the hope for peace which it offers firmly sustained, by the Senate of the United States.

Once more, let me express my appreciation to you both for your visit and for your suggestions.

Sincerely,

JOHN F. KENNEDY.

STATEMENT OF DR. GLENN T. SEABORG, CHAIRMAN, ATOMIC ENERGY COMMISSION; ACCOMPANIED BY DR. ROBERT E. WILSON, MR. JOHN G. PALFREY, MR. JAMES T. RAMEY, MR. GERALD TAPE, COMMISSIONERS; GEN. A. R. LUEDECKE, GENERAL MANAGER; DR. SPOFFORD G. ENGLISH, ASSISTANT GENERAL MANAGER FOR R. & D.; MR. JOSEPH HENNESSEY, GENERAL COUNSEL; MR. FRANK J. McCARTHY, DEPUTY CONTROLLER; MAJ. GEN. A. W. BETTS, DIRECTOR, DIVISION OF MILITARY APPLICATION; BRIG. GEN. DELMAR L. CROWSON, DEPUTY DIRECTOR, MILITARY APPLICATION; MR. G. J. KETO, ASSISTANT DIRECTOR OF MILITARY APPLICATION; MR. D. B. ANTHONY, ASSISTANT DIRECTOR FOR PROGRAM ANALYSIS AND BUDGET MILITARY APPLICATION; MR. KENNEDY C. BROOKS, ASSISTANT DIRECTOR, DIVISION OF CONSTRUCTION; MR. VICTOR CORSO, ASSISTANT, CONTROLLER FOR BUDGETS; MR. RICHARD X. DONOVAN, CONGRESSIONAL LIAISON; MR. S. P. SCHWARTZ, PRESIDENT, SANDIA CORP.; DR. NORRIS BRADBURY, DIRECTOR, LOS ALAMOS SCIENTIFIC LABORATORY; DR. JOHN S. FOSTER, DIRECTOR, LIVERMORE; DWIGHT INK, ASSISTANT GENERAL MANAGER; FRANKLIN N. PARKS, ASSISTANT GENERAL COUNSEL FOR MILITARY ACTIVITIES; A. A. WELLS, ACTING ASSISTANT GENERAL MANAGER FOR INTERNATIONAL AFFAIRS; AND HAROLD D. BENGELSDORF, ASSISTANT DIRECTOR, DIVISION OF INTERNATIONAL AFFAIRS (PROGRAM DEVELOPMENT AND LIAISON)

Dr. SEABORG. Mr. Chairman, I can assure you at the outset, however, that I am going to speak to the four safeguards that Congressman Hosmer has identified.

Representative HOLIFIELD. All right.

Dr. SEABORG. I am pleased to appear before you with members of the Atomic Energy Commission and its staff to discuss the proposed amendment to Public Law 88–72 authorizing AEC appropriations for fiscal year 1964. This amendment provides for adding 12 weapons program construction projects at a total estimated cost of $17,945,000 and is related to the safeguards program being undertaken as a result of the recently approved nuclear test ban treaty.

IMPLEMENTATION SAFEGUARDS UNDER THE NUCLEAR TEST BAN TREATY

Before getting into the specifics of the proposed amendment, I would like to set forth briefly these safeguards actions which the Commission is taking under the conditions of the treaty.

They can be summarized in four general categories. First, it is important that this Government maintain strong weapons laboratories which can continue to conduct a vigorous program of weapons development. This amendment is directed primarily to this objective.

Second, we must be in a position to resume atmospheric testing on short notice if this should become necessary by reason of violation of any provisions of the treaty. We are proceeding, subject to appropriation action, with an atmospheric test readiness program whereby testing can be resumed on a reaction time of up to 2 months for weapons systems test and proof tests, within 3 months for weapons development tests, and within 6 months for high altitude and AEC/DOD effects tests. I must say in each case here this is the time when the first such tests could be performed. In each category there would be tests that would require of course longer times than those first times.

In addition we will prepare for conduct of experimental tests in the atmosphere related to weapons hardening.

In this area, the technology will be constantly changing and we plan to do as much of this work as possible in the underground test program. [Classified matter deleted.] And this particular reaction period is also the recommendation of the directors of our weapons laboratories.

During a 20-month period spanning 3 fiscal years, 1963–1965, we expect to spend about $121 million on the readiness program. Once the readiness state has been attained, we anticipate annual holding costs of from $20 to $25 million. As has been discussed in previous testimony before this committee, the AEC initiated in fiscal year 1963 a program for the modification to and installation of equipment in high speed aircraft whereby an airborne diagnostic test capability could be obtained. The cost of this program is approximately $18 million. We are also now proceeding with test construction in the Johnston Island and Hawaiian area. The total estimate of the AEC portion of this construction is approximately $22 million. This is a joint program with the DOD, which will be spending approximately $42 million in construction effort at Johnston Island, the major portion of the DOD expenditure being for dredge and fill work nesessary to expand the size of the island.

The total $121 million readiness program also includes $28 million for development and stockpiling of needed equipment and instrumentation and for periodic air exercises for atmospheric development test capability; and $53 million for development of diagnostic instrumentation, stockpiling of rockets required for high altitude and effects tests, including the limited capability for atmospheric test related to hardening.

A third safeguard is the expansion of underground weapons test activities. We are planning a program of [classified matter deleted] weapons development events plus seven Plowshare events during fiscal year 1964, representing an increase of [classified matter deleted] events over plans as originally proposed for this fiscal year.

It is expected that underground tests of higher yields will be conducted in the Pahute Mesa portion of the Nevada test site and we expect in the future to expand the Pahute Mesa area into a portion of the present Air Force gunnery range. We have concurrence of the Air Force for the use of this area. This expanded underground testing program is expected to provide some of the needed answers [classified matter deleted].

The fourth safeguard is the improvement of this Nation's detection capability. This is the primary responsibility of the Department of Defense. The AEC is working closely with the Department of Defense in coordinating plans and requirements for the overall safeguards program. I am pleased to note that the members of the Joint Committee are taking a personal interest in this and taking a trip to make inspections of these sites. I want also to express appreciation that you are including Commissioner Tape and two members of the staff on this important mission. (See JCAE press release, app. 2, p. 68.)

In connection with the increased effort we will put on testing and readiness capability, we are making certain changes in our 1964 operating budget. Whereas the original estimates would provide $94.0 million for weapons testing, the revised estimate is $203.8 million, or an increase of $109.8 million for 1964. Of this increase, $42.6 million will be applied to the expanded underground test activity and supporting laboratory participation increasing the 1964 amount for this work from $88.0 million to $130.6 million The 1964 estimate for the readiness program is being increased by $67.2 million from $6.0 million to $73.2 million.

The commission believes that these revisions will adequately provide for the program planned for fiscal year 1964 to meet the safeguards responsibilities.

GENERAL FEATURES OF THE SUPPLEMENTAL AUTHORIZATION BILL

I should now like to return to the projects proposed for authorization. The 12 new construction projects estimated to cost a total of $17,945,000 are an important part of the commitment to maintain modern nuclear laboratory facilities and programs which will attract, retain, and insure the continued application of human resources which are vital to an effective weapons program.

Three of the proposed construction projects, totaling $3,740,000, would be at the Los Alamos Scientific Laboratory, New Mexico. These much needed facilities would replace inadequate high temperature chemistry laboratory space and the old plutonium research laboratory space and would provide space for the occupational health physics group. Addition of these projects to the two weapons projects previously authorized for 1964 at a cost of $3,265,000, would provide a total of five projects costing about $7 million at Los Alamos for this fiscal year.

At the Lawrence Radiation Laboratory at Livermore, Calif., we are proposing five projects estimated at $8,755,000. These include a radio chemistry building, a plant engineering and services building, and additions to the hazards control building, the craft shop, and the cafeteria. Along with a $3,500,000 theoretical and computations building previously authorized for 1964, there would be six weapons projects, costing $12,255,000, for Livermore during this fiscal year.

We are proposing three projects estimated at $4,820,000 for Sandia Base, N. Mex. These are a development laboratory, an explosive chemistry laboratory, and an addition to the classified technical reports building. When added to the two Sandia projects previously authorized for 1964, at a cost of $930,000, there would be five projects at a cost of $5,750,000 for Sandia during this fiscal year.

The proposed amendment also includes $630,000 for additions to the control point at the Nevada Test Site in keeping with the more intensive underground testing activities taking place at that location. This is in addition to a previously authorized project for base construction at a cost of $4 million making a total of two weapons projects at the test site, for this year, at a cost of $4,630,000.

In summary, the program we are proposing for the balance of this fiscal year and for the following years will enable us to maintain a flexible readiness capability to resume atmospheric testing should that be decided, and will permit a tempo of underground testing and levels of support of research and development with necessary capital facilities to maintain the energy and viability of our weapons laboratories.

This concludes my general statement. I will be pleased to answer any questions you have at this time. The General Manager and General Betts and other members of the staff are here to provide such further details as you may want.

The Directors of the three weapons laboratories are also available.

Representative HOLIFIELD. Thank you, Dr. Seaborg. Are there any questions at this point or do you want to have the General Manager proceed?

I think we will proceed right now with the individual projects. We will withhold questions until you finish your statement, General Luedecke.

OCCUPATIONAL HEALTH LABORATORY, LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

General LUEDECKE. I thank you, Mr. Chairman. The first project under the proposed amendment is project 64–d–10, Occupational Health Laboratory, Los Alamos Scientific Laboratory, New Mexico, $1,650,000.

This project provides for an L-shaped one-story and basement building, including equipment containing laboratories, offices, and related areas having a gross area of 26,500 square feet. Site development of parking areas and access drives will be included as will utility development of connections to existing systems adjacent to the site.

The building will have reinforced concrete frame and floor slabs, flat insulated roof, masonry block panels and interior partitions. Ceilings will be concrete and the floors will be concrete with asphalt tile.

Special air handling systems are required for the laboratory areas including hoods and filter systems. No air conditioning is provided for the office areas. The building contains laboratories and their service and corridor areas, offices and related space, storage, shop and vault areas, and general utility and toilet space. The approximate total building volume is 350,000 cubic feet.

This project is needed to provide immediate improvement to the physical plant of the laboratory with a view to insuring a high level of nuclear weapons research and development progress coupled with the readiness to resume atmospheric full-scale testing on short notice.

Increasing concern and requirements for detailed analysis and control of health hazards in nuclear research and experimental work has broadened the scope of responsibility for the industrial hygiene and radiation effects work requiring increased needs for space and equipment in the Health Research Laboratory to meet these responsibilities. The Health Research Laboratory at present also houses the biomedical research activities of the Laboratory.

Additional space is required to permit the expansion of fundamental work in cellular and molecular biology. The industrial hygiene effort is primarily concerned with the control of factors in the Laboratory environment which could be hazardous to health. It also is concerned with development of criteria and advisory supervision of ventilation and air cleaning equipment, air sampling for toxic and special radioactive materials, respirator fitting and noise evaluation as well as with the assay of radioactive and toxic materials in air and biological fluids.

The radiation effects effort provides for the documentation of radiation effects associated with the nuclear test programs. The work is divided into three areas—integral dosimetry, dose rate dosimetry, and monitoring of radioactive releases.

Sixty-seven biomed and thirty-five weapons personnel presently occupy the existing facility. The Laboratory plans to expand this total of 102 to 118 by the end of fiscal year 1964 to accomplish necessary activities. The present building will be overcrowded at that time.

Further personnel expansion in these activities is planned in light of predicted workload increases in this area. The proposed facility provides an average of 97 square feet of office space per person, and 270 square feet of laboratory space per person. The planned occupancy is 46 persons.

Mr. Chairman, General Betts has charts showing the locations of these buildings and is prepared to give further details in the backup that the committee desires.

General Betts. You will recall, Mr. Chairman, that the present activity of the occupational health group at Los Alamos is in a building that is across the bridge from the main tech area. It is now proposed that this green location on the south side of the bridge at Los Alamos in the main tech area, the present South Mesa tech area, is where we would put this occupational health laboratory.

Representative Hosmer. Where is the administration building on that map?

General Betts. Right here.

Representative Hosmer. That area is all within the fence?

General Betts. This would be within the tech area. I might point out that we indicated in our last discussions that you would like to have some feeling for the cost that goes into this building. The average square-foot cost is $35.50. That is a little bit misleading because the office space is only $22 and the average is raised by the fact that there is a considerable amount of laboratory space which

comes out to $56 a square foot. Essentially as concrete, frame, and masonry block panel construction, it is austere.

Representative HOLIFIELD. I think we had better take the questions which we have prepared for each item as we go along. The first question relates to the relationship between the program to be carried out at the occupational health laboratory and the weapons program. In spite of the name of the facility there appears to be basic biological research here in cellular and molecular biology. This may be a very worthwhile project but does this invigorate the weapons program? Does this duplicate other work in AEC's biology and medicine program?

General BETTS. We do not consider that it is duplicative of other things except to the extent that we do have a basic responsibility for what I would call industrial safety as related to biology and medicine.

In that sense, since it is a sort of operating function, it is like operating functions of that type in other laboratories but it is obviously necessary in this lab.

Representative HOLIFIELD. Does it duplicate the work in other laboratories or is it an adjunct to it?

General BETTS. It does not duplicate in the sense of doing research work being done somewhere else.

Representative HOLIFIELD. Is it duplicative of a current project?

General BETTS. In a research and development sense; no, sir.

Representative HOLIFIELD. Have there been problems in the past with the control of radioactive health hazards at LASL.

General BETTS. There is always a continuing workload related to the health safety aspects of radioactivity. Los Alamos is no different from any other laboratory. I would not say that there have been unusual problems that were not expected in this type of work.

Representative HOSMER. You have had a good safety record, have you not?

General BETTS. They have had a good safety record.

Representative HOSMER. Is it the increased weapons work that places the requirement for this related facility increase?

General BETTS. Whatever additional work we do in the field of testing activity as well as in plutonium research and the other radioactive materials with which we work there is additional burden on the health safety facilities.

Representative HOSMER. What I am trying to get is what kind of program has been conceived or settled upon that creates this requirement for this ancillary support work?

General BETTS. We have over the past 2 years settled down to a steady state level of underground testing which has thrown a rather different type of workload on the laboratories than was the case when we were testing in spurts. To the extent that we recognize that as a continuing workload that affects the workload in the laboratories it undoubtedly has an impact on the requirement for this kind of capability but I can't identify a new program and say that is specifically related to this facility.

Representative HOSMER. How long has this facility been in the mill?

General BETTS. Los Alamos has seen the need for an expanded capability in this area for some years.

Representative HOSMER. A request has been made from time to time for this project?

General BETTS. Yes, sir.

Representative HOSMER. You took this request for the project to the Bureau of the Budget the last time and it was deleted.

General BETTS. We have had a series of unfortunate experiences of that nature. We have had trouble because of the priority of other projects that we felt had to be funded before this project.

Representative HOSMER. I understand that but I am just trying to find out why the implications of the weapons development work have suddenly overcome these previous difficulties.

General BETTS. A conscious national decision has been made to upgrade the facilities of the laboratories to show the people in the laboratory that weapons work is still important to this country.

For that reason we feel that this is a logical candidate for support under that concept.

Representative HOSMER. It is partly at least in the psychological field to give your topflight scientists eyeball evidence that something is going on to keep them encouraged, is that right?

General BETTS. Partly.

Representative HOSMER. How does this facility for that purpose rate against some other potential expenditure? Are they really going to be excited about this or would they be more excited about something else that we spent the same amount of money on.

General BETTS. I would rather throw that question to the laboratory directors. Dr. Bradbury.

Dr. BRADBURY. Members of the committee, this is, as General Betts has said, a project which has concerned us for some time. I might review for you a bit of the history of this particular activity. It is a fundamental one in the lab for the health and safety of our people.

It was originally planned for this activity to go into the main administration building. When that building was built it was already overcrowded. This very important portion of our activities had to be put into the biological research building. It is crowded there now and we have for some time urged and planned that we get this activity into suitable quarters.

Representative HOLIFIELD. How far back does this go in point of years?

Dr. BRADBURY. The main administration building was built in 1954, I guess.

Representative HOLIFIELD. I was thinking of the desire for this specific building.

Dr. BRADBURY. At the time when it was first occupied. We have had this problem facing us for some time. I also would like to point out that the problem of health and safety is really important in a laboratory. We don't contend it is only radioactive material but all the industrial solvents, oxide gasses, dust of every variety.

