

MILITARY CONSTRUCTION APPROPRIATIONS FOR 1974

HEARINGS BEFORE A SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS HOUSE OF REPRESENTATIVES NINETY-THIRD CONGRESS FIRST SESSION

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PART 2 AIR FORCE

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**MILITARY CONSTRUCTION APPROPRIATIONS FOR
FISCAL YEAR 1974**

TUESDAY, MAY 29, 1973.

MILITARY CONSTRUCTION, AIR FORCE

WITNESSES

RUFUS L. CROCKETT, ACTING DEPUTY ASSISTANT SECRETARY OF
THE AIR FORCE (INSTALLATIONS)
MAJ. GEN. M. R. REILLY, DIRECTOR OF CIVIL ENGINEERING
H. P. RIETMAN, ASSOCIATE DIRECTOR, CIVIL ENGINEERING
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LT. COL. EDWIN ANDERSON, DIRECTORATE OF INTELLIGENCE
MAJ. GERALD ROBERTELLO, DIRECTORATE OF INTELLIGENCE

Mr. SIKES. We now have Military Construction, Air Force. We will insert in the record pages VI and VII of the financial summary.

[The pages follow :]

DEPARTMENT OF DEFENSE—MILITARY CONSTRUCTION, AIR FORCE
PROGRAM AND FINANCING (IN THOUSANDS OF DOLLARS)

	Budget plan (amounts for construction actions programed)			Obligations		
	1972 act	1973 estimate	1974 estimate	1972 act	1973 estimate	1974 estimate
Program by activities:						
Direct:						
Major construction	252,264	239,329	278,900	216,970	288,700	255,800
Minor construction	18,605	10,000	15,000	17,990	15,000	15,200
Planning	16,170	17,000	18,000	17,103	18,800	19,950
Supporting activities	2,295	3,000	.....	1,067	2,700	2,450
Total direct	289,334	269,329	311,900	253,130	325,200	293,400
Reimbursable (total) .....	.....	2,000	2,000	.....	1,800	2,600
Total	289,334	271,329	313,900	253,130	327,000	296,000
Financing:						
Receipts and reimbursements from:						
Federal funds .....	.....	-2,000	-2,000	57	-1,800	-2,600
Non-Federal sources .....	.....	.....	.....	474	.....	.....
Unobligated balance available, start of year:						
For completion of prior year budget plans .....	.....	.....	.....	-184,513	-220,703	-151,055
Available to finance new budget plans .....	.....	.....	-10,000	.....	.....	-10,000
Reprogramming from (-) or to prior year budget plans	517	-13,777	-10,000	.....	.....	.....
Unobligated balance available, end of year:						
For completion of prior year budget plans .....	.....	.....	.....	220,703	151,055	159,555
Available to finance subsequent year budget plans .....	.....	10,000	.....	.....	10,000	.....
Budget authority	289,851	265,552	291,900	289,851	265,552	291,900
Budget authority:						
Appropriation	289,189	265,552	291,900	289,189	265,552	291,900
Transferred from other accounts	662	.....	.....	662	.....	.....
Appropriation (adjusted)	289,851	265,552	291,900	289,851	265,552	291,900
Relation of obligations to outlays:						
Obligations incurred net .....	.....	.....	.....	253,661	325,200	293,400
Obligated balance, start of year .....	.....	.....	.....	312,638	250,905	315,105
Obligated balance, end of year .....	.....	.....	.....	-250,905	-315,105	-336,505
Outlays .....	.....	.....	.....	315,393	261,000	272,000

OBJECT CLASSIFICATION (IN THOUSANDS OF DOLLARS)

Department of the Air Force:			
Direct obligations:			
Other services .....	.....	1,500	1,400
Lands and structures .....	.....	49,027	46,800
Total direct obligations .....	.....	50,527	48,200
Reimbursable obligations:			
Lands and structures .....	.....	.....	1,800
Total, Department of the Air Force .....	.....	50,527	50,000
Allocation accounts:			
Other services .....	.....	12,000	19,000
Lands and structures .....	.....	190,603	258,000
Total, allocation accounts .....	.....	202,603	277,000
Total obligations .....	.....	253,130	327,000
Obligations are distributed as follows:			
Defense—Military:			
Army .....	.....	165,754	225,000
Navy .....	.....	36,381	50,000
Air Force .....	.....	50,527	50,000
Department of Transportation .....	.....	468	2,000

OPENING STATEMENT OF THE CHAIRMAN

Mr. SIKES. We are very happy to welcome here this morning Mr. Davy Crockett, who is appearing in lieu of Mr. Turner, whom he has ably assisted for many years. We are sorry Mr. Turner is not feeling well today. Send him our best wishes. I know he is ably represented by you, Mr. Crockett.

This is your first appearance as Acting Deputy Assistant Secretary. We give our congratulations to you. You have the appreciation of the committee for many years of good service. We will place your biography in the record. Would you please proceed.

[The biography follows:]

RUFUS L. CROCKETT—ACTING DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE
(INSTALLATIONS)

Mr. Rufus L. Crockett became Acting Deputy Assistant Secretary of the Air Force (Installations) on October 1, 1972. He is responsible for: installation planning and programing; bases and facility construction; family housing construction and maintenance; management and real estate; real property maintenance; and directs and coordinates the initiation, determination, development, formulation, and monitoring of base utilization. He was born in Lancaster County, S.C., September 6, 1917, and spent his early years there. He graduated from the University of South Carolina in 1939 with a bachelor's degree in civil engineering.

In 1940, Mr. Crockett began Government service with the Memphis District, Corps of Engineers as a surveyman-engineering aide. Two years later, he became a project engineer for the Office, Chief of Engineers.

From 1943-46, Mr. Crockett served as an officer in the U.S. Army after attending Officer Candidate School at Fort Belvoir. Upon graduation, he remained at the Fort Belvoir Engineering School and taught for 2 years. His last year in the service was spent with Permafrost Research in Alaska. Afterwards, Mr. Crockett returned to civilian life and the Office, Chief of Engineers from 1946-54, and worked as a project engineer on various overseas construction projects including Okinawa, Philippines, Turkey, Labrador and Greenland.

His next 5 years of service were spent with Headquarters, U.S. Air Force (HQ USAF) as Deputy Chief, Special Projects Branch, Construction Division; and as Associate Director of Facilities Support, Assistant Chief of Staff for Installations.

From 1959 to 1962, Mr. Crockett served with the Air Defense Command in Colorado as Associate Deputy for Civil Engineering; and as Technical Associate, Deputy for Site Activation, Ballistic Systems Division, Air Force Systems Command, California. In 1962, he returned to Headquarters, USAF as Associate Deputy Director for Civil Engineering Operations, and in 1969 became Associate Director of Civil Engineering.

In 1965 and in 1972, Mr. Crockett received the Air Force Gold Medal for Exceptional Civilian Service.

In 1967-68, Mr. Crockett attended the Air War College resident course at Maxwell Air Force Base, Ala.

STATEMENT OF ACTING DEPUTY ASSISTANT SECRETARY OF THE AIR
FORCE (INSTALLATIONS)

Mr. CROCKETT. Mr. Chairman and members of the committee, it is a pleasure for me to present the Air Force military construction program to this committee and to discuss our request for appropriations for the fiscal year 1974. We are grateful for the guidance and the support which this committee has so generously extended and we wish to assure you it is our desire to be fully responsive to that guidance. Our programs have been formulated to provide the maximum aerospace capability for the Air Force and our objective is to manage the

programs approved by Congress to achieve the highest quality facilities in the most efficient and economical manner within authorized allowances.

With me today are: Major General Reilly, the Air Force Director of Civil Engineering, who will discuss in detail the overall features of the program.

I would like to introduce Dr. Billy Welch, Special Assistant for Environmental Protection. Dr. Welch joined us approximately a year ago and is responsible for Air Force compliance with all statutory requirements relating to protection of the environment. Other Air Staff supporting witnesses are present to support individual line items in the program.

The fiscal year 1974 program that we present today includes only the most urgent of our new facility and modernization and replacement requirements. Each line item has been carefully reviewed and approved by the Air Force, the Office of the Secretary of Defense, and the Office of Management and Budget. Unfortunately many valid requirements proposed by the major commands had to be deferred on a priority basis to later years due to overall Air Force program limitations.

Our program has been carefully screened to insure that no requests have been included which have been invalidated by the realignment of missions and activities announced by the Secretary of Defense on April 17, 1973.

Our construction budget request this year totals \$424 million. It consists of \$312 million for regular base construction, \$82 million for family housing, \$10 million for the Air Force Reserve, and \$20 million for the Air National Guard. I would like to discuss the major features of each of these programs.

Our request for the Active Forces, excluding family housing, totals \$312 million. General Reilly is prepared to discuss in detail the major categories, including selected major programs. I would like, however, to underscore the major emphasis and a few significant programs and projects in the fiscal year 1974 MCP.

The programs and projects included in the fiscal year 1974 MCP give support to new and continuing missions, provide for modernization and replacement of existing facilities, and finance additional increments of advance planning and minor construction. The distribution of the program between these functional and program areas indicates the priority of our greatest needs in the next fiscal year.

We have included \$35 million to support new missions. The largest project representative of this group is the request for the first increment of operational and maintenance facilities for the Advanced Airborne Command Post at Andrews Air Force Base, \$13.5 million. These facilities are required to support the new 747 aircraft recently authorized by the Congress for the National Military Command System.

For continuing missions \$52 million is requested. The largest individual program and nationally significant effort will provide \$9 million to continue the Air Force effort in air and water pollution abatement. The remaining projects satisfy urgent deficiencies in all mission areas and construction categories, including several large electrical and other military support items for established missions. The Air Force is greatly concerned with the need for improvement in the

adequacy of its utility systems and will seek to give greater recognition to this area in the future.

For modernization and replacement of existing facilities we request your approval for projects which total \$192 million. You will note that this amount is approximately 61 percent of our total program. In prior years, we have advised the committee that our backlog of construction is in excess of \$5 billion. Accordingly, we have again allocated the major portion of the military construction program to projects which modernize, improve, or replace existing substandard facilities.

In the last 4 years we have increased the annual level of funds applied to this purpose from \$52 million to \$192 million requested this year. In this year's program we make the following requests: (1) \$31 million for the third major increment of the Air Force Logistics Command depot modernization program which was initiated in the fiscal year 1971 MCP; (2) \$29 million for new major administrative facilities, including two facilities long overdue for replacement; \$20 million for a new, urgently needed personnel support headquarters for the Air Force Accounting and Finance Center, Lowry Air Force Base, Colo., and \$4 million for the Armament Development Test Center at Eglin Air Force Base, Fla.; (3) \$25 million for modernization of medical facilities, including replacement of two professionally obsolete hospitals, the first at F. E. Warren Air Force Base, Wyo., where the existing main building was constructed in the late 1880's, and Laughlin Air Force Base, Tex., where the existing facility is World War II frame construction; (4) \$30 million for dormitories as part of our extensive program for improvement of living conditions for our enlisted personnel; and (5) \$77 million for other projects which will improve or replace deteriorated, substandard facilities.

We see in this modernization and replacement program the best combination of improvement of existing facilities for extended utilization, demolition of substandard structures which are beyond the point of economical recovery, and the provision of essential new facilities to achieve overall economy through increased responsiveness and maximum operational efficiency.

In the general support category, our program includes requests for \$18 million for advance planning and design, and \$15 million for the minor construction program, a total of \$33 million. The advance planning program provides funds for professional services for the design of future years' programs. The minor construction program provides financing for small construction projects which have an importance in the support of Air Force missions out of all proportion to their individual cost. These projects are for urgent requirements which were not identified in time for inclusion in the current military construction program and cannot reasonably wait to be programed in the next year.

INSTALLATIONS MANAGEMENT

I would like now to discuss several major elements in our management of the Air Force construction and real property programs.

INNOVATIVE CONSTRUCTION

In our last two appearances before this committee, we discussed Air Force efforts to achieve better overall construction management

by the use of innovative construction techniques. It was our desire to obtain major advantages in economy, livability, and relocatability from the extensive experimentation with factory-built structures then taking place in the building industry. I would like to summarize for you at this time our experience in this area.

The approved fiscal year 1972 MCP industrialized construction effort was developed into three facility packages: One for bachelor housing (dormitories and officers' quarters); the second for operations, administration, and training facilities; and the last, a single warehouse item.

We have successfully awarded contracts for the dormitories and officers' quarters, with the exception of two projects which involve special problems associated with large composite dormitories and their nonstandard central dining and administrative spaces. We have also awarded the operations, administration, training, and warehouse facilities packages.