It is important to keep people safe, well, and healthy from these hazards as it is from the hazards which you are more commonly aware of, the radioactive hazards.

Representative HOSMER. I think my question was directed to what other possible physical eyeball evidence we could give to your people out there that would encourage them as topflight scientists to stay in the laboratories and keep the laboratories working at high efficiency.

Dr. BRADBURY. We will cover in this morning's hearings a few other activities which we regard rather important to the upgrading of

our physical plant. This is one of them. We have other items in the fiscal 1964 budget which are important.

At the moment I think there is no particular item that I would suggest that I would put higher than the three which you have before you this morning.

Representative HOSMER. I would assume that you have others but these just came out at the top, is that right, for this purpose?

Dr. BRADBURY. They came out at the top at this particular time. They are not things that are capricious. They are things which we have had in the mill for some time.

Representative HOSMER. I think that brings up an additional question of whether or not authorization, at this time, of some others on the list might make more certain that our purpose was accomplished rather than just considering these three projects.

At some point in the inquiry I would like to get an idea of the next two or three on the list. Not right now, however.

Representative HOLIFIELD. Why could not this dosimetry and monitoring work be done at the Nevada Test Site rather than the Laboratory which is quite a distance from the test site?

General BETTS. There is a certain amount of this work done at the Nevada Test Site, as you are aware but indeed the function is an integral part of the health and safety activities there at the Laboratory.

I am sure that to have good people involved in this kind of function also means that you must have some things that they can do that are forward looking and that the two are interrelated. It is part of an operational problem and part giving good people the opportunity to think of ways to improve the situation.

Dr. BRADBURY. There is underway at the moment a change from the film badge and dosimetry to a technique which will give a much more reliable indication of exposure and will be simpler and better in all respects. It is the same as the service group does. That will be a fundamental change.

Representative HOLIFIELD. What relation does this change have to whether the work should be done at the test site or at Los Alamos?

Dr. BRADBURY. The work at the test site is only a very small part of the work. We have the entire Laboratory under dosimetry protection. We like to keep, and should keep, the records of all our people.

Representative HOLIFIELD. In other words, the major part is done at LASL anyway.

Dr. BRADBURY. Right. The major part of our employees are at Los Alamos.

Representative HOLIFIELD. General Luedecke, the project data sheets state that this facility has an anticipated life expectancy of 50 years. Could not a cheaper and less durable facility be designed that would still be adequate to meet all present foreseeable needs for such a laboratory?

General LUEDECKE. Possibly, Mr. Chairman, this is very simple durable construction. I doubt that you would do it with a reasonable building much cheaper than that. I can ask my construction man to respond to that specifically. Mr. Brooks?

Mr. BROOKS. We can't build anything there that would be cheaper unless we built some very temporary structure that we would have to abandon later. This is not out of line with our past laboratory costs. They usually range between $30 and $60 a square foot.

Representative HOLIFIELD. Thank you. Are there any further questions on 64–d–10?

Representative BATES. Dr. Bradbury, will you spell out the need for the expansion more than you have thus far? We have to explain it on the floor. If you could spell out the need for the expansion a bit, I would appreciate it.

Dr. BRADBURY. It is difficult to put it in a quantitative fashion other than the fact that we are overcrowded, the fact that there is need for expansion of facilities, the fact that this is a program of fundamental importance to the health of the personnel.

Every man in the Laboratory working at any desk or at a bench comes in contact with this activity day by day, and we should insure that he is not exposed either to radiation or toxic gases which in any way endanger him.

I think it is important to indicate to our people that this type of concern is as fundamental to the Commission's interest, the country's interest, as is our concern that we make progress in technical developments. It will be a good thing for the program, I can assert.

Representative BATES. You are going to expand from 102 to 118. That is your total expansion of personnel.

Dr. BRADBURY. Planned at present. Of course if we turn up with new materials or new problems those numbers will go by the board and we will add more people. The level of this activity is our best guess of what it will take to do a good, satisfactory job of industrial health protection.

Representative BATES. What is going to happen to the space that you are presently occupying in your Laboratory?

Dr. BRADBURY. That space, which is biological research space, we will let the people who are now crowded in other biological laboratories expand into more suitable space.

This was the purpose of the building in which they are now living, which was really built and planned on a program having a moderate expansion of the biological work of the lab.

Representative BATES. Is that the greater need or is this the greater need?

Dr. BRADBURY. The greater immediate practical need is the industrial health building. That is something we live with every day.

Representative BATES. Are there any new aspects of this industrial health that you are going to get into that you are not presently pursuing?

Dr. BRADBURY. I mentioned the one of changing the type of film badge dosimetry. It is very difficult to forecast at any given moment that you will go into new solvents, new dust, new toxic chemicals which will always happen. We have to prepare for it.

Representative BATES. Thank you.

Representative HOLIFIELD. Mr. Morris?

Representative MORRIS. Mr. Chairman. Dr. Bradbury, I suppose it is very foolish for anyone of the committee to be asking questions about an installation which is going to be built in his State. I am greatly impressed with the need of health facilities. I just hope that we are not just building it to try to please somebody, that there is more to it than that. Is that not correct?

Dr. BRADBURY. You of course are correct. I would like, if I may, to point out that the concern of people in the disposal problem is a

real concern for the welfare of Los Alamos. We may differ and in fact I differ with a great many of my staff in the approach but the concern is a real one for the well-being of Los Alamos.

The Health Physics Laboratory is my immediate concern.

Representative MORRIS. I don't know what else you can do that has not been done already to make them feel that we are interested in their work, if that is the only need for this project.

Dr. BRADBURY. This is not the only need for it. I think I discussed it in some detail. This is not purely a psychological problem. One can think of other things; this makes technical sense. I share your opinion that no one will be completely happy.

The people who will get this building will always think it should have been bigger. Somebody else who had some other petty request who did not get it won't be as happy. There is a specific need for the personnel in the Laboratory and the expression of continuing interest of the country in their vitality and safety.

Representative MORRIS. I can buy that 100 percent but if we are justifying it partly on the psychological aspects, I don't know whether it is worthwhile or not.

Dr. BRADBURY. It is not an expressed opinion of mine that "it will make people happy" is perhaps too much to expect.

Representative ANDERSON. I have one question which I think was answered previously. Do I understand that substantially this identical project has been submitted before and rejected by the Bureau of the Budget as not having sufficiently high priority?

General BETTS. It has in the past been submitted and overtaken by things of higher priority.

Representative ANDERSON. The question that exists in my mind is whether or not under the cover of the willingness on the part of the Government to spend more money generally for a readiness program we are just resurrecting things in an effort to take advantage of a situation which has arisen because of the test ban treaty.

General BETTS. I think the requirement for this building can stand on its own feet. The problem of priority each year is always a difficult one. In the context of the discussion of trying to have the best possible weapons laboratory I am sure that this will stand fully on its own feet without any question.

Dr. SEABORG. The projects often take several years to work their way up to the top of the priority list.

General BETTS. I might point out that the Bureau of the Budget has looked at it with just as hard a look as they have taken in the past and they have agreed to include it in this bill.

Representative HOLIFIELD. Are there any further questions? If not we will go to 64–d–11.

HIGH-TEMPERATURE CHEMISTRY FACILITY, LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

General LUEDECKE. High-temperature chemistry facility, Los Alamos Scientific Laboratory, New Mexico, $1,435,000. This project provides for a building of approximately 23,000 square feet gross area with office space, conference and file rooms, health space, change rooms, laboratories and shops, demolition and removal of an existing wooden building, site improvements and utility connections, and related equipment.

The proposed building is one story with partial basement, concrete frame, and floor slabs, flat built-up roof, with masonry block panels and interior partitions. Ceilings will be concrete and the floors will be concrete with asphalt tile.

Special air handling and filter systems are required for the laboratory area, change rooms, and sections of the machine shop. No air conditioning is provided for the office areas. Approximately 10,000 square feet gross area of new laboratory space is proposed to be used principally for chemistry-type laboratories with hoods and associated laboratory equipment.

Replacement space includes office, conference and library space, shop area, change rooms and health monitor area and an enclosed corridor. Utility space is needed for building and special laboratory services. The building has an approximate gross volume of 250,000 cubic feet.

This project is needed to provide immediate improvement to the physical plant of the laboratory with a view to insuring a high level of nuclear weapons research and development progress coupled with the readiness to resume atmospheric full-scale testing on short notice.

A new facility for research laboratory space and support space is needed for (1) high-temperature chemistry research areas to supplement an existing crowded laboratory facility that is inadequate for present programs and unable to serve for anticipated future research programs, (2) replacement of an old wooden structure which does not provide sufficient space for operating and research personnel, which will be demolished, and (3) the increased efficiency which will be brought about by consolidation of the support services for this research program.

The principal occupying group in the new laboratories and supporting space will be conducting research on the physical and chemical properties of materials and systems of possible high-temperature nuclear application which relate to weapons, reactor, and other programs. The planned occupancy of this building is 44 persons who will be transferred from the building planned for demolition.

Specific requirements for new laboratories include necessary pyrometer calibration and pyrometry development space, space for X-ray diffraction services for high-temperature measurements, laboratories, and equipment for high-pressure measurements complimentary to high-temperature work, space for low-temperature conductive measurements and space for certain physical property measurements on refractory materials.

Increase in the support space is required to expand the machine shop to allow a separate shop area for graphite work, to provide increased library and conference space, and to allow better contamination control by more effective change room arrangement.

Special equipment required for the new laboratories includes induction furnaces, conventional furnaces, five ultra-high-vacuum systems, a high-pressure apparatus, and high-purity inert gas and drybox systems.

Representative HOLIFIELD. How much of this high-temperature research is related to the weapons program and how much to reactor and other programs?

General BETTS. It is very difficult, Mr. Chairman, to separate it in that fashion on a numerical basis. It is perfectly clear that we are

getting into more and more difficult materials problems [classified matter deleted].

The fact that the work is related to both weapons and reactor, the Rover reactor particularly, is well known. One might ask that question of Dr. Bradbury.

Representative HOLIFIELD. Dr. Bradbury?

Dr. BRADBURY. I expected that question to come back to me this morning. I would like to supplement what General Betts has said by making the following observations. I am sure this committee is very well aware that the fundamental responsibility of the lab is to conduct basic physical nuclear metallurgy and chemical research. It is out of this research in actual fact that all our progress for weapons and reactors has come.

I have used the analogy many times before of a broad play to have fundamental studies for basic research out of which periodically peak up various types of specific developments, weapons, and so forth. Characteristically over the years this has been the responsibility of the lab and I think recognized as the source of laboratory strength.

As General Betts says it is very difficult to say in just what way a specific program of research in high-temperature, solid-state physics, ends up in weapons, in Rover, in a reactor, or in Sherwood, or wherever it may end.

Nevertheless it is a part of the responsibility of the laboratory which has been carried on and in my opinion has been carried on effectively and in the future will protect our future vitality. Everyone recognizes that the lack of knowledge in the country for the right of application of better high temperature materials is one of the things that holds us back in so many places more than anything else. This is one of the areas that the laboratory is vitally interested in.

The particular building which is being demolished is now some 20 years old. It is a wooden building. It is about time it is torn down.

Representative HOLIFIELD. The work that will be done in this new facility is not currently being conducted by the Government at other locations? It is not duplicative of work in other laboratories?

Dr. BRADBURY. It is not. Our concern is with those materials, containers for those materials in which we are particularly interested.

Representative HOLIFIELD. Are there any questions of Dr. Bradbury? General Luedecke, the square foot cost for the laboratory space is $47. Will you explain why the cost runs that high?

General BETTS. I believe the actual building costs comes out to $31.70 a square foot. There is almost $400,000 worth of equipment that goes into the total figure.

Representative HOLIFIELD. Are there any further questions on 64–d–11? If not we will go to 64–d–12. In order to save time and if we are going to get through all of these by noon for the afternnon hearing, I think we had better insert this background analysis at this point in the record as we get to each one of these projects.

(64–d–12 follows:)

PLUTONIUM RESEARCH SUPPORT BUILDING, LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

Project No. 64–d–12, Plutonium Research Support Building, Los Alamos Scientific Laboratory, New Mexico, $655,000

This project provides for a 2-story and partial basement structure of 18,600 gross square feet containing staff offices, change rooms, health physics space, machine shop, and lunchroom to serve the plutonium chemistry and metallurgy program of the Laboratory, removal of two old frame buildings, site improvements and utility connections and related equipment. Proposed construction is reinforced concrete frame, floor slabs, and roof with masonry block panels and partitions. Ceilings will be concrete and floors will be concrete with asphalt tile. About 1,800 square feet of basement space is required for building utility equipment and change room plumbing and services. A first floor area of 10,200 square feet includes change rooms and toilets, health and monitor space, offices, machine shop, a lunch room, and an enclosed corridor which will connect the change rooms to existing laboratory buildings. The second floor area of 6,600 square feet contains offices, drafting room, conference room, library and file space. The building, including connecting corridors, has a gross volume of about 232,920 cubic feet. The building dimensions are 170 by 60 feet on the first story and 110 by 60 feet on the second. The partial basement measures 30 by 60 feet. No air conditioning is planned for this building; however, special ventilation arrangements will be required in such areas as the change rooms and lunch room.

This project is needed to provide immediate improvement to the physical plant of the laboratory with a view to insuring a high level of nuclear weapons research and development progress coupled with the readiness to resume atmospheric full-scale testing on short notice.

This facility will replace two inadequate wooden structures constructed in 1945 that are extremely overcrowded, deficient in space requirements and design, excessively high in maintenance costs and inefficient due to present dispersion of services and support activities. In addition to correcting space deficiencies for personnel for the plutonium operations, space is allocated to support groups supplying engineering design, maintenance craft shops, machine shop, health monitoring services, accountable material storage and records, property and equipment control, change rooms, lunchroom, and first aid station. The plutonium chemistry and metallurgy group carries out research and development programs on plutonium processing and plutonium metal preparation and fabrication. The group does pyrometallurgical and aqueous process research for the laboratory reactor program, as well as development work on methods of handling fissioned plutonium. They have the responsibility for the recovery and recycle of plutonium and the production and fabrication of plutonium metal, alloys and compounds.

The existing change room system serves a complex of four large laboratory buildings and is used daily by an average of 140 people, 100 of whom require showers and complete change of clothing. The peakload in the change room is at 8 a.m. when personnel are entering the laboratories. Exit schedules are staggered, establishing an average shower load of 50 people over a half hour period. Associated health facilities for dispensing of clean clothing, removal of contaminated clothing, first aid, and control monitoring are required. The machine shop, including metalworking tools, welding hoods and equipment and assembly systems, is used in the preparation of miscellaneous fixtures for the plutonium research program. The present office area averages about 70 square feet net office space per person. The proposed building provides an average of 110 square feet per person for the same personnel. A conference room, not available in the existing buildings, is required for group, safety and health meetings, will accommodate about 50 people. The planned occupancy of this building is 109 persons, all of whom will be transferred from the old facility.

Representative HOLIFIELD. How will the effort of this facility contribute to the weapons program?

General BETTS. This is a research support building so one might say in a direct sense it is not a research facility as such but obviously since we are replacing a couple of old 1945 or earlier constructed wooden buildings, the effectiveness of the support that it provides

will make a real contribution to the effectiveness of those research facilities that are supported.

We will have a better health physics space and better change rooms. It is a distinct upgrading of the capability that was under consideration for the fiscal year 1965 budget at the time we were asked to look at the safeguards question. At that time we pointed out that this building indeed is important to the effectiveness of the plutonium research capability at Los Alamos.

Representative HOLIFIELD. We note that a conference room that will accommodate 50 people for safety and health meetings is required for the proposed facility. Aren't there conference room facilities available in adjacent buildings?

General BETTS. Not in this immediate area. It is generally true of any technical laboratory of this sort that there are repeated needs for meetings. We never have space for meetings. Dr. Bradbury might be able to give you a better answer than I.

It is our feeling that this facility for a basic technical research facility needs adequate conference space.

Dr. BRADBURY. I think the committee is aware that this structure is the front building at "DP West," the plutonium plant. There are no conference facilities, no meeting facilities within about 2 miles of this building. The nearest one would be the conference room up in "HRL."

It is necessary to have some place of this sort where you can get the staff together and discuss the very specific problems of operating a building with as many dangerous aspects as the plutonium research building, DP West, has. I would like to state the old building is a wartime building, a frame building.

Every employee that goes in there in the morning, comes out at noon, goes back in after lunch, and comes out at night, is reminded of an ancient wooden structure built much along the lines of the CCC barracks.

In response to Mr. Morris' comments, this is one thing that will indeed greatly please the people there. It is a pretty sorry structure. I think you will have no back talk on that one.

Representative HOLIFIELD. Are there any further questions on 64–d–12?

PROJECTS NOT INCLUDED IN THE SUPPLEMENTAL AUTHORIZATION BILL

Representative HOSMER. Beyond 64–d–12, Dr. Bradbury, I assume that you have other projects in mind for next year?

Dr. BRADBURY. Yes, sir.

Representative HOSMER. As a matter of information and possible action, what next occupies the highest priority with respect to the maintenance of the efficiency of the laboratories and the retention of topflight scientific personnel?

Dr. BRADBURY. The expansion of our computation facilities.

Representative HOSMER. How expensive a project is that?

Dr. BRADBURY. That is quite an expensive project. I think it is running of the order of $2½ million.

Representative HOSMER. General Luedecke, could you submit a backup sheet on that item?

General LUEDECKE. Yes, sir.

Mr. ANTHONY. May I point out, sir, that this project is in the present act which has been approved for this year, but is awaiting appropriation.

Representative HOLIFIELD. Identify yourself for the record.

Mr. ANTHONY. Mr. Anthony, from the Division of Military Application. This project has been approved in the present bill which we are seeking amendment to.

(The information requested follows:)

PROJECT NO. 64-d-2, ADDITIONS TO ADMINISTRATION AND COMPUTER BUILDINGS, LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO, $2,400,000

(Authorized in Public Law 88-72, 88th Congress, S. 1745, dated July 22, 1963)

This project provides for the following additions to the administration and computer facilities of the Los Alamos Scientific Laboratory.

(*a*) *Addition to computer building*

A one-story-and-basement addition to the present computer building will have a gross area of approximately 20,240 square feet. Construction will be similar to the present computer building, namely, reinforced concrete frame with masonry block panels and partitions. The roof will be a continuation of the existing folded plate concrete construction to provide clear span space for computer equipment. The building will be air conditioned without windows, and will have special air-handling requirements for computer machine cooling. This addition will house the IBM computer machines, equipment, and storage now in the Administration Building.

(*b*) *Addition to administration building*

The second building is a new addition to the east side of the administration building. This addition will be three stories, with a full basement, and will extend east from the approximate center of the east wing of the present building. Since the ground at this location slopes to the east, the first floor of the addition will connect at the basement level of the present building. This addition will be about 320 by 40 feet. Approximate gross area will be 50,660 square feet, and approximate gross volume of 633,000 cubic feet. The first floor of this wing will provide office space for the computer group for the theoretical division. An enclosed passage will be provided connecting this section to the computer building addition. The second floor, part of the basement, part of the first floor, and part of the third floor, will provide office space, file and catalog space, and special-use area for the Laboratory Supply and Property and Personnel Departments. The balance of the third floor will provide office space, drafting space, shop and mock-up area for the Planning and Special Design Group of the Engineering Department. Construction will be reinforced concrete frame, masonry block or transite panels and partitions and concrete floor slabs, similar to the existing administration building. No air conditioning will be provided for and ventilation will be by operable windows.

(*c*) *General project features*

Site improvements will consist, principally, of construction of asphalt surfaced parking and service areas with concrete curbs and access walks. Parking will be provided for 120 private vehicles and a service area will accommodate up to 20 Government vehicles. Approximately 400 feet of security fence will be relocated.

All necessary utilities for the two buildings exist in the immediate area. Electric power for the computer addition can be obtained from existing transformer stations. Transformer equipment will be required in the second building. Steam required to heat the buildings will be supplied from the TA-3 steamplant through connections to existing supply and condensate return to the computer building.

The Los Alamos Scientific Laboratory is suffering increasing space problems in the administration building as the laboratory is growing and its problems change. The difficulties are particularly onerous in the theoretical division, and in its associated calculational equipment. There is serious crowding in the IBM room itself, in the adjacent halls, and in the surrounding offices. The computational group is geographically split, with many of its people simultaneously involved in both the computer building and in the current IBM room. Computational space for existing and replacement machinery is a major problem, and there is increasing crowding in other activities.

Since the occupancy of the present administration building, the number of personnel in the 3 major divisions occupying most of the building has increased from 390 in fiscal year 1956 to 524 in fiscal year 1962. Other departments and divisions occupying some space in the existing building have increased in personnel an average of about 3½ percent per year through the same period, making it impractical to readjust space to benefit the particularly crowded groups.

Unsatisfactory space has been developed by partitioning offices in basement areas, and, in one case, by partitioning off a corridor. People serving in the maintenance of the building are using equipment rooms and transformer vaults for storage and working areas. This particular use must be discontinued for safety reasons.

Moving the computer equipment from the present machine room and moving personnel from offices adjacent to this space will provide 7,491 square feet of functional space. One group will use 1,016 square feet as supporting space for operation of the Maniac equipment, and 780 square feet as adjacent additional office space. On the first floor, 550 square feet of office space will be used by another group. T Division will use a small conference room, 297 square feet on the second floor. The present machine room, 4,848 square feet, will be partitioned for single and double offices, file rooms, and consultants' offices for J Division. Partitioning of this machine room will provide approximately 3,400 square feet of functional office space for J Division use.

The office and drafting space now occupied by Group ENG–1 in the administration building, 1,187 square feet, will be occupied by ENG personnel now housed in partitioned basement areas and utility rooms. These basement areas along with the present basement shop area will be released for use by the maintenance crafts.

The Commission-approved, long-range plan of development for Los Alamos has included, as a major feature, geographical separation of community and laboratory areas. There are definite environmental advantages to such a plan. The mesa and canyon type of terrain indigenous to Los Alamos has been adapted to this concept; Los Alamos, Pueblo and Barranca Mesas are reserved and used for the townsite, whereas the South Mesa is reserved for construction of Laboratory facilities. Retention of Supply and Property and Personnel Departments at TA–1 on the Los Alamos Mesa is detrimental to the efficient Laboratory operation. Since they are now geographically isolated from the remaining LASL departments, the Laboratory mission has been and will continue to be hampered unless these two operations are relocated.

Representative HOSMER. What else isn't in this bill, Dr. Bradbury?

Dr. BRADBURY. That takes care of our major requirements at the moment. I will have to stop and think for a moment what we will be coming for next.

Representative HOSMER. If you think of something, mention it later.

Dr. BRADBURY. The problem of increasing facilities is a continual problem. One of the problems that always faces us is the problem of deciding any given year what problems have priority for technical reasons.

Representative HOSMER. That is right. I want to make certain that we do maintain our weapons laboratories in a complete going condition and we are able to retain our topflight scientists. I would not want this committee to take action on anything less than is required to do that at this time.

Dr. BRADBURY. These things that we are putting in for have technical justification and will fulfill the purpose you require. I have got up my sleeve other things that I would regard as in the same category of importance to the technical problem.

Representative HOLIFIELD. Are there any further questions on 64–d–12? If not we will go to 64–d–13, the radiochemistry building for the Lawrence Radiation Laboratory in California. This is in the classified section. We will accept the backup material in this subject, of course, subject to declassification.

(Project 64–d–13 follows:)

RADIOCHEMISTRY BUILDING, LAWRENCE RADIATION LABORATORY, LIVERMORE, CALIF.

Project No. 64–d–13, radiochemistry building, Lawrence Radiation Laboratory, Livermore, Calif., $5,900,000

This project provides for a one-story building, 400 feet by 185 feet, with a 100- by 97-foot mechanical room on the roof. There will be 83,700 gross square feet for light laboratories, offices, conference room, vault, library, storage, toilets, and a janitor's room. Exterior construction will consist of incombustible materials, concrete floor slab, exterior walls, columns, and roof slab. To obtain adequate shielding, all interior partitions are planned to be concrete. The approximate gross area of the shielded laboratory space is 10,000 square feet, and that of the unshielded laboratory space is 42,500 square feet. The office area corridor partitions will be wood stud and gypsum board. Interior office partitions will be movable metal. Minor laboratory mechanical equipment will be housed in utility corridors between laboratories. Special ventilation systems are required for fume hood operations. Normal heating and ventilation systems will be provided for all other areas. Cooling will be accomplished by mechanical refrigeration. The discharge of air fume hoods requires a once-through cooling system for the laboratories, which adds considerably to the cost.

This project is needed to provide immediate improvement to the physical plant of the laboratory with a view to insuring a high level of nuclear weapons research and development progress coupled with the readiness to resume atmospheric full-scale testing on short notice.

The proposed building will relieve the existing severe shortage of research laboratory and office space within the Chemistry Division. The facility is designed to accommodate all radiochemistry and associated support activities now conducted in two buildings and five trailers. This will, in turn, free permanent light laboratory and office space that is badly needed by the general chemistry group. The complexity and volume of programmatic work has increased with time, resulting in multiplied demands on laboratory space used for development and analytical work. Partial relief from the laboratory space shortage is being obtained by temporarily locating people in trailers and converting the vacated offices to laboratories. This makeshift method is generally unsatisfactory in that available trailer space is often not adjacent to the laboratories with resulting wastes in time and effort. In the light of the increased programmatic demands and the Laboratory's past personnel growth, it is no longer possible to efficiently or effectively accomplish chemistry's functions without additional permanent space.

Representative HOLIFIELD. Explain how activation analysis is relevant to the weapons effort, please.

General BETTS. We have a very real problem of determining the yield of weapons testing underground as well as telling in some detail exactly what has happened which can be solved only by radiochemistry. There are other techniques that can be used.

Certainly when we tested in the atmosphere we used not only radiochemistry, but other techniques. Some of these techniques are applicable underground but there has been indeed an increase in workload in radiochemistry which has resulted from the current underground testing program.

Representative HOSMER. Is that because of the difficulties with respect to contamination of samples with extraneous materials?

General BETTS. No; it is because the other techniques require rather considerable additional cost of providing space underground to place instrumentation, that kind of thing.

Representative HOSMER. I am talking about the work you are doing in the building. I presume that you take back samples?

General BETTS. Yes.

Representative HOSMER. And do a radioanalysis and things like that. Is the sampling from underground testing more difficult to handle than from an atmospheric test?

General Betts. It is.

Representative HOSMER. As a consequence that throws an additional load on the lab.

General BETTS. That is right.

Representative HOSMER. To meet that load this project is suggested, is that correct?

General BETTS. This is a part of the additional load, that is correct.

Representative HOLIFIELD. Do you have approval from the Budget Bureau for the biomedical program which is partial justification for the radiochemistry building?

General BETTS. We do have an active biomedical program. What we don't have approval for is additional facilities for that biomedical program. I think you are aware of the fact that we had hoped to get some additional facilities in this area but they do not fit into the safeguards picture at the moment.

Representative HOLIFIELD. Why isn't this project listed under the biology and medicine program rather than the weapons program?

General BETTS. It contributes much more heavily to the weapons program than to biology and medicine. Dr. Foster can give you a much better idea than I but that is my understanding.

Representative HOLIFIELD. Dr. Foster?

Dr. FOSTER. Mr. Chairman and members of the committee, the major reason that we see for the need for this radiochemistry facility is simply that during the last 2 years of intensive underground testing the laboratory has devoted a major effort [classified matter deleted].

Representative HOLIFIELD. Are operating funds for this activity also charged to the weapons program, General Betts?

General BETTS. Yes, they are.

Representative HOLIFIELD. How do you assure close coordination of this program with AEC's research being conducted at other laboratories throughout the Nation?

General BETTS. There is a very considerable exchange of information in radiochemistry techniques between our two nuclear weapons laboratories. I am sure that at the research level we have a considerable interchange with our other laboratories.

Representative HOLIFIELD. Are there any questions on 64–d–13? If not we will go to 64–d–14.

(Project 64–d–14 follows:)

HAZARDS CONTROL ADDITION, LAWRENCE RADIATION LABORATORY, LIVERMORE, CALIF.

Project No. 64–d–14, hazards control addition, Lawrence Radiation Laboratory, Livermore, Calif., $1,000,000

The proposed addition is a one-story building which will be constructed contiguous to the west end of the existing hazards control building. There will be 18,960 square feet of gross floor area. The building will contain hazards control offices and light laboratories, toilets and a mechanical room. Construction will be concrete floor slab on grade, concrete exterior walls, steel-frame, metal roof deck with concrete fill and insulation. Corridor and permanent partitions will be wood stud with gypsum board finish. Partitions between offices will be movable metal. Normal utilities and a heating and ventilating system will be pro-

vided and connected with those in the existing building. Cooling will be accomplished by mechanical refrigeration.

This facility is needed to consolidate and to provide permanent office, laboratory, and related space for site hazards control activities which consist of such things as hazards research and development, radioactive materials control, fire protection, radiation safety, industrial safety, high explosives safety, industrial hygiene, and education and training. The buildings presently being used for hazards control work are ill suited and poorly located with regard to the functional plan of the entire site. The Laboratory has found it difficult to maintain high personnel recruitment standards because of considerable crowding in most of its quarters. The problem of maintaining a competent staff will be eased considerably by the existence of adequate permanent facilities.

The proposed facility will provide for the permanent housing and centralization of the hazards control functions which are at present scattered throughout the site. The laboratory space in this addition will be devoted to development work on dosimeters, radioactive detectors, industrial safety equipment, fire protection equipment, glove boxes, respirator maintenance, and instrument calibration. The planned occupancy of this building is 66 persons.

General BETTS. I might point out that the kind of justification we applied to the health physics laboratory building at Los Alamos, applies in almost an identical way to the need for this facility, Mr. Chairman. Much of the discussion we had about that other facility would apply to this one except in this case we are indeed in rather primitive facilities in some of the old structures at the Livermore Laboratory. This is a distinct upgrading of that capability.

Representative HOLIFIELD. Are you prepared to say that current or future laboratory weapons or test programs will suffer adversely if the hazards control addition is not provided?

General BETTS. I would be hard put to say how but I am personally convinced that our technical programs would suffer in the long run if we don't have improved hazards control facilities at Livermore.

Representative HOLIFIELD. Please describe your present experience with hazards controls, your safety record at the laboratory and so forth.

General BETTS. The safety record has been good. In the context of health physics we have had some accident problems at Livermore that I don't think are related in detail to the activity of this building but I don't have specific numbers to submit on their safety record. I could for the record, Mr. Chairman.

(The information requested follows:)

ADDITIONAL MATERIAL ON HAZARDS CONTROL AT LIVERMORE LABORATORY

The proposed hazards control addition at the Livermore Laboratory is needed to provide space for consolidating in adequate facilities the various functions of the hazards control group. It is in accord with plans for upgrading laboratory facilities and for maintaining viable weapons laboratories under a continuing national readiness posture.

In 1959, the Livermore Laboratory safety groups were consolidated organizationally under the hazards control department. However, due to the lack of appropriate facilities, the personnel involved in this function could not be housed together. In spite of the limitation posed by being physically dispersed over the site, the safety function became much more effective as a result of the organizational consolidation. Since 1959, there has been better than a fourfold decrease in the lost time injury rate and it is felt that the provision of proper hazards control facilities will result in still further improvement.

The hazards control function at Livermore includes such activities as industrial hygiene and ventilation, radiation and nuclear safety, electrical and high pressure safety, industrial safety, and fire and high explosive safety. The Department also treats and packages for disposal all radioactive, toxic, high explosive, and

industrial wastes, reclaims precious metals, decontaminates equipment for reuse or salvage, and operates the environmental sampling program, the film badge service, a hazardous materials transportation service, the fire department, and the emergency services response team. Hazards control also prepares special operating procedures for certain laboratory experiments with radioactive, fissionable, toxic, or high explosive materials which because of their potentially hazardous nature are reviewed by management personnel before execution.

The following table is a 4-year summary of the accident frequency, size of the Livermore Hazards Control Department and the number of special operative procedures prepared.

Calendar year	Lost time injuries per million man-hours	Personnel assigned to hazards control	Number of special operating procedures prepared
1959	4.60	108	2
1960	2.00	122	38
1961	1.90	128	39
1962	1.05	137	92

Representative HOLIFIELD. Your cost estimate includes an item for laboratory furniture in the amount of $75,000. Can you give us more detail on this item?

General BETTS. I would have to submit that for the record. I don't have a breakout of that material.

Representative HOLIFIELD. Please do so.

(The information requested follows:)

The $75,000 for laboratory furniture (equipment) reflected in project 64–d–14 is to provide 750 linear feet of laboratory benches and cabinets. The estimate also covers the cost of installation.