As you are aware, the Air Force industrialized construction program was a pilot program in the military services. A definitive evaluation of the facilities will not be available until construction has been completed and its day-to-day living environment and maintenance data for a reasonable period of occupancy is in hand. Our experience to date indicates that the fiscal year 1972 program will meet most of our expectations. The basic three-dimension room modules for the standard dormitories and officers' quarters will provide improved living conditions within existing cost constraints. The relocatable feature provides an extra measure of flexibility to satisfy adjustments in base mission and unit relocations. After a suitable period of use, the Air Force will determine whether additional construction in this mode will be undertaken.

POLLUTION ABATEMENT

The fiscal year 1974 MCP includes \$3.7 million for air and \$6.1 million for water pollution abatement, a total of \$9.8 million for these purposes. Our request reflects our continuing revision and updating of programs as more stringent air and water quality standards and laws are promulgated at both State and Federal levels. We anticipate a continuing need in this area.

We are currently evaluating the Federal Water Pollution Control Act of 1972 to insure that future plans keep pace with the phased requirements of this law. Our past activities in water pollution control, under the full support and guidance of this committee, have placed us in good position. However, the incremental implementation of rules for the removal of specific materials from industrial waste will require a continuous upgrading of our systems. The requirement for advanced waste treatment in 1983 will require still additional facilities. The cost of meeting these new requirements will be significant. I want to assure you that the Air Force is addressing its need for well-ordered plans and programs to assure the future quality of the environment.

FAMILY HOUSING

I would like now to discuss the Air Force family housing request which is included in the Defense Family Housing Appropriation to be heard by this committee at a later date.

For the fiscal year 1974 Air Force family housing construction program, we request \$82 million. This amount will provide for the construction of 1,800 new units at eight installations, 415 mobile trailer spaces, improvement of existing facilities and essential support programs. We have elected to take a conservative approach with new construction in light of the overall reductions experienced in recent years in Air Force military strength. Also, increases in the authorized basic allowances for quarters have served to bring a greater number of community housing units within the adequacy standards of the Department of Defense maximum allowable housing cost program. While these factors are temporary, until total strength is stabilized and rentals escalate to the new basic allowances for quarters, the situation permits us to undertake a new survey of our total housing requirement. Therefore, we will continue at a conservative level and review our existing inventory for adequacy, both as to numbers and quality of units. To date our reviews have indicated a need to initiate major improvement and replacement of older units and those units which were constructed to lesser standards of size, design and materials. With the encouragement of this committee in prior years, we have increased our request for the improvements program in fiscal year 1974 by approximately 100 percent, or \$23 million. A year ago, our improvements request was just over \$11 million.

The Air Force is especially grateful to this committee for the improvements made possible through increased appropriations for minor construction projects in fiscal year 1972 and fiscal year 1973. We have been able to improve the liveability of some of our older and smaller houses with such items as range hoods, privacy walls, insulation, safety fences, garages, garbage disposals, additional storage space, and smoke and fire detectors. The great majority of this work was accomplished in units allocated to junior officers and enlisted men. We have also accomplished meaningful improvements to mobile home facilities. In fiscal year 1972, we accomplished 155 projects at a cost in excess of \$5 million; in fiscal year 1973 to date, we have approved 150 projects in excess of \$4 million.

Our family housing program has benefited greatly through the section 236 program administered by the Department of Housing and Urban Development (HUD), because it provides housing for our young married families who are otherwise ineligible for on-base housing. It is an important adjunct to our All-Volunteer Force plan. A moratorium was placed on this program effective January 5, 1973. At that time, contract authority had been secured for all but 422 of the 3,500 units allocated to Air Force bases in fiscal year 1971 and fiscal year 1972. The 1,164 units completed to date have been occupied and are well-received. There is a firm requirement for the 422 units now under the "freeze" and also the 4,100 units recommended by OSD for the Air Force in the fiscal year 1973 program.

INDUSTRIALIZED FAMILY HOUSING

A year ago we advised the committee of our progress in acquiring 2,910 family housing units under the fiscal year 1972 program through the use of industrialized housing techniques. We indicated great concern with respect to the small number of contractor responses to the request for proposals and that we were reserving judgment until pro-

posals and bids had been received and evaluated. To make a long story short, we did not get the interest and price competition we anticipated. It is our reluctant conclusion that individual procurement, either turnkey or plans and specifications would provide a more satisfactory solution at this time.

UNIT COSTS

The Department of Defense has requested in the fiscal year 1974 Military Construction Authorization Act an increase in the average unit cost for all units of family housing constructed in the United States (other than Hawaii and Alaska) from \$24,000 to \$27,500.

The current statutory limitation was set in the fiscal year 1972 family housing program and has served through two fiscal years. The existing limitation will no longer provide a house with the scope and amenities authorized by the Congress due to the overall rise in prices for labor and materials, due particularly to the severe shortages in lumber and other residential building products. The Department of Defense is also requesting adjustments in authorized maximum space limitations to permit construction of a slightly larger house in accord with the needs of an All-Volunteer Force and to obtain equality with conventional standards. The Air Force is especially concerned because 1,767 of 1,800 units requested in the fiscal year 1974 program are four-bedroom units, 1,765 for airmen and two for officers. Without an increase in the average unit cost, we feel that it will not be possible to place this program under contract without unacceptable degradation in scope and appurtenances.

In view of these considerations, the Air Force requests the committee's support for the larger unit cost.

RESERVE FORCES

Our request for the Reserve Forces totals \$30 million and provides for the Air National Guard, \$20 million and for the Air Force Reserve, \$10 million.

AIR NATIONAL GUARD

The appropriation requested for the Air National Guard military construction program for fiscal year 1974 is larger by \$4 million than the request 1 year ago. This amount will provide \$16 million for new facilities and \$2 million each for advance planning and minor construction.

The major emphasis in the fiscal year 1974 MCP is to provide facility support for the modernization of both flying and non-flying units assigned to each of the 50 States, the District of Columbia, and Puerto Rico. During the past few years, equipment modernization in the Air National Guard has created a serious facility shortage. The shortages arise especially from the introduction of the more sophisticated aircraft and electronic systems into the inventory, the need for new operational, maintenance, and training support facilities, and provision for protection of the environment.