Representative HOLIFIELD. Your cost estimate includes an item of $50,000 for utilities. Isn't that rather high since this building will be an addition to an existing building?

General BETTS. I don't know if we have the answer to that.

Mr. ANTHONY. No, sir, we don't.

General BETTS. I will have to submit that justification. The construction people have looked at this but we don't have detailed information with us this morning.

(The information requested follows:)

Project 64–d–14: Although the proposed project is an addition to the present facility, the utilities are not sized to handle this addition. The requirements are:

Waste disposal system	$15,000
Mechanical runs from existing mains	9,000
Sewer connection	1,000
750-kilovolt-ampere substation	25,000
Total	50,000

Representative HOLIFIELD. Are there any further questions on 64–d–14? We go to 64–d–15.

(64–d–15 follows:)

PLANT ENGINEERING AND SERVICES BUILDING, LAWRENCE RADIATION LABORATORY, LIVERMORE, CALIF.

Project No. 64–d–15, plant engineering and services building, Lawrence Radiation Laboratory, Livermore, Calif., $1,400,000

This project provides for a two-story building which will be constructed northwest of the existing east cafeteria. There will be 18,865 square feet of gross area on each floor for a total of 37,730 gross square feet. The building will have offices

drafting rooms for plant engineering and construction, plant services, inventory, security and AEC field engineering. Special use rooms for data processing equipment, vaults, conference rooms, library, classroom, storage and TWX will be provided. Construction will consist of concrete floor slab on grade, concrete columns and exterior walls and concrete flat plate upper floor and roof slabs. Corridor partitions will be wood stud with gypsum board finish. Partitions between offices will be movable metal and adapted to a suspended ceiling. Normal utility services and heating and ventilating system will be installed. Cooling will be accomplished by mechanical refrigeration.

The proposed structure is in accordance with Laboratory plans to provide for the orderly replacement of temporary and substandard structures. Its construction will enable the Laboratory to continue the replacement of World War II frame structures with permanent facilities specifically designed to fit the needs of a research and development laboratory. The original Navy buildings have been pressed into service over the years as required by the Laboratory. It has become increasingly evident during these years that in addition to high maintenance costs, most of the buildings are ill suited for their current use, and are poorly located with regard to the functional plan of the entire site. The planned occupancy of this building is 174 persons.

Representative HOLIFIELD. Will you describe any tangible and dollar savings in efficiency for the Laboratory by the construction and utilization of this building?

General BETTS. I am sorry, Mr. Chairman, I didn't get that whole question.

Representative HOLIFIELD. Can you describe any tangible and dollar savings in efficiency of the Laboratory by the construction and utilization of this building?

General BETTS. I don't have specific dollar numbers but I might point out that in the Livermore Laboratory we are suffering from having put facilities into old World War II wooden structures that had never really been adequate.

As the Laboratory has expanded the workload has been very difficult to support. I might point out in this instance, for example, that we have technicians who just don't have adequate space to work, they have had to share work space with other technicians and mix up tools and that kind of thing, a relatively inefficient operation. But I don't have specific dollar numbers as to how our savings will work out with better facilities.

Representative HOLIFIELD. This is a modern building which replaces an old building. You state in your backup material that there is high maintenance cost.

General BETTS. Yes, sir; and we are also replacing some trailers. We do have a division of effort in that the work is not pulled together in an efficient fashion.

Representative HOLIFIELD. You have an old building and some trailers?

General BETTS. Yes, sir.

Representative HOLIFIELD. This new building would replace all of those?

General BETTS. That is right, sir.

Representative HOSMER. Dr. Foster might want to comment on this.

Dr. FOSTER. Mr. Hosmer, my main reason for feeling very strongly about the acquisition of this building is simply that the people in this field are scattered around the Laboratory which makes it extremely difficult for us to provide prompt service to the many people that are involved.

Representative HOSMER. Under a vigorous program of underground testing are you going to have more work in this hazard control field, I mean plant engineering field and greater need for efficiency of the people you have working there?

Dr. FOSTER. That is right. This is the proposed location of the building. At the moment the plant and service people are distributed in the far corner of the lot. It is important to us to bring them back into the area where the people whom they serve are located.

For several years as you know, the Laboratory has put a preponderance of its effort into the development of weapons and has grown in that area and has paid very, very little attention to the important question of the development of new facilities.

We completed, approximately 1 year ago, a site development plan for the period up to 1970. Now having this master plan we are in a position to implement it in an orderly way. That is the prime responsibility of this engineering services group.

Representative HOSMER. Are they going to make a contribution to the effectiveness of your weapons research work under the conditions of the test ban treaty?

Dr. FOSTER. Yes, sir, without a highly efficient service by these people we will not be able to get the services necessary to perform the test program that has been outlined as a matter of national policy.

Representative HOLIFIELD. Your data sheet indicates this facility will have special use rooms for data processing equipment. Will this involve obtaining new EDP equipment or relocation of existing equipment?

General BETTS. I believe it is the relocation of existing equipment. I will check that but I am pretty certain that is the case.

Mr. ANTHONY. It is relocation.

General BETTS. It is relocation of equipment now available.

Representative HOLIFIELD. Of equipment you now have?

General BETTS. Yes.

Representative HOLIFIELD. Is that equipment properly working now in its old quarters?

General BETTS. I have no specific information on the problem that we are having with that operation.

Representative HOLIFIELD. How about you, Dr. Foster?

Dr. FOSTER. Yes, sir, it is working now and it is in an inconvenient location. We wish to move it and place it in this new building.

Representative HOLIFIELD. Are there any further questions on 64–d–15?

(Project 64–d–16 follows:)

WEST CAFETERIA ADDITION, LAWRENCE RADIATION LABORATORY, LIVERMORE, CALIF.

Project 64–d–16, west cafeteria addition, Lawrence Radiation Laboratory, Livermore, Calif., $255,000

The proposed facility is a one-story addition to the west cafeteria. There will be 6,740 square feet of gross floor area in the addition. This consists primarily of a large dining area and mechanical equipment room. New hot food service equipment will be installed. A new snackbar will be provided in the northeast corner of the existing dining room. An adjoining dining space, enclosed on three sides by concrete block walls, will be provided for conference

luncheons. A folding partition will be installed on the north side in order to enable the room to be used as a general dining area when not needed for conference. The addition will be of the same construction as the existing building: reinforced concrete foundations and floor slab on grade; concrete block exterior walls, fixed windows in metal frames; structural steel frame; and insulated metal roof deck with composition roofing. A heating and ventilating system will be provided in the addition. Cooling will be accomplished by mechanical refrigeration. Interior electrical and other utilities will be extended from existing services. Improvements to land include the necessary site grading and paved walks to new entrances.

This facility is needed to provide adequate food service to the employees situated in the western section of the site. There are currently 2,600 employees located in the area served by the west cafeteria. The present cafeteria facility contains 178 seats and serves an estimated 100 breakfasts, 200 luncheon "take-out" customers, and 560 "eat-in" luncheons daily. At present, 20 percent of the population served by the cafeteria are seated customers. The laboratory estimates that this figure would increase to a minimum of 40 percent provided more dining space were made available. Usage of the present cafeteria facilities is heavy, averaging daily 3.1 customers per seat with 10.6 square feet per seat. It is estimated that the proposed addition will reduce this average to 2.5. The AEC Design Manual criteria allow a 2.0 customer per seat ratio (based on a 1-hour lunch period) with 15 square feet per seat. The addition will result in agreement with the AEC square footage criterion.

The proposed facility includes a 750-square-foot conference luncheon room which can be used for luncheon conferences. The present procedure of using the conference rooms in another building for this purpose disrupts other group and program meeting schedules for the conference room in that building. Conference luncheons in other buildings are makeshift affairs and disrupt cafeteria labor schedules since equipment and food must be trucked in, set up, cleaned up, and trucked out. This often requires staff employees to coordinate delivery and removal of banquet tables, arrange for custodial help and security guards, and supervise pre- and post-service operations.

Representative HOLIFIELD. We note that the estimated cost for engineering and design and inspection of this facility is $20,000. In view of many existing cafeterias at AEC installations are you using any existing designs on this project in order to lower design costs?

General BETTS. It is always our practice, Mr. Chairman, to use fairly standard design material where it is available. In this case our problem is that it is an addition to an existing facility, so we have to start with that. I believe $20,000 for this kind of facility at 10 percent is routine and justified.

Representative HOLIFIELD. You indicate that the AEC design manual allows two customers per seat ratio in arriving at the seating capacity of the cafeteria. We notice NASA has used a criteria of turnover of five customers for a 2-hour feeding period.

Can you explain the difference in this particular allowance between you and NASA?

General BETTS. I can't explain the difference in standards. I might point out that the arithmetic applied to this specific building comes out to 2.5.

Representative HOLIFIELD. It does?

General BETTS. Yes, sir. Although our manual does allow two as you have indicated.

Representative HOLIFIELD. Then it is in line from a practical standpoint?

General BETTS. It turns out that way.

Representative HOLIFIELD. Are there any further questions, Senator Pastore?

NEED FOR THE SUPPLEMENTAL AUTHORIZATION BILL

Senator PASTORE. Yes. I am usually designated as chairman of the Subcommittee on Supplemental Appropriations much because the problem here will be not only the authorization but the appropriation as well, the question usually comes up on the supplemental appropriations, why didn't we wait for the regular authorization bill or the regular appropriations bill?

I would like to have your comment on that because I think it is quite important to have it in the record.

General BETTS. I believe there are two important things to say, Senator Pastore. One is that there was a conscious national decision to look at the laboratories and determine what we could do that would make it perfectly clear to the laboratory people that the country had not abandoned the development of nuclear weapons and that does have an impact on timing.

I might also point out that it is now almost November of this year and buildings that were to have been started in fiscal year 1964 cannot be started. [Classified matter deleted.]

Believe it or not it looks touch and go whether we will get that money by that date.

Senator PASTORE. If we wait how much delay will we incur?

General BETTS. I don't know sir. Based on this year, another year's delay although I don't believe it will take until after November next year to get our appropriations through. Next year will be a different situtation, this is true. But undoubtedly it will be a delay in getting on with this effort.

Senator PASTORE. This all ties in, does it not, with the determination not only of the administration but the Congress as well to make sure that the proper safeguards are not only initiated but maintained and here is the first opportunity we have, at least, to indicate the spirit of Congress to carry out its own admonition.

General BETTS. This is right. It is a very important time factor.

Senator PASTORE. A lot of fancy words to say we ought to get going.

Representative HOSMER. I think Dr. Foster has something to add on that.

WEST CAFETERIA, LIVERMORE RESEARCH LABORATORY, CALIF.

Dr. FOSTER. I would like to comment on the cafeteria for the Livermore Laboratory, the extension of the existing cafeteria. As most of you know who have visited the Laboratory, the facility contains two cafeterias. There is a cafeteria at the east end of the Laboratory and this cafeteria serves that portion of the Laboratory associated primarily with the nonweapons aspects. Now since the resumption of testing, the effort in the weapons program has substantially increased and as a consequence the cafeteria at the west end which primarily serves the weapons people has become very overcrowded.

So the extension we are talking about here for the Laboratory cafeteria applies primarily to the increase in service to the additional people in the weapons program.

Representative HOLFIELD. Thank you.

We will go to 64–d–17, craft shop additions:

(Project 64–d–17 follows:)

CRAFT SHOP ADDITION, LAWRENCE RADIATION LABORATORY, LIVERMORE, CALIF.

Project No. 64–d–17, craft shop addition, Lawrence Radiation Laboratory, Livermore, Calif., $200,000

The proposed facility is a one-story addition to the south end of the site craft shop. The overall dimensions of the addition are 200 feet by 54 feet. There will be 10,800 square feet of gross floor area. This addition will contain rooms for the storage of janitorial supplies, an extension of the electrical shop in two 12-foot-high side bays, and an extension of the lumber storage area in the 26-foot-high center bay. The addition will be constructed of reinforced concrete foundations and floor slab on grade, wood frame exterior walls with cement-asbestos shingles on the exterior. Roof construction will be composition roofing on wood roof deck and wood joists. Steel beams and girders on pipe columns will support the roof in the high center bay. Bridge crane rails will be extended from the existing building into the center and west bays of the addition. Existing sprinkler systems will also be extended to serve the addition. Interior partitions will be wood frame with gypsum board finish. Windows will be provided in exterior walls to match existing adjacent windows. The rolling hangar door on the end of the existing building will be removed. The existing heating system, lighting, and utilities will be extended into this addition. Improvements to land will include paving around the new addition and ramps from doors to existing grades.

This addition is in accord with Laboratory plans to provide for the orderly replacement of temporary and substandard structures. As such, its construction directly affects the demolition of buildings and the accommodation of personnel in more suitable permanent structures. Present facilities for site maintenance and repair shops are inadequate. For example, the existing electrical shop space consists of a 2,400-square-foot work area, a 400-square-foot storage area and 300 square feet of office space. This area is no longer adequate for the 30 electricians of whom only 16 have permanent work space assigned in the present shop area. Some of the remaining electricians are now located in the main bay; others have to double up on one work bench. The existing electrical materials storage space is also too small and material has to be stored under benches and on top of lockers. The proposed addition will provide the needed extension to the electric shop.

The proposed addition will also provide for the relocation of motor maintenance shop and custodian areas. The building in which these areas are now located is scheduled for demolition in fiscal year 1967. Motor maintenance and repair is noisy and dirty work which must be separated from the rest of the electric shop. At present, this shop is responsible for the maintenance, repair, and adjustment of 10,000 electric motors. The 1,000-square-foot equipment repair room in the proposed addition will be utilized for this work. At present, 108 custodians are using 2,000 square feet of locker room, office, and storage area for custodial supplies in the building scheduled for demolition. These people and custodial supplies will be housed in 2,280 net square feet of the proposed addition.

Representative HOLIFIELD. How many shifts do the crews work at the present time in this support activity?

General BETTS. I don't have that specific information. I will have to supply it.

Representative HOLIFIELD. You gentlemen from the Laboratory should know that. Dr. Foster, do you know how many shifts are being worked there?

Dr. FOSTER. No, sir.

Representative HOLIFIELD. Is it a one-shift operation?

Dr. FOSTER. No, sir, I do not know at the moment. The normal operation is a one shift. We have of course a standard policy of using overtime whenever it is justified on a timely and financial basis. So, from time to time we do in fact employ the craft shop on multiple shifts.

Representative HOLIFIELD. I am aware that this is in an isolated area, however, a question which usually comes up is why you could not use additional shifts in the same building in order to forestall the need of a new building.

General BETTS. I feel that the work is not just simply electrical work and other craft work. It does get related to the other activities in the Laboratory. Now Dr. Foster could probably add to that but it is my understanding that we are not talking about electricians whose function is completely unrelated to the Laboratory operation as such. It very frequently takes highly qualified supervision.

Representative HOSMER. They have to be there at the same time as the people who are working there.

General BETTS. Yes. There is an interrelationship between the kind of support you get from this craft shop and the day-by-day functioning of the Laboratory.

Representative HOLIFIELD. Of course if you did have additional shifts you would be faced with additional housing needs in this isolated area because you could not pick up the workers from a metropolitan area.

General BETTS. The real problem is that we would be faced with keeping additional supervisory people on these long shifts.

Representative HOLIFIELD. Are there any further questions?

PROJECTS NOT INCLUDED IN THE SUPPLEMENTAL AUTHORIZATION BILL

Representative HOSMER. I would like to ask Dr. Foster if in the context of the effectiveness of the Livermore Laboratory in weapons research and the conditions of the test ban treaty and the maintenance of top-caliber personnel, if there are one or more additional items that at this time would contribute substantially to these ends, if authorized now?

Dr. FOSTER. Mr. Hosmer, we in attempting to respond to the request by the Division of Military Application for additional structures did look through the most urgent items, and in fact placed them on the request that you see.

We, however, have ourselves some limitations regarding the rate at which we can properly plan and support the construction phase of such activities. Now the only major item that was deleted from the fiscal 1964 additions was the biomedical building. That will entail roughly now a 6-month delay of the program.

Of course, those in the biomedical program find this rather serious, but I am prepared to accept that delay. Far more important in my mind would be an opportunity to provide for construction in fiscal 1965 and in fiscal 1966. You see, the Livermore Laboratory is now 11 years old. It is somewhat in the same stage that the Los Alamos Laboratory was in 1943 and 1944 when they planned for their new facilities.

In our case, then, there are a number of facilities that we are most anxious to have in fiscal 1965. I don't know the details of the current plans by the AEC for this, but I do hope that it will be possible for us to authorize construction that is close to our capabilities.

Representative HOSMER. Then you would say with what is in this bill you have a good opportunity to keep the Laboratory effective and keep people from drifting away that you want to keep there.

Dr. FOSTER. Yes, sir. The reason I put some emphasis on the fiscal 1965 situation is that we have gone through a rather detailed study of the ways and means whereby the Laboratory might be able

to hold the many young people it has. I think you realize that Livermore is chock full today of a number of enthusiastic people. Our average Ph. D. age is less than 40 as is the average of the top management.

As a consequence, there is a great attraction on the outside for these services, for the service of these people. So we hope over the next several years to be able to build up the several fields of science that can attract outside talent and in addition provide the basic aspects that are vital to the weapons programs.

This means then, facilities in physics, engineering, chemistry.

PLANS TO ASSURE CONTINUING SUPPLY OF TECHNICALLY COMPETENT PERSONNEL FOR LRL

Representative HOSMER. I take it then, that the maintenance in laboratories and the retention of this topflight talent is not a one-shot thing but something to which the lab, the AEC will have to address itself.

Dr. FOSTER. I believe so.

Mr. CONWAY. Isn't there the concept where you are working closely with the graduates of the university?

Dr. FOSTER. Yes, sir.

Mr. CONWAY. You might explain that at this time.

Dr. FOSTER. The Laboratory in the last 2 years has made a major effort to attract the best scientists from around the country. In the last year we feel we have been outstandingly successful. We have attracted more Ph. D.'s to the Laboratory than in any other year in its history.

I don't know how the next year will go under these new conditions. The general approach to this has had several facets. We have a summer program where professors and their graduate students from around the country come to the Laboratory for summer employment in classified and unclassified research. This has grown rapidly in the last 2 years and we are very pleased with the results.

The second part is the plan, which is well underway, to expand our physics department, in the research aspects in that field, as well as the chemistry and engineering facilities. The third part is our connection with the University of California and in particular the Davis campus. This newly established school of applied science will in my opinion provide the future talent and growth for a very successful laboratory just as the program in Berkeley, between the Radiation Laboratory and the Berkeley campus, has sustained that Laboratory.

Mr. CONWAY. This last concept of the Davis campus is at no cost to the Government?

Dr. FOSTER. That is right.

(Correspondence relating to the above matter follows:)

ATOMIC ENERGY COMMISSION,
Washington, D.C., June 6, 1963.

Hon. JOHN O. PASTORE,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States.

DEAR SENATOR PASTORE: This is to inform you that the Atomic Energy Commission has approved the objective of working out an arrangement with the University of California under which the university will be able to use certain

personnel, facilities and equipment at Livermore Laboratory in connection with its establishment of a graduate school of applied science at the Davis campus. The graduate school is to be known as the Department of Applied Science of the School of Engineering, Davis campus, University of California. Dr. Edward Teller will be designated chairman of the new department. The establishment of this school is a university matter and will involve no expenditure of funds by the AEC. The use of personnel, facilities, and equipment will be fully reimbursed by the University of California. The facilities and services at Livermore would be made available on a noninterference basis for an initial period of not to exceed 5 years.

It is expected that a considerable advantage to the country, to the AEC programs, and to the Laboratory will be realized from the new applied science graduate school. With respect to the latter, access to a source of potential employees with advance degrees in the areas of physics, chemistry, and mathematics with emphasis on engineering applications will exist. Present employees of the Laboratory will be able to participate in this advance study school, as well as students (including non-Soviet bloc aliens) accepted by the University of California for the applied science graduate school.

The Livermore Laboratory is a Government-owned facility which is operated by the University of California, and is one of the Commission's major laboratories performing research in such important programs as nuclear weapons, peaceful uses of nuclear explosives (Plowshare), controlled thermonuclear reactions (Sherwood), and nuclear propulsion. The continuing strength and vigor of this Laboratory as represented by the highly qualified and experienced staff is of vital importance to the Commission.

This step by the University of California, with the modest assistance by the AEC, will accord with the desire of the President's Science Advisory Committee and the Federal Council on Science and Technology that Federal agencies aid educational institutions to increase their capabilities of producing doctorates in science and engineering.

Normally, graduate student research at the Livermore Laboratory under the university plan will be unclassified and will not require "Q" clearances. Doctoral candidates who will become student employees in order to use designated Laboratory research facilities for assigned research projects will be "Q" cleared; however, such assignments will be made only in the furtherance of the Laboratory program in the same manner as currently followed at Berkeley. All students and student employees using facilties at Livermore Laboratory will be subject to applicable AEC policies and regulations concerning security, patents, and other matters.

In developing the security aspects of the AEC-university arrangement the objective, of course, will be to eliminate any possibility of classified information being compromised. In order to accomplish this it will be necessary for the Laboratory to install a comprehensive security program specifically for this project which will include control measures such as the following: (1) A distinctive student identification system; (2) appropriate physical security measures to restrict access to authorized locations; (3) removal of classified material from any area or building to which uncleared students may gain access; (4) detailed procedures governing escort requirements and controls to be imposed on students; (5) specific requirements for security indoctrination of both Laboratory and student personnel; and (6) frequent inspections by Laboratory and AEC security personnel to assure that all necessary security requirements are being properly maintained. Senior headquarters personnel will conduct an on-site review of the proposed security measures, and the AEC will approve the security plan and procedures prior to implementation of the program.

No public announcement will be made at this time. However, an announcement is being coordinated with the University of California and a copy will be made available to you prior to its release.

I will be happy to furnish any additional information you desire in connection with this matter.

Sincerely yours,

DWIGHT A. INK,
Assistant General Manager.

U.S. ATOMIC ENERGY COMMISSION,
Washington, D.C., October 17, 1963.

HON. JOHN O. PASTORE,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States.

DEAR SENATOR PASTORE: You were advised on June 6, 1963, that the Commission had approved the objective of working out an arrangement with the University of California covering the use of certain facilities and services at AEC's Livermore Laboratory in connection with the establishment, by the university, of a school of applied science at the Davis campus. There are approximately 85 students enrolled in this new program, which began with the fall semester this year.

The arrangements have now been formalized in an agreement between AEC and the university which our San Francisco office has been authorized to execute.

In summary, the agreement provides for the following:

1. *Term.*—The agreement is to expire on September 30, 1967, or on the expiration of AEC's contract with the university for the operation of the Lawrence Radiation Laboratory, whichever occurs first. The Commission has the right to terminate the agreement at any time the facilities or services involved are required for AEC work.

2. *Facilities and services.*—On a full cost recovery, noninterference basis, the Commission will furnish—

(*a*) Classroom space.

(*b*) Equipment to be used by doctoral candidates for research projects, such projects to be in furtherance of the Laboratory's work for the Commission.

(*c*) Lawrence Radiation Laboratory personnel to serve as instructors.

(*d*) Library publications on a callout basis.

(*e*) Other technical, administrative and utility services as approved by the AEC.

3. *Priorities.*—The university has agreed to give such priority to Commission work as the Commission deems necessary.

4. *Costs.*—A list of charges for the various facilities and services to be furnished the university has been worked out and is incorporated in the agreement.

5. *Indemnity.*—The university has agreed to indemnify and hold harmless the Government up to $1 million for each occurrence from any claims for property damage or personal injury (including Government property or Government personnel).

6. *Security.*—The security article is the same as that contained in the AEC contract with the university for the operation of Lawrence Radiation Laboratory. In addition, a special security plan has been developed and incorporated in the agreement. This plan provides security arrangements the objective of which is to preclude the possibility of classified information being compromised. The plan also provides that no aliens will be admitted to the laboratory without Commission approval. The AEC is satisfied that the objectives for security arrangements stated in our letter of June 6 have been attained.

You will, of course, be given advance notification of the public announcement which is expected to be issued shortly after the agreement is signed.

Sincerely yours,

A. R. LUEDECKE, *General Manager.*

U.S. ATOMIC ENERGY COMMISSION,
Washington, D.C., October 23, 1963.

MR. JOHN T. CONWAY,
Executive Director, Joint Committee on Atomic Energy,
Congress of the United States.

DEAR MR. CONWAY: Attached for your information is a copy of an announcement concerning the signing of an agreement with the University of California for use of certain facilities at Livermore, Calif.

It is planned for our San Francisco operations office to distribute this announcement to news media for use in p.m. papers of Thursday, October 24.

Sincerely yours,

RICHARD X. DONOVAN,
Special Assistant to the General Manager (Congressional).

The Atomic Energy Commission has entered into an agreement with the University of California for the use of some of the AEC laboratory and other facilities at Livermore, Calif., by the University of California at Davis for graduate courses in science and engineering.

The AEC's Lawrence Radiation Laboratory at Livermore is operated under contract by the University for the Commission.

The courses are designed to increase the number of graduates with master's degrees and doctorates trained in both science and engineering, many of whom it is hoped will join the staff of the laboratory. The new program will be conducted under the auspices of the college of engineering, Davis campus. The university will reimburse the Commission for noncontract costs of facilities and services used in the courses. Classrooms will be those which have been used previously for graduate and undergraduate courses for Lawrence Radiation Laboratory employees.

New knowledge and applications in the fields of controlled thermonuclear reactions, peaceful uses of nuclear explosives, reactor development and the weapons program depend in great degree upon the growth of a new generation of scientists and engineers. It is felt that the new academic program at Livermore will make a substantial contribution to such growth, and thus to national defense and peaceful programs.

Representative HOSMER. Is there anything over in the Berkeley division of the laboratory that is needed to achieve these purposes which should be authorized this year in the supplemental that you know?

Dr. FOSTER. Not to my knowledge.

Representative HOLIFIELD. If there are no further questions, we will go to a classified subject, 64–d–18, development of the laboratory at the Sandia Base.

General LUEDECKE. We will submit an unclassified justification for the record.

DEVELOPMENT LABORATORY, SANDIA BASE, N. MEX.

Project No. 64–d–18, development laboratory, Sandia Base, N. Mex., $3,780,000

This project provides for a three-story 76,000 gross square foot laboratory building. The dimensions of the building are 280 feet by 90 feet. The building will have a reinforced concrete frame with lightweight concrete block panels to match construction of adjacent buildings. A complete air-conditioning system will be installed to meet the rigid requirements of temperature, humidity control, and low contamination content necessary in research and development laboratories.

The first floor will be a concrete slab on grade to permit installation of special heavy equipment. The other floors will be concrete on metal deck. All floors will have asphalt tile covering. The roof will be metal decking with rigid insulation and builtup roofing. The ceilings in the laboratory and office area will be suspended, acoustical layin panel type. The interior partitions, with the exception of utility chassis, equipment rooms, stairwell and restrooms will be ceiling-height movable metal and will match and be interchangeable with those in the existing buildings. The mechanical and electrical equipment room will be housed in a partial basement and a fanroom will be located on each floor of the building. The basement will be approximately 20 square feet.

This project is required to provide immediate improvements to the physical plant of the laboratory with a view to insuring a high level of nuclear weapons research and development progress coupled with the readiness to resume full-scale weapons testing in the atmosphere on short notice.

While there has been no growth in the total personnel level (8,000 employees) of Sandia Corp. since 1961, there has been a change in the composition of the types of skills employed. About 430 engineering and technical personnel have been added. This increase was offset by a reduction in nontechnical support-type personnel. Coupled with the increase in scientific and technical personnel is an increase in the space required due to the types of equipment and supporting services needed for the development programs. At the present time, there is severe overcrowding and continued use is made of temporary World War II wooden structures.

Sandia personnel must engage in all phases and aspects of development from inception through material and process determination to the final product placed in stockpile. To perform this function, it is necessary for Sandia Corp. to carry the application of advanced concepts through not only the predevelopment phases but also far enough into development to know that the product will function properly. Detailed specifications for manufacture can then be given to suppliers, with more assurance that finished products will perform as desired and will be compatible with all other parts of the system.

Although industrial capabilities will continue to be used to the greatest extent possible, it has become increasingly evident that the Sandia laboratory must do additional development in-house work on the processes, materials, and devices peculiar to its nonnuclear responsibilities in order to judge whether a proper job is being done and to advise industry on manufacturing methods and quality control.

Representative HOLIFIELD. Since construction is not planned to start until fiscal year 1965, why do you need authorization at this time?

General BETTS. In the first place we ought to get on with the detailed engineering so that we don't lose the time that is involved in the detailed engineering. We will need authorization to get on with that effort.

Representative HOLIFIELD. What contribution will this project make to the weapons program?

General BETTS. The fundamental fact of life, Mr. Chairman, is that Sandia has been changed in its manpower characteristics. They have over the last year or two had a rather considerable shift from what I would call administrative or support-type personnel to staff members or technical personnel directed specifically at the weapons effort.

We end up with virtually the same number of total people in the laboratory but there is actually, as our data sheet indicates, 430 engineering and technical personnel that have been added at the expense or support people. It takes this kind of space to provide them an adequate place in which to work.

Representative HOLIFIELD. In other words, there has been an upgrading of scientific work and in order to furnish these scientific and technical personnel space you are going to have to build this project.

General BETTS. This is right. Our problems have demanded of the component developers a rather considerable expanded effort in the last few years.

Representative HOLIFIELD. Are there any further questions on this?

This is directly applicable then to the weapons work?

General BETTS. This is directed specifically at the weapons effort; yes, sir.

Representative HOLIFIELD. 64–d–19.

EXPLOSIVE FACILITIES, SANDIA BASE, N. MEX.

Project No. 64–d–19, explosive facilities, Sandia Base, N. Mex., $540,000

This project provides for an explosive chemistry laboratory and an explosive preparation facility; two allied functions closely related to the explosive devices complex. These functions will be situated in separate locations for safety and operational continuity. Each will be housed in a one-story building of reinforced concrete masonry, with monolithic, reinforced concrete blast walls separating the test or preparation areas from the control rooms.

This project is required to provide immediate improvements to the physical plant of the laboratory with a view to insuring a high level of nuclear weapons

research and development progress coupled with the readiness to resume full-scale weapons testing in the atmosphere on short notice.

The explosives chemistry laboratory is needed for analysis and evaluation, temperature cycling surveillance, investigation of malfunctioning, and test firing of explosive materials. Operations in existing facilities are presently performed manually and thus are limited to small quantities of high explosives. This situation is undesirable in that in many cases present and contemplated development requirements call for much larger quantities of explosives. Remote handling facilities are necessary to perform the required tests, analyses, and investigations; therefore, these operations cannot be safely performed in any existing facility at Sandia. Some work is now being done by improvised unsafe methods.

The explosives preparation facility is required to provide a facility for shaping, machining, and modifying standard explosive charges to specific design characteristics. Sandia Corp. has four firing sites in operation which utilize explosive charges for research and development purposes. Normally, the charges are fabricated a few at a time with the configuration of each explosive charge being governed by the test proposed or the results of the previous test. At present shapes are obtained from other locations. Because of the required rate of development, short time period between tests, special shapes required, and the need for constant consultation between the engineer and the shop technicians, it is essential that such a facility be located at Sandia.

General BETTS. I might point out that Mr. Schwartz is here today if you have any specific questions to ask of him.

Representative HOLIFIELD. Mr. Schwartz, would you like to add anything to this testimony at this point?

UTILIZATION OF SPACE AT SANDIA

Mr. SCHWARTZ. I would just like to, if I may, Mr. Chairman, expand on General Betts' remarks. Since 1960 we have had a plan in action at Sandia to review all our space and utilize it for the best possible purposes. During this period we moved around about 3,000 people and 40 percent of our space in order to see that we had the best utilization.

As General Betts mentioned during the same period we increased our technical staff by 430 people and dropped supporting people by 122. I want to say that this test readiness job has put us in a position of transferring people from one job, from development jobs or advanced development jobs, over to the test readiness group, and as an example of the tightness of our space, in moving some 68 people to the test readiness group, if you will, requisitioning these from the other groups we have had to take building 880, which is used for test purposes, for the test group, discontinue a cafeteria, a branch technical lab, moved people around the branch mechanical shops, et cetera, in order to free about 10,000 square feet of space.

Unfortunately when you move people from one organization to another you can't take their square feet of space with them. In addition to that we are buying five trailers and we will move six more trailers from our test area 3 when a control building is completed later next year. We have just finished rearrangement of all our space. We have our people properly located in the space but these additional requirements, particularly on the test readiness and the movement of people, have put us in a very very tight situation.