AIR FORCE RESERVE

Our military construction appropriation request for the Air Force Reserve for fiscal year 1974 is \$10 million—\$9 million is for major

construction, \$800,000 for planning and design, and \$200,000 for minor construction. This represents an increase of \$3 million above the appropriation for Air Force Reserve military construction for fiscal year 1973.

This committee has been concerned as to the adequacy and timeliness of programs for the support of the Air Force Reserve Forces. We are pleased to report that 14 of the 18 original fiscal year 1973 projects are under contract and bids will be opened in the next few weeks for the remaining projects. Of \$9 million available for obligation in fiscal year 1973, obligations are expected to total over \$7 million by June 30, 1973.

The increased level of funding for the Air Force Reserve will provide the facilities necessary to support the newer aircraft systems assigned over the past few years.

This concludes my statement, Mr. Chairman. General Reilly has a short statement and then we will be happy to provide any additional information and answer any questions of the committee.

Mr. SIKES. Thank you very much, Mr. Crockett.

General Reilly, we are pleased to see you again. You have an excellent record in your dealings with this committee. It is a privilege to work very closely with you and your associates. We are impressed by the knowledge all of you have shown of the military construction program. The committee wishes to compliment you on the manner in which you and the Air Force carry out your military construction program.

Will you proceed with your statement?

STATEMENT OF DIRECTOR OF CIVIL ENGINEERING

General REILLY. Mr. Chairman, and members of the committee: It is a pleasure to appear before this committee again, to present the Air Force fiscal year 1974 military construction program.

The primary objective of this program is to support the force and deployment goals presented to the Congress in the Air Force Chief of Staff's posture statement. The bill now before your committee requests appropriation for projects valued at \$423,851,000 for the Air Force, with major subdivisions as follows:

Regular military construction-----	\$311, 900, 000
Military family housing-----	81, 951, 000
Guard/reserve construction-----	30, 000, 000
Total -----	423, 851, 000

My comments today concern the \$312 million of projects for the regular military construction program since it is my understanding that family housing and Reserve Forces construction will be the subject of separate hearings.

The major share of our request is for construction within the United States with only about 10 percent for overseas construction. Again this year's program does not include funds for construction in Southeast Asia.

LONG RANGE PLANNING

Our program has been keyed to long range planning. We have made engineering and economic evaluations of each item to provide a pro-

gram of new construction balanced to support new and changing missions, and to modernize existing facilities to adequately and economically support our most pressing force and mission requirements scheduled over the next 5 years. Consistent with that objective, our request includes some \$192 million for facilities modernization, or about 60 percent of the total program as compared to some 40 percent last year. Again, as in the past, we've looked in depth at our total long range requirements, using professional engineering and economic evaluation of each item in concert with required phasing of operational needs to arrive at a realistic and responsive program of facilities support. Projects in the fiscal year 1974 request now before you have undergone extensive review and represent our highest priority requirements for funding.

COMPLETION OF REQUIREMENTS

Consistent with the committee's interest, line items requested in this year's program will, for the most part, satisfy requirements for the type of facility to be constructed at each location. Of the 185 line items in the program, 157 will complete the respective facility requirement. For the remainder, phased construction is necessary to coincide with equipment delivery or mission buildup, or the construction is of such magnitude and cost as to make one-time programing impractical.

COST SAVINGS

Economic evaluations have played an important part in the selection process for each item in this program. Acceptable alternatives have been reviewed for new construction to determine optimum combinations of siting, materials, and construction methods. Decisions to replace or modernize existing facilities have been based primarily on economic considerations. Upon completion, the projects will provide savings on the order of \$56 million initial cost avoidance and \$8 million annually thereafter. A portion of these anticipated savings result from removal of aged and obsolete facilities from our inventory. Most of these were constructed over 30 years ago with a design life of 5 years using materials consistent with that economic life. These facilities are now functionally inadequate and require constant and expensive maintenance for continued use. We have disposed of 5,300 obsolete facilities, containing over 14 million square feet, in the last 3 years.

OBLIGATION OF FUNDS

We have further intensified our emphasis on early award of contracts for approved construction. The objective has been to provide the Air Force with these needed facilities as early as possible after the Congress has appropriated funds.

I am pleased to report to this committee that the first of the fiscal year 1973 military construction program projects went under contract in January 1973, just 90 days after the appropriation law was signed. We anticipate that the major portion of the program will be under contract before the end of this fiscal year and the balance prior to the end of the calendar year.

We now estimate that there will remain about \$161 million in prior year construction appropriations unobligated on 30 June 1973. This represents a downward trend from the amount carried over into fiscal year 1973, which was \$220 million. Significant effort will be exerted to continue this trend into the future.

In analyzing this carryover in light of our emphasis on early contract award, we conclude that approximately \$100 to \$125 million is the minimum feasible range of carryover to provide for effective management of construction beyond the end of the fiscal year and prior to the following year's appropriations.

PERSONNEL SUPPORT

Our concern for our people is expressed in the fact that more than 40 percent of the request now before you is in direct or related support of personnel. We must continue to improve living conditions, on base support and health care for our personnel. Toward that end, we have included \$125.1 million for these facilities. Of that amount, \$39.7 million is for construction of 4,768 new dormitory spaces and 60 new bachelor officer accommodations, and for improvement of 4,757 existing dormitory spaces. In addition, we are requesting \$28.4 million for on-base personnel support facilities such as commissaries, gymnasiums, chapels, and open messes. Modernization and replacement of outmoded and obsolete medical facilities are being given added emphasis in this year's military construction program. We are requesting \$37 million to initiate a phased program for medical facilities that will insure modern and efficient health care. Another very important personnel related project in this program is the replacement of the Air Force Accounting and Finance Center at a cost of approximately \$20 million.

DEPOT PLANT MODERNIZATION PROGRAM

As mentioned by the Secretary, projects to support our depot plant modernization are an important part of the program before you. Included is another increment of depot plant modernization valued at \$31.4 million for construction of 16 projects at 5 air material areas.

COST ESTIMATES AND DESIGN STATUS

In preparing our program, we seek to refine our cost estimates on individual projects to a careful projection of actual contract costs. This entails as much advanced individual project engineering as practicable, a sounding on inflationary trends and anticipated market conditions, and an analysis of our most recent bidding experience. We have taken this same approach for the last several years. Actual bidding experience versus our estimates has shown it to be a sound approach. Planning of the fiscal year 1974 program is well advanced and we have a high degree of confidence in the estimates now before the committee.