Representative HOLIFIELD. Approximately how many people have you moved from the advance project to the test site?

Mr. SCHWARTZ. Sixty-eight and there are more on the way. There will be another 68 to 200 people move there.

TEST READINESS GROUP

Representative HOLIFIELD. What is the main function of their work? Is it to plan for emergency tests?

Mr. SCHWARTZ. This is a group that, No. 1, is working on development of the test capability, the all-aircraft capability, the instrumentation of the aircraft, the testing of the aircraft, testing of the capability, developing the capability for high-altitude tests, getting all of the instrumentation equipment together to make up the payloads for the missile carriers, developing the rocketry of the sampling systems for the high-altitude tests, and then the other area as we go underground now our job is to find ways and means of simulating environment underground, measuring this environment and, of course, ranging the experiments to utilize test components against this environment.

Instrumentation development and much hardware is involved in this work. I would like to say that so far as the Sandia Corp. is concerned we are meeting this challenge with much enthusiasm. Our people are very much pent up to go at this job.

Our recruiting teams are now on the campuses. We have had very high acceptance rates on our recruiting and we, like other organizations, have a technical development program with the University of New Mexico to increase the technical capability of the corporation.

Representative HOLIFIELD. Considering the needs for hiring personnel and developing these facilities do you feel that you are getting support for underground work because of the safeguards on the limited test ban?

Mr. SCHWARTZ. Yes; we are

Representative HOLIFIELD. Could you efficiently utilize more help in this area?

Mr. SCHWARTZ. The hiring of the help, of course, would be to put people in other organizations, ongoing organizations, and moving people with experience into this activity. At the moment, just taking on more people would not move our job forward too fast.

Representative HOLIFIELD. Are there any further questions? If not, we will go to 64–d–19, explosive facilities at Sandia.

EXPLOSIVE FACILITIES, SANDIA BASE, N. MEX.

Representative HOLIFIELD. Would you describe the experiments using small quantities of explosives, what you learn from such small explosions and what additional information you will acquire from larger explosions.

General BETTS. I think we ought to go back a little Mr. Chairman, and look at the changing character of some of the devices we are now building for weapons. [Classified matter deleted.]

It is highly inefficient in the terms of a functioning of a laboratory to try to develop a component and then have to go to some other installation to try to test ideas that would lead to an improvement in that component.

Representative HOLIFIELD. Are these high explosives or nuclear events?

General BETTS. These are high explosives.

Representative HOLIFIELD. You indicate that the explosive preparation facilities are required to provide facilities at Sandia to machine shapes for explosive charges, rather than to obtain them from outside

sources, because of the need for constant consultation with the engineer and the shop technicians. Why is this such a problem?

General BETTS. It requires the kind of thing which I have just mentioned. It takes the people in the laboratory who are designing and developing some new gadget. It takes their time to travel to the high explosive plant, to explain what they want, to look into the capability of the plants.

There is a great deal of lost motion, time lost, and additional cost involved. It is not an effective way to do a development job.

Representative HOLIFIELD. This is the most efficient and economical way to do it.

General BETTS. In the long pull this is the most efficient and economical way to do the job.

Representative HOLIFIELD. Are there any further questions?

CLASSIFIED TECHNICAL REPORTS BUILDING ADDITION, SANDIA BASE, N. MEX.

Representative HOLIFIELD. Now, let's look at 64–d–20.

(Project 64–d–20 follows:)

Project 64–d–20, classified technical reports building addition, Sandia Base, N. Mex., $500,000.

This project provides for a structure two stories in height, which will be a 10,200 gross square foot addition to the unclassified technical library. It will be a reinforced concrete frame and masonry structure which will include a two-story high 4,000-square-foot reinforced concrete vault for security and fire protection purposes.

The area and volume of the building are provided in the details of the cost estimate in terms of a full two-story building because the double-decked library shelving creates, in effect, two floors, each requiring lights, air conditioning and fire protection. The addition will be added to the east and south sides of the existing technical library building. Adjacent to the vault, on the first floor, will be a controlled access reading room, approximately 1,200 square feet in area. A stairway and book elevator inside the vault will provide access to the second floor of the file area. Restrooms and a mechanical equipment room will be located on the first floor. All floors will be concrete with asphalt tile covering and underfloor electrical and communications ducts will be placed at convenient intervals throughout the office and reading room areas. Refrigerative cooling will be provided by a system similar to that provided in the existing buildings, to make the two systems compatible.

This project is required to provide immediate improvements to the physical plant of the laboratory with a view to insuring a high level of nuclear weapons research and development progress coupled with the readiness to resume full-scale weapons testing in the atmosphere on short notice.

This project provides for centralizing all of the classified technical books and reports essential to the research and development work of weapons design engineers and scientists. Because of the lack of central vault space, the Sandia Corporation has resorted to makeshift expedients in handling the classified report literature. Such makeshift processes cause wasted motion and make more possible the expenditure of resources on work which has already been performed by researchers at other locations since complete information on such work is not always readily available. At present, valuable technical information is scattered among hundreds of safes and files and cannot be obtained either quickly or surely since proper library control cannot be maintained in such a situation.

Security classification often prevents formal publication; hence, report literature has become the source for much of the information needed for research and development programs. In addition, report literature has great advantages over other sources in timeliness and completeness. In recognition of these facts, technical libraries throughout the country have done much to provide bibliographical control, vault stack space, and controlled reading rooms, to set up ordering channels, and to improve in other ways the ready accessibility of this

type of information. For these reasons, a weapons' reports library, as an addition to the library building 804, is proposed to provide vault stack space for technical reports, a classified reading room, and associated staff offices. This will make it possible to centralize all of the information essential to the work of weapons design engineers and research scientists.

Representative HOLIFIELD. Your data sheet indicates that this project is needed to provide centralization of all classified data essential in the development of weapons and that the present makeshift process causes waste, inefficiency, duplication. If this is true why has not this project been requested before, General?

General BETTS. The project has been requested of DMA, but we have had to place things with higher priority above it. It is a very real requirement and one that makes good sense. In the context of trying to upgrade the capability of the laboratory it certainly fits in this safeguards discussion.

Representative HOLIFIELD. Do you consider it too urgent to wait for the 1965 authorization bill.

General BETTS. I believe it comes back to the same question of timeliness that we discussed before with respect to the safeguards. It is something which should have been done before. I am sure that it would make a very real impact on the technical people in the laboratory to see this kind of facility being made available to them.

Representative HOLIFIELD. How many classified technical documents of a scientific or engineering nature do you receive each month?

General BETTS. During 1962, there were some 12,000 unclassified documents and we would anticipate that the classified documents are in some comparable number but we have not had a centralized facility so that we have not had this kind of numbers record on them. That 12,000 is as opposed to 3,600 back in only 1956. There has been that kind of increase.

Representative HOLIFIELD. Is this library used, this classified library, and if so, how many people do you feel will use it in a day?

General BETTS. It will be used. We don't have a classified library now. We have an unclassified library. The classified library material is scattered at points around the laboratory. They are indeed used very heavily. I don't have numbers.

Representative HOLIFIELD. You say scattered. What do you do, have them in security vaults here and there?

General BETTS. In safes and security vaults that are scattered around the laboratory.

Representative HOLIFIELD. Would it be the plan to bring them all together in one place?

General BETTS. The plan is to pull them in a central vault with a central control system so we would make much more efficient utilization of the information available.

Representative HOLIFIELD. Would you have any comment, Mr. Schwartz on this problem?

Mr. SCHWARTZ. A lab with the technical competence of Sandia not having a technical library is a strange situation. We have been requesting for some years the opportunity to bring them together. What happens is that the classified documents come into a distribution organization, they are cataloged and then distributed around the corporation to staff members who have a particular interest. As a result, the staff members then put them into their classified files and

hold them there. Of course we have drives every so often to cut down our filing cabinet space.

If they have no use for them they dispose of them which means that they are not therefore there for anybody else who might wish to use them in the future.

Representative HOLIFIELD. You mean they are destroyed?

Mr. SCHWARTZ. Yes, sir. If that particular man has no further use for them then he sends them for destruction. As a result we think we are not making very good use of all the classified information that is available to our technical organization under this present setup.

Representative HOLIFIELD. It might involve quite a bit of waste if you left it up to the judgment of one man.

Mr. SCHWARTZ. No. Each individual may have 25 or 30 classified documents that are concerned particularly with the job he is working on. Once he is over that job and the document is several years old he may dispose of this.

Representative HOLIFIELD. Are these classified documents in the nature of memorandums, support documents and things like that?

Mr. SCHWARTZ. That is right and work that other laboratories have done that we try to pick up.

Representative HOLIFIELD. How do you control that sort of thing from a security standpoint?

Mr. SCHWARTZ. They are all in locked file cabinets, in the individual offices of the staff members.

Representative HOLIFIELD. Can a man destroy his own document?

Mr. SCHWARTZ. No, he does not destroy it. He marks it for destruction and sends it to a central point.

Representative HOLIFIELD. So it is screened before it is destroyed?

Mr. SCHWARTZ. Yes.

Representative HOLIFIELD. Are there any further questions on this?

PROJECTS NOT INCLUDED IN THE SUPPLEMENTAL AUTHORIZATION BILL

Representative HOSMER. While Dr. Schwartz is here I would like to ask him the same question I asked Dr. Bradbury and Dr. Foster relative to any other items that might be essential at this time to maintain the laboratory at Sandia in effective operating conditions and retaining top-flight people that you desire to retain.

Mr. SCHWARTZ. As far as retaining the people I think we have had very good recognition from the AEC on our facility needs. There is one item that I haven't discussed with the DMA people. It was requested in the 1965 budget and might have some value of being pulled forward.

That is a track, we call it a track for which we had a slightly different word because it is in effect a type of monorail, in this manner of developing environments to test those things that we are not able to test atmospherically.

Just as of yesterday in discussing means of testing structural vulnerability of warheads, the concept of firing them down a track [classified matter deleted] and other complicated facilities seems to be a way that we may be able to get some early information on structures prior to combining this particular environment with others.

The track we have right now has been in operation for some time and does not give us the accelerations we will need. This is an 18-inch track, about 5,000 feet long which is in our 1965 budget. It is $1.4 million, I believe. I just mention this thing as something that could advance our progress if our ideas on the developing environments proceed as they are now.

Representative HOSMER. There are several more tracks around the country operated by Air Force, Navy, and other people. Why would not time on them be suitable for your purpose?

Mr. SCHWARTZ. I wish we could use another word than "track" here. We do use the Holloman track consistently. In fact we are down there much of the time. Our use of the track is as an impact device to drive something up into a target. If you would visit our area 3 you would see that on our present track we change these targets, impacting into things like concrete strips, water tanks, and so forth. [Classified matter deleted.]

What we are doing is using the track to shoot something into a target. When I say track, it is two rails 18 inches apart in effect a monorail. For some of the activity we want to do here a track such as Holloman with a wide track offers real problems as to the stability of the sleds.

Representative HOSMER. Do the devices you test under these conditions contain fissionable material.

Mr. SCHWARTZ. No, sir. They contain high explosives.

Representative HOSMER. The reason you can't get time on the other tracks is because the impact facilities and so forth would tie up——

Mr. SCHWARTZ. The track is not adapted for that purpose.

Representative HOSMER. In other words, you have a special purpose?

Mr. SCHWARTZ. This is a special facility.

Representative HOSMER. General Luedecke, will you supply for the record any further information relative to justification for that item.

General LUEDECKE. I can sir.

Representative MORRIS. Is this going to be actively under consideration by the committee?

Representative HOSMER. I don't know. I would like to see what else they have on it when it comes time to mark up the bill.

Representative MORRIS. If it is I think we ought to see the other side of it too. I am not so convinced that this cannot be done at the Holloman track or that they can't use the facility that is existing at the Holloman Air Development Center. Maybe there is some good reason for it. We had a little track problem 2 or 3 years ago, as I remember, which developed into quite a difference of opinion.

I don't know that we should proceed so swiftly around here on this track building. If it is something that is urgent and you can't do without until further consideration of it, that is different. I don't want to get into another one of these track controversies if I can get out of it.

If I do, Mr. Schwartz, your presentation that you made this morning certainly has not convinced me that this is needed.

Mr. SCHWARTZ. Mr. Morris, we are getting all the time that we can utilize on the Holloman track. It is a track, I will grant you

that, it is a rail. As I hope I explained, this is an entirely different facility than the Holloman track or any other tracks for the purpose for which it is used.

Representative MORRIS. Now if you built that track there you would have to provide management for the track. What would be wrong with building this one alongside the Holloman track and the same management could manage and schedule both tracks or both facilities? There might be other people who would be interested in impact data also beside Sandia Corporation and the AEC.

Mr. SCHWARTZ. In our area 3, which is 5 miles south of Albuquerque, we have many environmental testing facilities. I think we have the finest array of environmental testing facilities in the country. We do have a group of people out there that operate all these facilities. As you recognize it takes 2 weeks to get ready and 30 seconds to fire the test.

We have a 3,000-foot track there now which has been in operation for some years. In fact we have torn it up a couple of times. It is not a replacement for that particularly. We will continue to use that track we have as well as we could but this will not increase any personnel at Sandia Corporation. It would be adding one more facility to this array that we now have in area 3.

Dr. SEABORG. Mr. Chairman, I think if this is under consideration for the 1965 budget that we should not try to add it to this particular list of items. If we are going to add items I think it would take a priority analysis review in order to determine which would be of the highest priority and that has been done to place the requested items on our list.

Representative HOLIFIELD. Dr. Schwartz, is there anything crucial that would delay or affect your program in a bad manner if this was not moved into this supplemental but would be allowed to come forward in the regular 1965 authorization bill?

Mr. SCHWARTZ. I think as several of the other gentlemen mentioned this morning, the availability of facilities just determines the rate of progress in your activity. In developing new ways of producing environments to check our devices in the absence of full-scale tests, we will probably be making this in small tests, trying an idea, seeing what it produces and then making it a little more sophisticated.

It is purely a matter of determining the rate of progress.

Representative HOLIFIELD. It is only a few months before the 1965 authorization bill will be under consideration.

Mr. SCHWARTZ. That is right. I may have been in error in bringing it up this morning. The question was asked. That was the next item on our program.

Representative HOSMER. The question was asked, in the context of authorization now, would it be important in both retaining top-flight scientific personnel and the effectiveness of your laboratory for operation under test ban conditions?

Mr. SCHWARTZ. The answer to that is "No." The track is a facility to help our progress in the job of determining the weapons effects.

Representative HOSMER. In other words, you feel it can wait until the 1965 authorization.

Mr. SCHWARTZ. It certainly could; yes, sir.

Representative HOSMER. Very well. I don't request the information.

CONTROL POINT ADDITION, NEVADA TEST SITE, NEV.

Representative HOLIFIELD. We will go next to 64–d–21.

Project No. 64–d–21, control point additions, Nevada Test Site, Nev., $630,000

This project provides for (1) communications building of 11,000 square feet constructed of reinforced concrete with ground and basement floors, and (2) a device assembly area including a guard station, two uuderground explosive magazines of 300 square feet and 1,050 square feet respectively, assembly buildings of about 7,500 square feet, a warehouse of 1,500 square feet, and a paved road to each building. Above-ground construction will be of reinforced concrete.

These facilities are necessary for safe and effective operations of the Nevada Test Site forward areas. With the turn to steady state weapons test operations at the Nevada Test Site, the laboratories and operating personnel at the forward sites have "made do" in facilities that were used for short-term continental test series through 1958. Because of increasing difficulties in operating on a steady basis in present facilities, the following is required: first, a new communications building to enable both the Bell Telephone Co. and the Communications Department of the Reynolds Electric & Engineering Co. (the AEC operating contractor) to consolidate all of their communication facilities into one location. By removing those functions of their operations that are presently located in the central control point building at NTS, floor space originally designed for use by the AEC and scientific agencies in that building can be utilized by the proper personnel; and second, device assembly buildings will provide the Nevade Test Site with assembly areas to replace existing inadequate facilities.

Representative HOLIFIELD. This project includes quite a group of items. Your data sheet indicates substantial economies of operation will improve the construction of this project. Can you give us an estimate of these savings?

General BETTS. I don't have a dollar estimate, Mr. Chairman. If you are familiar with the Nevada Test Site, [classified matter deleted] the Livermore Laboratory is using facilities that are [classified matter deleted] away from the control point or from the point at which they would carry out their tests.

That will get to be an even more unfortunate distance once we get out to [classified matter deleted] tests that we would like to do on the Pahute Mesa.

Representative HOSMER. What range are you talking about [classified matter deleted].

General BETTS. We have said we think we can get up to a megaton [classified matter deleted].

Representative HOSMER. How about the effect on Las Vegas and Hoover Dam?

General BETTS. I am sure there is no likelihood of an effect on Hoover Dam from tests even as great as a megaton. I don't believe that we have any need to worry about damage at Las Vegas from a megaton. We certainly would have a level of perceptibility at Las Vegas from a megaton [classified matter deleted].

Representative HOSMER. I was in San Francisco when you shot off [classified matter deleted]. The headlines were that Las Vegas was rolling for 30 minutes and so forth.

General BETTS. We were not able to confirm the headlines.

It is true that a vertical building will magnify any ground motion that the building feels. Indeed, a couple of tall buildings in Las Vegas, particularly one under construction, where the stiffness of the curtain walls of the building had not been applied as yet since it was just there in framework, and the people on the higher floors of the framework felt some swaying of the building like they would feel in a very high wind.

Undoubtedly it was caused by the ground motion induced from the explosion. But it was not damage level. It certainly was at a perceptible level.

Representative HOSMER. Does the seismic effect go up proportionately with the yield or some other relationship?

General BETTS. It does go up proportionately.

[Classified matter deleted.]

General BETTS. We had a medium problem here which has not been answered. In other words, Bilby was in tuff overlain with alluvium. In the Pahute Mesa we will be in a solid block of tuff and it will be in a different elevation as against what happened in the flats where we tested Bilby. I don't know yet what this interrelationship will be.

Representative HOSMER. General, I don't think it has a linear relationship. It is according to the cube root or something like that. Does anybody know? It is an important factor because there is certainly some limitation on your yield and if it becomes provident to get up to a megaton or more we are going to have to meet that problem.

Dr. BRADBURY. There is an answer and I am sure it is known.

Representative HOSMER. It is not linear?

Dr. BRADBURY. I don't think it is linear.

General BETTS. I am sure it is not cube root though [classified matter deleted].

Representative HOSMER. I wish you would get a better feeling for this because I think possibly some of the Congressmen in southern California will be asking questions about what will happen to Hoover Dam. We ought to be able to give an answer.

General BETTS. We can give you a considerably better answer than we have this morning. I might add though, that medium is probably a much more critical problem than the question of the relative yield.

Representative HOSMER. You got some information on it last Saturday.

General BETTS. And we still have some development work to do on this score.

Dr. FOSTER. Mr. Hosmer, we have studied that problem of the Pahute Mesa. We will be glad to supply it to DMA.

Dr. BRADBURY. Also, you have set up under the Nevada office a group of experts to consider these seismic problems from the shots.

Representative HOSMER. Then they can sit around and talk all day long. We still have to be able to satisfy the public who might have apprehensions about this. We should have a little better feel for it, I believe, than we have at the present moment.

Dr. BRADBURY. There is a wide variety of available knowledge right now. Looked at today from the standpoint of big shots, there have been shots of 100 kilotons [classified matter deleted]. There is a body of data on the subject of the limitations General Betts mentioned, that the AEC has. The medium has changed. It is probably comparable in the particular frequency of motion you are talking about, but may have variations.

There is information on this. It does not happen to be in our hands at this particular moment.

Representative HOSMER. We will have to put some tranquilizers or placebos on this question. We have to contend with the effect on the general public in order to be able to give some fairly accurate answers to the questions when they are asked.

Dr. BRADBURY. This I am sure we will do.

General LUEDECKE. We will give the committee the best report on the information we have up to date.

(Information requested was submitted separately in a classified letter dated November 15, 1963.)

Representative HOLIFIELD. We have finished the last one, have we not, 64–d–21?

Mr. CONWAY. I have one question, General Betts, on 64–d–21. During the hearings on the regular authorization bill for fiscal year 1964, AEC stated, in connection with project 64–d–6, that the field had requested $9 million but that the Commission had only requested $5 million from the Bureau of the Budget and it finally ended up with $4 million. That is how it was reported out as a line item in the regular authorization bill.

The query now would be, was any part of this 64–d–21 part of what was originally requested in 64–d–6?

General BETTS. I am trying to be responsive to the weapons testing aspect of this question. We felt that these control point items should be brought up for earlier authorization. I personally believe that the other things that the Nevada Test Site had asked for could wait through the normal cost of our budget cycle. Were these control points originally in the $9 million?

Mr. ANTHONY. In their original $9 million; yes.

Mr. CONWAY. When the committee originally was inquiring as to the cuts made on the people in the field, the committee was told that these were low priority items that were being deferred for a year or so. This apparently was considered a low priority at that time.

General BETTS. Let us say it was lower than the things that got approved. It is all relative.

UNDERGROUND TESTING IN FISCAL YEAR 1964

Representative HOLIFIELD. Dr. Seaborg, before we adjourn, we faced a situation, as we all remember, at the end of the unpoliced moratorium when we were rather caught off base by the Russian resumption of tests. We had a lack of readiness there that extended for several months. Most of this committee is very much concerned about maintaining our military superiority under the Test Ban Treaty. First, we are concerned about an active program which will give us as much information as we can get through the underground system and, secondly, we are also, of course, interested in the timelag which might occur in the resumption of atmospheric testing in case there is another change on the part of the Soviet.

Now in your opening statement Dr. Seaborg, and I would like to extend this question not only to you but to General Betts and the heads of the laboratories, you mention that for the underground weapons test activities, you are planning a program of up to [classified matter deleted] during fiscal year 1964 and that this represents an increase of [classified matter deleted] over plans as originally proposed.

Dr. SEABORG. That is counting Plowshare.

Representative HOLIFIELD. That [classified matter deleted] seems to me is a pretty stiff program.

Dr. SEABORG. I think that is going to be a higher rate of testing, actually, than the laboratories will in any event want to do. This is

a sort of upper limit. Whether it will be possible to do that might be questionable.

Representative HOLIFIELD. I am wondering, with the personnel and facilities that you have and in view of the amount of planning, accumulation, screening, and evaluation of data, and so forth, in connection with each test, it seems to me that you have a very heavy program here. I am wondering how long you can maintain this rate of testing?

Dr. SEABORG. You notice I said up to [classified matter deleted] weapons development events. That appears to be a sort of upper limit of what is possible.

Representative HOLIFIELD. How do you feel about that, Dr. Bradbury and Dr. Foster.

Dr. BRADBURY. Dr. Seaborg expressed the situation correctly. Speaking for Los Alamos we are going to do all that we possibly can that makes sense but we don't propose to do things that are not well thought out and not based on adequate analysis of the shots that have gone before. We are going to try to meet a higher level sensibly than we met before. It is not something that I want to be responsible for doing in poor or undeserved fashion.

[Classified matter deleted.]

Representative HOLIFIELD. Dr. Foster.

Dr. FOSTER. Mr. Chairman, I think there are two major factors which ought to be pointed up. First, the number of tests in a given yield range having to do with the development of nuclear explosives is a pretty good indication of a level of effort and the rate of flow of information.

[Classified matter deleted.]

So, whether one shoots in a given year [classified matter deleted] explosions is dependent, with the same level of effort, on the mixture of the device activity, the device development activities, and the activities associated with the effects problem.

That is the first. The second is that with our more or less fixed level of effort one has to strike a balance between the activities devoted to the continuous underground program and the pursuit that we think will best satisfy our continuing needs and the other side of it, the readiness for tests in other media in the event of an abrogation.

Now this is a difficult balance to strike at any time and I think Dr. Bradbury would agree with me that we expect to see a change in emphasis in one field or the other as time goes by.

General BETTS. This is a typical example of the kind of very difficult thing we propose doing in the course of underground testing which might otherwise have been done in an atmospheric program in connection with effects.

[Classified matter deleted.]

Representative HOLIFIELD. This causes me to be doubtful about achieving the number of events you have set forth. I am not critical of your ambitions but I am skeptical of the schedule.

Dr. FOSTER. Yes, sir; I must confess we have a question and I am sure Los Alamos does, as to how many we will conduct. The main point, however, is the one that Dr. Bradbury made. One tries to plan each experiment as best we can and make sure that each test provides the maximum amount of information for the effort invested.

Now we have found in the past that the plan that was made up was not adhered to, not because we did not have the effort to do those

tests at that rate but simply because each experiment provides you with new information, which in turn provides solutions to problems or introduces new ones, and for that reason you change the schedule.

As you change the schedule you have delays. Now the laboratories have made up these schedules with appreciation for these kinds of changes.

READINESS FOR ATMOSPHERIC TESTING

Representative HOLIFIELD. Going for a moment from the program of testing to the readiness problem, we can be assured, can we not, that on this point there will be a substantial readiness and a readiness in advance of that which we had at the end of the unpoliced moratorium of 1958?

Dr. SEABORG. Yes, I think we can. I don't think the situation is similar to the situation that confronted us in the fall of 1961. We are making this conscious, deliberate effort to be ready for atmospheric tests in all the categories and on the time scale for the first tests that I mentioned, that is 2 months for the systems tests and proof tests and 3 months for the developmental tests and 6 months for the high altitude and effects tests.

Representative HOLIFIELD. There is full cooperation and harmony on the part of the Department of Defense and AEC in targeting these things.

Dr. SEABORG. Yes; full cooperation and agreement on the dates and of course consultation with the laboratories.

Representative HOLIFIELD. Mr. Hosmer.

COMPREHENSIVE HEARING ON IMPLEMENTATION OF SAFEGUARDS UNDER THE TREATY

Representative HOSMER. Mr. Chairman, in view of the fact that we do not have any further time for getting into the questions of the details I would like to comment that Dr. Seaborg's testimony, although classified "Secret Restricted Data, Excluded From Automatic Downgrading" will probably appear in the unclassified record with very few exclusions.

It deals with the four safeguards very briefly. I think that there are many details on which this committee should have knowledge and be able to exercise judgment. Therefore, because we haven't gone into it in detail with Dr. Seaborg I don't want to leave the impression that it should not at some point be done. I think probably the committee, at least I would recommend that the committtc at some point comprehensively take up the safeguards and hear from both the AEC and the DOD, possibly at the same time.

Dr. SEABORG. We will stand ready.

Representative HOLIFIELD. You are not asking for this comprehensive hearing on the safeguards as part of these hearings on this particular legislation, are you?

Representative HOSMER. No. I think that is a more comprehensive problem of which this is a small part of the whole. For instance, we have considerations with respect to readiness for testing as to what amount of redundancy in equipment and what facilities reasonably should be required under anticipated emergency conditions under which we will be operating at that time.

That is just one of many factors.

Dr. SEABORG. And how the equipment should be replaced as it becomes obsolete.

Representative HOSMER. Yes; keeping the muscles toned and everything. It is a very comprehensive thing. I think these safeguards are important. They have been recognized so and certainly we must make every effort to insure that they are being implemented and implemented properly.

Representative HOLIFIELD. Without regard to the positions which the members of the committee took on the test ban treaty, itself, I don't think there is any difference of opinion on the part of all the members in regard to this underground testing program, the need for it and the urgency for it and also the interest in our readiness position.

I agree with Congressman Hosmer that the committee should continue to keep on top of this matter and I am sure that there will be plenty of opportunity to have additional sessions in which we will go into more detail on some of the matters.

Now, before we adjourn again, I would like to remind the Commission to review today's testimony for the purpose of declassification.

Dr. SEABORG. Certainly.

Representative HOLIFIELD. We may have, some supplementary questions that we will want to forward to the AEC staff and obtain prompt answers so that we can get this hearing in print. (See appendix p. 63.)

Dr. SEABORG. Fine. We will look the testimony over immediately from the standpoint of declassification.

Representative HOLIFIELD. Thank you, gentlemen.

APPENDIX

Appendix 1

Questions Submitted to AEC on the Supplemental Authorization Bill and AEC's Response

Congress of the United States,
Joint Committee on Atomic Energy,
November 6, 1963.

Gen. A. R. Luedecke,
General Manager, U.S. Atomic Energy Commission,
Washington, D.C.

Dear General Luedecke: You may recall that at the conclusion of our recent hearings on the AEC supplemental authorization bill for fiscal year 1964, Congressman Holifield stated that the committee might wish to submit additional questions to the Atomic Energy Commission.

Attached is a list of supplementary questions to which we would appreciate the Commission's response.

Your reply at an early date would be appreciated.

Sincerely yours,

Edward J. Bauser,
Acting Executive Director.

Additional Questions on Supplemental Authorization Bill

1. Please describe the complete process which the administration went through in developing this bill:

(*a*) At whose initiative was the bill prepared? White House? Atomic Energy Commission?

(*b*) When was preparation of the bill initiated?

(*c*) Did AEC request the laboratories to submit a list of needed projects? When?

(*d*) Were any of the projects requested by the labs turned down by AEC?

(1) Which projects were turned down?

(2) Why?

(*e*) When was the proposed bill submitted to BOB? When did BOB approve the bill?

(*f*) Did BOB turn down any projects proposed by AEC?

(1) Which projects were turned down?

(2) Why?

2. Do you believe that this bill, in conjunction with the reprogramed funds in the operating budget, represents everything that can be reasonably done in fiscal year 1964 to implement the safeguards which were proposed in connection with the nuclear test ban treaty?

If not, what additional things should be undertaken in fiscal year 1964?

3. Your bill, in combination with your plans for reprograming operating funds, provides some idea of the plans for implementing safeguards during fiscal year 1964. Can you provide a projection for 1965 (and later years) on the plans for implementing safeguards, including some estimate of the costs?

4. Why is it important to pass this bill at this session of the Congress? What would be the effect of a 2- or 3-month delay in congressional action?

5. Have you done a sufficient amount of planning to go into a stepped-up weapons program involving additional expenditures of over $100 million in the next 8 months?

6. Can you provide a detailed breakdown showing how the additional reprogramed funds on the operating side of the budget (for the weapons program) will be spent?

7. A substantial portion of the work in implementing the safeguards in connection with the test ban treaty will be the responsibility of the Department of

Defense. Specifically, the DOD would have major responsibility in the area of weapons effects testing, readiness for the resumption of atmospheric testing, and improvement of test detection capabilities.

Can you provide us with data on the DOD's plans for implementing their safeguards responsibility during the remainder of fiscal year 1964, including an estimate of costs?

Can you provide a projection of the DOD's plans, including costs, for fiscal year 1965 and future years?

8. Under the AEC fiscal year 1964 Authorization Act, $10 million is provided as a general authorization for the atomic weapons development program (project 64–c–1).

Why couldn't some of the smaller projects in the supplemental authorization bill, such as 64–d–16 and 64–d–17, be undertaken under this general authorization?

Wasn't project 64–c–1 intended to provide funds for additional facilities which would be required during the year but which could not be specifically identified at the time of the authorization hearings?

9. Which of the projects requested in this bill were originally requested by your field organizations for inclusion in the original authorization bill for fiscal year 1964? Why were they deleted? Who deleted them—the Commission or the Bureau of the Budget?

U.S. Atomic Energy Commission,
Washington, D.C., November 15, 1963.

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

Dear Mr. Conway: Reference is made to Mr. Bauser's letter of November 6, 1963, which enclosed supplemental questions on the fiscal year 1964 Atomic Energy Commission supplemental authorization bill.

Attached is the Commission's response to the supplemental questions. Also attached are two copies each of the Atomic Energy Commission classified budget document and unclassified excerpts for the amended weapons program operating cost.

Sincerely yours,

(Signed) A. R. Luedecke,
General Manager.

Additional Questions and Responses on Supplemental Authorization Bill

Question 1. Please describe the complete process which the administration went through in developing this bill:

(*a*) At whose initiation was the bill prepared? White House? Atomic Energy Commission?

The following points are pertinent to this question:

On July 23 and 25, the Atomic Energy Commission requested the laboratories and the Nevada Operations Office to develop plans, recommendations, and cost estimates for an atmospheric test readiness program should a partial test ban agreement be reached. On August 12, 1963, the Division of Military Application (DMA) verbally requested the Lawrence Radiation Laboratory to list the construction items they felt essential to upgrade and maintain a strong laboratory program.

While estimates were being reviewed within the AEC and the administration for the atmospheric test readiness program, about August 20, 1963, the Executive Office indicated the AEC should provide a listing of laboratory construction items which would be required under the safeguards.

(*b*) When was preparation of the bill initiated?

Preparation of the bill was initiated on August 21, 1963.

(*c*) Did AEC request the laboratories to submit a list of needed projects? When?