ENVIRONMENTAL PROTECTION

As noted in the Secretary's opening statement we have \$9.8 million set aside in this appropriation request for pollution abatement projects. With the excellent support of this committee we have already

received sufficient financing of our environmental program to enable us to meet the initial pollution abatement goals established by President Nixon in 1970. However, as air and water quality standards grow more stringent and as new environmental legislation is enacted, we shall have to present you with additional fiscal requirements as we are this year.

LAND USE PLANNING

Consistent with long range planning, discussed earlier, we are continuing to pursue the air installations compatible use zone concept presented last year. At that time, we oriented the program toward three bases involving 20,000 acres. This year, we are extending the concept to 13 additional bases involving over 78,000 acres. Also, we are extending our efforts to a much broader application of land use planning. This occurs as we determine the full impact of recent and proposed legislation on environmental protection and land use policies.

When our air bases were sited years ago, we selected areas considerably removed from urban development where noise levels and accident potentials were not a problem to adjacent communities. We were pretty much of an island to ourselves. Now, as urban development has evolved in our direction, we must discard our insular thinking and consider our air base as part of a larger community. We must plan on-base land usage and influence off-base land usage in a single concept.

To this end, we have recently established a multidisciplined capability within the Air Force. We will continue to emphasize our air installation compatible use zone requirements. This will carry us further toward our objective of encouraging only that use of land immediately adjacent to airfields that will be least sensitive to high noise levels and accident potentials. In this way, we believe we can preclude encroachment that will adversely affect our flying missions.

Our primary efforts in obtaining compatible land usage in the vicinity of our air bases continues to be directed toward encouraging local communities to enact suitable zoning ordinances. We have had generally favorable reaction to this approach with last year's program, and expect zoning ordinances to be enacted soon at the bases listed in our fiscal year 1973 program.

Concurrently with our efforts on the compatible use zone concept, we are devoting our energies to develop programs relating to community centers, installation renewal, residential development and parks and open spaces. In this effort, we will be working with local, State, and other Federal agencies concerned with total community development.

In essence, our land use program is oriented toward optimum use of the land in the area where our bases are located. Our perimeter fences confine only the area under our direct control. Our planning reaches out into the adjacent community.

PRIORITY OF PROJECTS

At the request of the committee we have provided the relative priority for projects in this program. The determination of priorities is an exceedingly difficult task since all projects are urgently needed to provide facilities in support of Air Force missions and objectives.

In conclusion, Mr. Chairman, we wish to assure you and your committee that this program represents our very best construction proposals within the confines of a limited budget. Projects for improved bachelor housing, medical care facilities, and community support items amount to more than a third of the total program. In addition, we are continuing to give priority support for the operational mission. The fiscal year 1974 construction program has been carefully designed to meet new and changing missions while holding a tight reign on expenditures. Capital investments are proposed only for those installations programed to remain in the inventory for the foreseeable future. Attached to the printed copies of my statement are narrative descriptions of the entire program, broken out by category of facilities, by command totals, and by mission elements supported.

Mr. Chairman, I thank you for the opportunity to appear once again before this committee. If there are any questions about our program, we will be pleased to provide additional information.

[Attachments to statement follow:]

TABLE I.—*Department of the Air Force fiscal year 1974 military construction appropriation program for the active forces*

Section 301—Command	<i>Thousands</i>
Inside the United States :	
Aerospace defense command.....	\$8, 794
Air Force communications service.....	3, 963
Air Force logistics command.....	60, 934
Air Force systems command.....	9, 062
Air training command.....	56, 232
Air university.....	5, 462
Alaskan air command.....	8, 658
Headquarters command, USAF.....	18, 435
Military airlift command.....	12, 416
Pacific air forces.....	7, 331
Strategic air command.....	25, 738
Tactical air command.....	17, 703
U.S. Air Force Academy.....	645
Pollution abatement.....	9, 070
Air installation compatible use zones.....	2, 000
Total inside the United States.....	246, 493
Outside the United States :	
Aerospace defense command.....	1, 355
Pacific Air Forces.....	11, 788
U.S. Air Forces in Europe.....	15, 925
U.S. Air Forces southern command.....	1, 038
U.S. Air Force security service.....	221
Pollution abatement.....	750
Worldwide communications.....	330
Total outside the United States.....	31, 407
Classified (section 302) : Radar support facility—various worldwide...	1, 000
Support:	
Planning and design.....	18, 000
Minor construction.....	15, 000
Total support.....	33, 000
Total appropriation program.....	311, 900

TABLE II.—DEPARTMENT OF THE AIR FORCE, FISCAL YEAR 1974 MILITARY CONSTRUCTION APPROPRIATION PROGRAM—ACTIVE FORCES—SUMMARY BY PROGRAM ELEMENT

	Amount (millions)	Percent of total
Strategic Forces.....	\$44.8	14.4
General purpose Forces.....	38.3	12.3
Intelligence and communications.....	32.1	10.3
Airlift and Sealift.....	14.1	4.5
Research and development.....	16.6	5.3
Central supply and maintenance.....	36.8	11.8
Training, medical and other general personnel activities.....	71.6	22.9
Administration and associated activities.....	57.6	18.5
Total.....	311.9	100.0

TABLE III.—DEPARTMENT OF THE AIR FORCE, FISCAL YEAR 1974 MILITARY CONSTRUCTION APPROPRIATION PROGRAM—ACTIVE FORCES—PROGRAM BY CONSTRUCTION CATEGORIES

	Amount (millions)	Percent of total
Operational.....	\$52.6	16.9
Training.....	7.8	2.5
Maintenance.....	36.9	11.8
Research, development and test.....	10.0	3.2
Supply.....	11.7	3.8
Hospital and medical.....	36.7	11.8
Administration.....	31.2	10.0
Bachelor housing.....	39.7	12.7
Community.....	28.4	9.1
Utilities.....	21.9	7.0
Real Estate.....	2.0	0.6
Support.....	33.0	10.6
Total.....	311.9	100.0

NARRATIVE CATEGORY ANALYSIS

Operational facilities—\$52.6 million

This category represents 16.9 percent of the appropriation request. It contains such essential items as airfield pavements, aircraft fueling support facilities, flight operations buildings, communications facilities, and navigational aids. Important items in this category are the second increment of the technical intelligence operations facility for \$11 million at Wright-Patterson AFB; special aircraft support facilities at Andrews AFB for \$13.5 million; a station composite support facility at Cape Newenham AFB, Alaska, for \$5.4 million; and an airfreight terminal complex at Hickman AFB for \$4.5 million.

Training facilities—\$7.8 million

Training facilities included in this construction program cover a range of Air Force training activities such as training for pilots, aircrews, and base maintenance personnel. Major projects are: flight simulator training facility at Reese AFB, Tex., for \$2.8 million, a base maintenance training facility at Shepard AFB, Tex., for \$2.8 million; and a flight simulator training facility at Luke AFB, Ariz., for \$.9 million.

Maintenance facilities—\$36.9 million

The maintenance category represents 11.8 percent of our request. It contains facilities to support aircraft and engine maintenance activities, special purpose shops, as well as shops to support maintenance of base facilities. Also included in this category are 10 projects totaling \$22 million for modernization of Air Force Logistics Command's depot facilities. This category also provides various maintenance and storage facilities for short-range attack missiles at two locations for \$1 million.

Research, development, test, and evaluation—\$10.0 million

A vigorous R. & D. program is an investment in our future security. This segment of our construction request provides the buildings, laboratories, and specialized test structures that are required in the conduct of a quality R. & D. program. An aircraft fuels and lubricants laboratory for \$4.9 million; alteration

of an aircraft engine components research facility for \$1.9 million; and a minor alteration and expansion of the human impact lab are major projects located at Wright-Patterson AFB, Ohio. Other major projects are a weapons guidance test facility at Holloman AFB for \$0.9 million and alteration of a rocket propulsion research laboratory at Edwards AFB for \$0.9 million.

Supply facilities—\$11.7 million

The major portion of this category is for 2 projects totaling \$5.9 million for modernizing Air Force Logistics Command depot facilities.

Other supply facilities include ammunition storage facilities at two PACAF locations, diesel fuel storage for remote sites in Alaska, a ballistic missile processing facility at Hill AFB, Utah, for \$3.0 million and a base supply facility at Reese AFB, Tex., for \$1.0 million.

Medical facilities—\$36.7 million

This year's program is directed toward expansion and alteration and replacement of hospital facilities to provide proper clinical and dental care. Composite medical facility projects are included for: Richards-Gebaur AFB, Mo., at \$3.8 million; Tinker AFB, Okla., at \$3.9 million; Maxwell AFB, Ala., at \$4.9 million; Francis E. Warren AFB, Wyo., at \$5.8 million; Laughlin AFB, Tex., at \$4.6 million; and Upper Heyford RAF Station, United Kingdom, at \$5.5 million. Also included are two aeromedical staging facilities; one at Scott AFB, Ill., for \$2.0 million and the other at Andrews AFB, Md., for \$1.7 million. A dispensary at Lackland AFB, Tex., for \$0.5 million at Keesler AFB, Miss., for \$1.6 million, Barksdale AFB, La., for \$1.2 million, and Shaw AFB, S.C. for \$1.1 million, are also included in the medical program.

Administrative facilities—\$31.2 million

The most significant item in this category is the construction of an Air Force accounting and finance center at Lowry AFB, Colo., for \$20.4 million.

In our continuing objective to House management and administrative personnel in facilities that will enable them to achieve maximum productivity, we are requesting modern efficient base personnel offices at Nellis AFB, Nev., for \$1.9 million and at Mather AFB, Calif., for \$1.7 million.

Other significant administrative facilities included in this category are: An armament development test center headquarters facility at Eglin AFB, Fla., for \$4 million and a data-processing facility at Randolph AFB, Tex., for \$1.5 million.

Community facilities—\$28.4 million

Community facilities are requested in order to provide for the welfare and morale of our military personnel and dependents, both in the United States and overseas. This category includes projects for religious activities, commissioned, noncommissioned officers' and airmen open messes, a base post office, and recreational facilities. It also includes commissaries in the amount of \$7.4 million at three locations in the United States where existing facilities are grossly inadequate and three dependent schools at overseas locations for \$7.4 million.

Bachelor housing—\$39.7 million

The provision of suitable living quarters for our bachelor enlisted and officer personnel is viewed as a priority objective by the Air Force. This year \$39.7 million, or 12.7 percent of our request, is for the construction of 4,768 new dormitory spaces at a cost of \$25.7 million, and 60 new officers' quarters at a cost of \$1.2 million. We are modernizing 4,757 existing dormitory spaces for \$11.3 million. Included in this program are a student housing composite building at one of our major technical training centers, Keesler AFB, Miss., for \$5.1 million and a composite recruit training and housing facility at Lackland AFB, Tex., for \$5.1 million, each housing 1,000 men. Buildings of these types provided in earlier programs have proven to be extremely effective. This is a continuation of a phased program to replace the old World War II barracks with modern composite structures.

This category of projects also includes air-conditioning for airmen dining halls at Lackland AFB, Tex., for \$1 million, and a new dining hall for airmen at Webb AFB, Tex., for \$0.6 million.

Utilities—\$21.9 million

Our utility package includes pollution abatement projects as well as projects to install the necessary utility support for existing and programmed construction. This year's increment of projects for air pollution abatement is \$3.7 million; and for water pollution abatement is \$6.1 million.

Real estate—\$2 million

The only item in this category is the \$2 million requested for acquisition of restrictive easements to protect our bases from encroachment by incompatible land use.

Support—\$33 million

The support portion of our request amounts to 10.6 percent of the program and consists of \$18 million for planning and design, and \$15 million for minor construction projects.

LONG-RANGE PROGRAM

Mr. SIKES. These have both been useful statements. They are well prepared and contain information helpful to the committee.

SUCCESS IN AWARDING PRIOR PROGRAMS

I am impressed by your statement, General Reilly, that the first of the military construction projects went under contract just 90 days after the appropriation law was signed. You say also that the major portion of the program will be under contract before the end of the fiscal year. You have done very well, but what were the principal difficulties you encountered? Are you getting enough bidders? Is there a spirited competition?

General REILLY. Yes, sir. We have had excellent success with both 1972 and 1973 programs. I think we are averaging something like six bidders per project.

Mr. SIKES. Are the bids well within the estimate range?

General REILLY. Yes, sir. I think as of the middle of this month we had something like 42 or 43 percent of our fiscal 1973 program under contract, and our costs, based on bids, were running about 96 percent of the programed amount, which we feel is a very good cost.

Mr. SIKES. Has the inflationary trend exceeded your estimate? Are you within the ball park in your estimate of inflation?