On August 22, 1963, DMA contacted each office and laboratory regarding construction requirements and requested their recommendations on construction they considered essential under the safeguards. The query was as to need and feasibility of accomplishment or initiation within the fiscal year 1964 time frame. The recommendations were received on August 22 and 23, 1963.

(*d*) Were any of the projects requested by the laboratories turned down by AEC?

(1) Which projects were turned down?

(2) Why?

None of the projects requested for fiscal year 1964 were deleted by the AEC. There were discussions with the laboratories on what items they would request for this bill and the requests were mutually agreed to.

(*e*) When was the proposed bill submitted to BOB? When did BOB approve the bill?

The proposed bill was submitted to the BOB on August 29, 1963. The bill was approved by the BOB on October 16, 1963, and the amended request to Congress was submitted the same date.

(*f*) Did BOB turn down any projects proposed by AEC?

(1) Which projects were turned down?

(2) Why?

Yes; the Biomedical Laboratories, Lawrence Radiation Laboratory, Livermore, Calif., estimated at $4,750,000.

Although this activity is indirectly weapons related, the primary purpose is not within the context of the safeguards program; therefore, the project was deferred with Commission and LRL concurrence. In testimony on October 31, 1963, Dr. Foster stated he was willing to accept delay in this project.

Question 2. Do you believe that this bill, in conjunction with the reprogramed funds in the operating budget, represents everything that can be reasonably done in fiscal year 1964 to implement the safeguards which were proposed in connection with the nuclear test ban treaty?

If not, what additional things should be undertaken in fiscal year 1964?

The construction items requested in the fiscal year 1964 authorization bill coupled with the reprogramed operating funds is considered all that can feasibly and reasonably be done in fiscal year 1964 to implement the safeguards program Many of the items included in the reprogramed funds have relative long lead procurement or construction; therefore, funding above that request would not be appropriate at this time.

Question 3. Your bill, in combination with your plans for reprograming operating funds, provides some idea of the plans for implementing safeguards during fiscal year 1964. Can you provide a projection for 1965 (and later years) on the plans for implementing safeguards, including some estimate of the costs?

In reviewing the needs for the safeguards program, certain portions (e.g., atmospheric test readiness) were reviewed as a program spanning more than one fiscal year. Other items are still being reviewed in context of the AEC fiscal year 1965 budget request.

The preparation for the atmospheric test readiness safeguard extends roughly over a period of 20 months. This program was actually initiated in fiscal year 1963 in that steps were being taken toward another atmospheric test series. These actions are equally applicable toward a readiness posture. An atmospheric test readiness program estimated at $121.2 million was presented to the Executive Office. The cost estimates were fiscal year 1963, $3.9 million (actual); fiscal year 1964, $73.2 million; and fiscal year 1965, $44.1 million. Tentative estimates of holding cost beyond the completion of this safeguard are $20 to $25 million annually. This overall program on atmospheric test readiness has been approved in principal with future (fiscal year 1964 and beyond) estimates subject to BOB and congressional review. Future requirements for the underground test program, laboratory construction, and AEC support of the DOD test detection program are under review in connection with the fiscal year 1965 budget estimates.

Question 4. Why is it so important to pass this bill at this session of the Congress? What would be the effect of a 2- or 3-month delay in congressional action?

As it now stands, considering the status of the amended authorization act and appropriation actions, it appears that approval of the projects and funds will not be available until late November or say mid-December. Safeguards (other than construction) are underway utilizing prior year carryover funds and within the provisions of the continuing resolution on appropriations.

Waiting 2 or 3 months for congressional action would actually mean deferral until the next session of Congress and possibly deferral of construction until the fiscal year 1965 budget cycle. Based on experience, exclusive of this year, a delay of 2 to 3 months at this time would actually result in a delay of approximately 1 year from now. It is felt that such a delay would not be to the best interests of

the Nation and would be interpreted by the laboratories as a lack of implementation of the national policy.

Question 5. Have you done a sufficient amount of planning to go into a stepped-up weapons program involving additional expenditures of over $100 million in the next 8 months?

Prior to the agreement on an atmospheric test ban the planning and actions underway were directed toward another off-continent atmospheric test. The long range actions underway are the same as those needed for a readiness posture. Therefore, in this area no problem is envisioned in the stepped-up program.

In the underground test program the revised cost level will be essentially at that experienced in fiscal year 1963. It should be noted that in fiscal year 1962 in an 8- to 10-month period the underground test activities went essentially from an $8 million base to costs of almost $100 million.

Question 6. Can you provide a detailed breakdown showing how the additional reprogramed funds on the operating side of the budget (for the weapons program) will be spent?

A detailed breakdown of the reprogramed operating funds is attached.

Question 7. A substantial portion of the work in implementing the safeguards in connection with the test ban treaty will be the responsibility of the Department of Defense. Specifically, the DOD would have major responsibility in the area of weapons effects testing, readiness for the resumption of atmospheric testing, and improvement of test detection capabilities.

Can you provide us with data on the DOD's plans for implementing their safeguards responsibility during the remainder of fiscal year 1964, including an estimate of costs?

Can you provide a projection of the DOD's plans, including costs, for fiscal year 1965 and future years?

Although the AEC and DOD are closely coordinating their test planning, we are not, at this time, in a position to provide you with information on DOD funding and cost estimates. However, we are discussing this request with the DOD and will advise you further in this respect.

Question 8. Under the AEC fiscal year 1964 Authorization Act, $10 million is provided as a general authorization for the atomic weapons development program (project 64–c–1).

Why couldn't some of the smaller projects in the supplemental authorization bill, such as 64–d–16 and 64–d–17, be undertaken under this general authorization?

Wasn't project 64–c–1 intended to provide funds for additional facilities which would be required during the year but which could not be specifically identified at the time of the authorization hearings?

Project 64–c–1, "Weapons production, development and test installations," $10 million was requested to provide for additional construction to meet changing or unforeseen production plant needs and technical research and development facilities which evolve from testing, development, and firming up of production requirements and processes.

The projects included in the proposed authorization bill are those required to upgrade the laboratories present plant, to remove scientists, engineers, and supporting staff from inadequate structures and trailers and to provide facilities which show the nation's intent to maintain aggressive viable laboratories. There are the types of items that would not be generally done from a contingency type project but would be processed and reviewed in the normal budget cycle since the contingency project is held for urgent programmatic type construction.

The contingency project is currently oversubscribed with urgent items. These items, listed below, are in most part, related to the production complex. One item in the list entitled "Pahute Mesa, NTS" is still not 100 percent firm and has arisen subsequent to approval on the amended authorization bill. The Pahute Mesa item is for the purpose of providing a permanent powerline from the present NTS areas to Area 12 adjacent to the Pahute Mesa area. Also, programmatic need has developed for an expansion to the gas laboratory at LRL. This is considered an item of the type which should be accomplished within the intent of project 64–c–1.

Subprojects under review for project 64–c–1

Title:	Cost estimate (in thousands)
Gas laboratory addition, LRL	$1,100
Pahute Mesa, NTS	700
Pinellas plant addition, Florida	2,035
Parts cleaning facility, Rocky Flats, Colo	600
Supplemental power, Kansas City	550
Environmental control facility, ACF–SAW, Albuquerque	650
Environmental control facilities, Burlington, Iowa	725
Welding facility, Rocky Flats, Colo	1,600
Machining facility, Pantex plant, Amarillo, Tex	[1] 800
Special fabrication facility, Mound, Ohio	[1] 850
HE plant complex	300
Waste disposal facility, Mound, Miamisburg, Ohio	[1] 700
Total	10,608

[1] Items are under further review so that priorities can be determined.

Question 9. Which of the projects requested in this bill were originally requested by your field organizations for inclusion in the original authorization bill for fiscal year 1964? Why were they deleted? Who deleted them—the Commission or the Bureau of the Budget?

The projects originally requested by the field organizations are as follows:

1. Project 64–d–10, "Occupational health laboratory, Los Alamos," was requested by the Los Alamos Scientific Laboratory and the AEC as a part of a larger project (project 64–d–2). This portion of the AEC request for project 64–d–2 was deleted during the review of the original budget by the BOB. The project was deleted on the basis that the people were now housed, even though in crowded conditions, and deferral to a later date would not directly impede the weapons program.

2. Project 64–d–16, "West cafeteria addition, LRL"; project 64–d–17, "Crafts shop addition, LRL"; project 64–d–20, "Classified technical reports building addition, Sandia"; and the communications building portion of project 64–d–20, "Control point additions, NTS," were deleted by the AEC during the review of the initial fiscal year 1964 budget. These projects, although highly desirable, did not meet the Commission's or DMA's priority listing as their deferral would not seriously affect the program objectives set forth prior to the decisions on the safeguards program.

UNCLASSIFIED EXCERPTS FROM REVISED CONGRESSIONAL ESTIMATE

Full-scale weapons test, fiscal year 1964

[In thousands]

	Summary		
	Congressional	Revised	Change
Continental underground tests	$52,500	$93,900	$41,400
Readiness for off-continent tests	6,000	73,162	67,162
Laboratory participation	35,500	36,700	1,200
Total, full-scale weapons test	94,000	203,762	109,762

On-continent tests

[In thousands]

	Initial congressional	Revised estimate	Change
Test construction	$25,700	$51,207	+$25,507
Underground effects (hardening) hardware	0	10,000	+10,000
Technical support	12,000	15,412	+3,412
Logistical support	4,300	4,826	+526
Maintenance and operations	10,500	12,455	+1,955
Total, on-continent tests	52,500	93,900	+41,400

Off-continent readiness safeguards

[In thousands]

	Total cost	Fiscal year 1963, actual	Fiscal year 1964, requirement	Fiscal year 1965, requirement
Aircraft diagnositic capability	$17,810	[1] $2,418	[1] $15,392	0
Johnston Island and other Pacific area construction	[2] 22,133	233	12,000	$9,900
Maintenance and operating cost	4,400	0	2,600	1,800
Development test capability	27,970	1,200	14,480	12,290
High-altitude test capability	37,340	0	21,190	16,150
Special effects capability	11,500	0	7,500	4,000
Total, off-continent readiness safeguards	121,153	3,851	73,162	44,140

[1] Fiscal year 1964 congressional: $9 million in fiscal year 1963 and $6 million in fiscal year 1964.
[2] In addition, the DOD is spending about $42 million.

Laboratory participation

[In thousands]

	Initial congressional estimate	Revised estimate	Change
Los Alamos Scientific Laboratory	$5,900	$6,100	$200
Lawrence Radiation Laboratory	18,600	19,100	500
Sandia	11,000	11,500	500
Total	35,500	36,700	1,200

NOTE.—Increase required for expendable materials in support of expanded underground program.

APPENDIX 2

[No. 431 for immediate release, Nov. 8, 1963]

From the Office of the Joint Committee on Atomic Energy.

STATEMENT OF SENATOR JOHN O. PASTORE, CHAIRMAN OF THE JOINT CONGRESSIONAL COMMITTEE ON ATOMIC ENERGY, FOLLOWING INSPECTION OF WORLDWIDE ATOMIC ENERGY DETECTION SYSTEMS

The following statement was made today by Senator John O. Pastore, chairman, Joint Congressional Committee on Atomic Energy:

"From the inception of the atomic energy detection system, the Joint Committee on Atomic Energy has closely followed the research and development program for improving the system. With the signing of the test ban treaty prohibiting atmospheric, underwater, and outer space tests, the necessity of being able to detect and identify nuclear detonations has become all the more important.

"As Chairman of the Joint Congressional Committee on Atomic Energy, I headed a special Ad Hoc Subcommittee which just completed an inspection of our existing worldwide system. The Subcommittee, consisting of bipartisan representation, included the Joint Committee Vice Chairman, Congressman Chet Holifield (Democrat, California); Senator Wallace Bennett (Republican, Utah); Congressman Craig Hosmer (Republican, California); Congressman William H. Bates (Republican, Massachusetts) and Congressman John B. Anderson (Republican, Illinois). We visited selected installations around the world where specially trained, competent U.S. military personnel operate detection equipment on a 24-hour basis every day of the year. Our inspection of detection stations included a detailed examination of acoustic, electromagnetic, seismic, and other electronic systems. The Ad Hoc Subcommittee was greatly impressed by the technical competence of the military personnel, both commissioned and enlisted, who manned these stations, and by their dedication to duty. The United States can be proud of these men who serve in many remote areas of the world, including outposts in Alaska and the Aleutian Island chain.

"In addition to visiting sites for detection of nuclear explosions, the Committee on its survey abroad took the opportunity whenever and wherever convenient to visit civilian nuclear installations and to talk with the personnel in charge of programs for peaceful uses of atomic energy. We were happy to see the enthusiasm of those with whom we talked in the work they are doing.

"We have returned from our inspection with a feeling of greater assurance in our ability to detect a violation of the test ban treaty should such a violation occur. However, improvements are being—and must continue to be—made. The Committee will prepare a detailed report of its trip, which will include certain recommendations for improving our detection capabilities. The report, of necessity, will have to be classified. Generally speaking, certain improvements can be accomplished through additional research and development and augmentation of the existing systems, and we have been assured that this is currently under consideration—within the Department of Defense, the AEC, and other executive agencies.

"The Subcommittee greatly appreciated the excellent cooperation it received from the executive branch of the Government. Representatives of the White House, the AEC, the Defense Department, and the Arms Control and Disarmament Agency accompanied the Committee. They included: Mr. Carmine Bellino, special assistant to the President; Dr. Gerald Tape, Commissioner, AEC; Maj. Gen. J. F. Rodenhauser, USAF; Maj. Gen. Austin W. Betts, U.S. Army; Col. Grover K. Coe, Office of Secretary of Defense; Mr. Dwight Ink, Assistant General Manager, AEC; Dr. George Rathjens, Arms Control and Disarmament Agency. The Committee and the accompanying group were fortunate to have one of the President's aircraft placed at their disposal.

"Consistent with its responsibility to the Congress and the country, the Joint Committee on Atomic Energy will continue to follow very closely the safeguards to the nuclear test ban treaty."

Appendix 3

Letter From AEC Regarding Implementation of Safeguards by the Department of Defense

U.S. Atomic Energy Commission,
Washington, D.C., November 19, 1963.

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

Dear Mr. Conway: On November 15, 1963, the Commission furnished replies to supplemental questions which you had on the fiscal year 1964 supplemental authorization bill. On question 7, we indicated that we were discussing, with the Department of Defense, your request for their cost data. In subsequent discussions with the DOD, it has been agreed that upon completion of a review of their plans and related costs, they will furnish this information directly to you.

There is attached for your information a copy of our letter to Dr. Brown relating to this matter.

Sincerely yours,

A. R. Luedecke, *General Manager.*

U.S. Atomic Energy Commission,
Washington D.C., November 19, 1963.

Hon. Harold Brown,
Director of Defense Research and Engineering,
Department of Defense.

Dear Dr. Brown: As an aftermath of hearings before the Joint Committee on Atomic Energy on October 31, 1963. concerning our request for authorization for the additional construction projects approved by the President as part of the test readiness program, the Committee on November 6, 1963, submittee a list of additional questions concerning the program for which replies were requested. We submitted, under date of November 15, our replies to these questions.

Question 7 had to do with plans of the Department of Defense for this program, and the question posed by the Joint Committee on Atomic Energy, together with the answer provided by the Commission, was as follows:

Question 7. A substantial portion of the work in implementing the safeguards in connection with the test ban treaty will be the responsibility of the Department

of Defense. Specifically, the DOD would have major responsibility in the area of weapons effects testing, readiness for the resumption of atmospheric testing, and improvement of test detection capabilities.

Can you provide us with data on the DOD's plans for implementing their safeguards responsibility during the remainder of fiscal year 1964, including an estimate of costs?

Can you provide a projection of the DOD's plane including costs, for fiscal year 1965 and future years?

Answer. Although the AEC and DOD are closely coordinating their test planning, we are not, at this time, in a position to provide you with information on DOD funding and cost estimates. However, we are discussing this request with the DOD and will advise you further in this respect.

As a result of discussion between Mr. McCarthy, Deputy Controller, AEC, and Mr. Jackson, of your office, it is our understanding that you still have under review projected DOD plans and related cost estimates for this program. It was agreed that at such time as your response to the question becomes available you will transmit the requested information directly to the Joint Committee on Atomic Energy. In the meantime, we are informing the Committee of our understanding and are furnishing them a copy of this letter.

Sincerely yours,

A. R. LUEDECKE, *General Manager.*

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