General REILLY. I think the cost estimating system we have now, where we are permitted to project our costs to the time of actual contract award, has been taking care of the inflationary trend.

Mr. SIKES. Are you overestimating the amount of inflation?

General REILLY. No, sir, I don't think we are. For this particular program before the committee we are projecting about an 8 percent increase from January 1973 until the spring of 1974. That is roughly 6½ percent during 1973 and a portion of the following year. That is somewhat less than what we have been projecting in the past.

AIR FORCE PROGRAM LEVEL

Mr. SIKES. Your program is the smallest of the three services. Does that mean that the Air Force, being a newer service, has a higher percentage of modern facilities and less requirement for replacement and modernization?

General REILLY. Mr. Chairman, I think the larger programs of the Army and the Navy reflect their high needs for modernization, especially in the troop housing areas.

I think the Army alone has approximately \$400 million in the 1974 program just for troop housing. But the level of our program is carefully weighed within the context of the overall Air Force budget, and

I think with the level of modernization that we have identified for 1974 of some \$192 million that we can make up some lost ground.

Mr. SIKES. The Air Force has been a new, young, and competitive force and has never hesitated to ask for what it wanted. Someone must have told you you don't get poor from asking. But the size of your program is smaller than that of the other services, and even though we are spending what some would call a considerable amount of money on construction, I think that all of us are fully cognizant of the fact that there are many bases, including Air Force bases, which still are predominantly of World War II temporary construction. We must be getting close to the end of the line for getting any satisfactory utilization out of a great many of those facilities. And they are not worth the maintenance money we are putting in them.

General REILLY. Yes.

FACILITIES DEFICIT

Mr. SIKES. Last year you estimated the deficit for the regular Air Force as \$5.9 million. Can you tell us more precisely where you stand now with respect to the total facilities deficit?

Mr. CROCKETT. Yes, sir. Out of the total Department of Defense deficit that has been reported at \$23.2 billion, the Air Force portion is \$6.8 billion, which is roughly a billion more than last reported. The increase results primarily from a relook at our modernization and replacement requirements. It supports the observation you have made that many older structures exist on our bases and need improvement. However, looking ahead to future years, the new figure also contains a substantial figure for cost escalation.

Mr. SIKES. I would like to have for the record a chart showing current deficit by category of facility, what you expect to be able to accomplish in fiscal years 1974 through 1978, and what your remaining deficit is expected to be at the end of that period.

Mr. CROCKETT. All right, sir.

[The information follows:]

CHART OF CURRENT AND PROJECTED DEFICITS BY CATEGORY

[In millions of dollars]

Category	Deficiency	Proposed MCP's, fiscal years 1974-78	Remaining deficiency
Operational.....	815	239	576
Training.....	164	50	114
Maintenance.....	714	178	536
R.D.T. & E.....	779	85	694
Supply.....	495	120	375
Medical.....	306	211	95
Administrative.....	673	83	590
Bachelor housing.....	714	228	486
Community.....	1,012	147	865
Utilities.....	628	105	523
Real estate.....	67	3	64
Support.....	500	180	320
Total.....	6,867	1,629	5,238

¹ A portion of this deficiency would be alleviated by use of nonappropriated funds.

Mr. SIKES. From the chart provided last year, it appeared that you had sizable deficits in all areas except real estate, and particularly in operation, maintenance, R.D.T. & E., supply, administrative, bachelor housing, and community support facilities, and in utilities. Is this still the case?

Mr. CROCKETT. Yes, sir; that is still essentially the case. We have sizable deficiencies in all categories.

PRIORITIES FOR FUTURE PROGRAMS

Mr. SIKES. Where are you proposing to put major emphasis over the next 5 years?

Mr. CROCKETT. We will place major emphasis in the following categories, in this order: (1) operational facilities—projects will support both continuing missions and new missions; (2) medical facilities—the Department of Defense has recognized the need for major modernization and replacement of medical facilities; (3) bachelor housing and other on-base community support facilities to provide essential support of our military personnel and their families; (4) maintenance and supply facilities—we will continue the logistical depot modernization program; and, finally, (5) replacement and upgrading of utility systems.

As one who has spent many years charged with responsibility for the maintenance and repair of our utility systems, I know that there is a large and urgent requirement to upgrade our underground utilities systems in future years. It is often hard to find these problems until they break out. We have included important projects in this program and we will continue to do so in future years.

BACHELOR HOUSING DEFICIT

Mr. SIKES. What is the total deficit in bachelor housing?

General REILLY. About 43,000 spaces, Mr. Chairman, a great majority (35,000 spaces) of that being for bachelor airmen.

Mr. SIKES. At the rate that you are going now in modernization and replacement facilities, how long will you need to overcome that deficit?

General REILLY. Mr. Chairman, we are moving ahead with bachelor enlisted housing at something over 4,000 units a year. The actual deficit in bachelor enlisted housing is something over 35,000. So we are 7 or 8 years away.

Mr. SIKES. You are not using the open bay type housing anywhere, are you?

General REILLY. Except for recruits at Lackland Air Force Base and some overseas locations. For the most part, we have room-configured accommodations.

HOSPITAL MODERNIZATION

Mr. SIKES. What is the general picture on hospital facilities, and at how many major bases are you still using the World War II cantonment type hospitals?

Colonel BAIRD. We have about 14 bases remaining with about 17 facilities.

Mr. SIKES. The cantonment type hospital is an expensive hospital to maintain. It is inefficient in its operation. Over what period of time do you propose to phase out all of that type of hospital?

Colonel BAIRD. Mr. Chairman, we look forward to being able to phase it out in about a 5- or 6-year period.

Mr. SIKES. What level of medical facilities programming do you anticipate in the years immediately ahead?

Colonel BAIRD. Mr. Chairman, we anticipate about a \$42 million program per year for the next 5 years. That is exclusive of the test bed hospital, the new generation military hospital, which currently is estimated to cost about \$109.

HOSPITAL WORKLOAD

Mr. SIKES. What has been your experience with hospital workload for inpatients and outpatients in recent years?

Colonel BAIRD. Mr. Chairman, we have noted a moderate reduction in our inpatient workload and a near stabilization of our outpatient workload in the past few years.

Mr. SIKES. You attribute that to what?

Colonel BAIRD. The primary reason is the shift in emphasis on medical care, much as they are experiencing in the civilian community, sir.

MEDICAL SUPPORT FOR RETIRED PERSONNEL—CHAMPUS VERSUS MILITARY HOSPITAL CONSTRUCTION

Mr. SIKES. How much in the way of new hospital facilities are you programming for retired personnel?

Colonel BAIRD. We are programming our space for retired in our facilities based on Department of Defense guidelines which say we are authorized to add 5 percent additional space in nonteaching hospitals and 10 percent additional space in teaching hospitals. The purpose is to provide teaching experience for our training program.

Mr. SIKES. Do you anticipate greater or less reliance on CHAMPUS in the years immediately ahead?

Colonel BAIRD. We anticipate in the near future that we will have greater reliance on CHAMPUS to a small degree. Later when we begin to see the benefits of our modernization program and the acceleration we are getting we expect CHAMPUS will drop.

TRISERVICE MEDICAL REGIONALIZATION

Mr. SIKES. What has been the effect of the triservice medical regionalization program upon the Air Force's requirements for specialists and its need for additional facilities?

General REILLY. The triservice medical regionalization program, which has been evolving for slightly less than 1 year, has had a demonstrable, but not yet readily quantifiable effect on Air Force requirements for medical specialists and for new facilities. The regionalization program has opened up an active dialog between supervisory medical personnel within each region so that the specialists and existing facilities are maximizing their delivery of health care. For example, in the Virginia tidewater region, we have developed a program

to support Air Force personnel and their families at remote radar sites on the Virginia capes through the use of a Navy mobile optometry van. This has eliminated the need for these patients to travel back to Langley Air Force Base for care, and has increased the availability of optometric care for beneficiaries at USAF Hospital Langley. The commanders of our medical centers at Lackland and Travis Air Force Bases also report greater utilization of their specialists and unique facilities by other service patients since the regionalization program began.

We are developing our medical construction program with regionalization as an element in our planning. The health facility projects in this request and future requests are all validated by the Office of the Assistant Secretary of Defense—Health and Environment—within the context of their consistency with regional patterns of health care delivery and total triservice regional requirements.

Mr. SIKES. Provide for the record the past, present, and projected workload for each of the Air Force's major hospitals.

Mr. LONG. Mr. Chairman, I wonder if on item 25 we could have a breakdown as between beds and out-patients?

Mr. SIKES. Yes.

General REILLY. Sir, the workload data for the Air Force's major hospitals, which will be provided, is stated as bed related and as outpatient workloads. Bed workloads are measured as average daily patient loads, and outpatient workloads are measured as outpatient visits per year.

[The information follows:]

The Air Force has six area medical centers, each with over 300 beds, which can be defined as major hospitals. The workload statistics for these major hospitals follow:

FISCAL YEAR 1972

Area medical center	ADPL ¹	Outpatient visits	X-ray	Lab	Prescriptions
Andrews AFB, Md. (USAFMC Malcolm Grow).....	253	436, 200	482, 932	1, 030, 828	518, 751
Keesler AFB, Miss. (USAFMC Keesler).....	329	397, 320	236, 500	700, 821	433, 203
Lackland AFB, Tex. (USAFMC Wilford Hall).....	823	870, 860	541, 365	2, 286, 410	1, 062, 778
Scott AFB, Ill. (USAFMC Scott).....	192	229, 935	191, 042	390, 724	171, 108
Travis AFB, Calif. (USAFMC David Grant).....	269	357, 002	232, 128	961, 063	279, 788
Wright-Patterson AFB, Ohio (USAFMC Wright-Patterson).....	295	381, 680	213, 999	707, 146	343, 321

ESTIMATED FISCAL YEAR 1973

Andrews AFB, Md. (USAFMC Malcolm Grow).....	246	449, 921	487, 526	1, 229, 343	580, 396
Keesler AFB, Miss. (USAFMC Keesler).....	319	422, 686	250, 475	782, 054	481, 437
Lackland AFB, Tex. (USAFMC Wilford Hall).....	780	871, 500	581, 323	2, 764, 721	956, 178
Scott AFB, Ill. (USAFMC Scott).....	196	233, 350	168, 346	463, 201	180, 884
Travis AFB, Calif. (USAFMC David Grant).....	285	397, 000	260, 158	1, 059, 735	302, 199
Wright-Patterson AFB, Ohio (USAFMC Wright-Patterson).....	270	354, 065	204, 146	731, 792	382, 016

PROJECTED FISCAL YEAR 1974

Andrews AFB, Md. (USAFMC Malcolm Grow).....	263	454, 000	509, 399	1, 278, 339	595, 378
Keesler AFB, Miss. (USAFMC Keesler).....	315	423, 000	249, 643	815, 000	490, 000
Lackland AFB, Tex. (USAFMC Wilford Hall).....	785	875, 000	620, 000	3, 100, 000	965, 423
Scott AFB, Ill. (USAFMC Scott).....	200	237, 000	171, 252	520, 000	190, 000
Travis AFB, Calif. (USAFMC David Grant).....	300	410, 000	293, 338	1, 122, 606	323, 000
Wright-Patterson AFB, Ohio (USAFMC Wright-Patterson).....	270	365, 000	208, 606	744, 237	424, 306

¹ Average daily patient load.

BACHELOR PERSONNEL USE OF OFF-BASE SUPPORT

Mr. SIKES. What is the present policy on optional residency off-base for the Air Force's bachelor officers and enlisted personnel?

General REILLY. The Air Force would like to see a policy whereby all E-4's and above and officers could reside off-base with basic allowance for quarters at their option. However, by law we can only extend that choice to O-4's, that is major and above.

Mr. SIKES. How has your present policy and the sizable increases in the pay of enlisted personnel and lower rank officers affected your bachelor housing deficit?

BACHELOR HOUSING DEFICIT

General REILLY. It has been reduced, Mr. Chairman. We were indicating last year a 72,000-space deficiency for airmen and a 14,000-space deficiency for officers. This year it is down to 35,000 and 8,000 respectively.

Mr. SIKES. In the event that OSD allowed you greater flexibility with regard to optional off-base living, would it further reduce your bachelor housing deficit?

General REILLY. Yes, sir, I think it would.

Mr. SIKES. Do you have an estimate of that effect?

General REILLY. No, sir, I don't. I think eventually it would reach the point to where our future construction requirement would only be for students and transient duty personnel except in overseas and remote locations.

Mr. TALCOTT. The bachelor housing deficit has been reduced primarily because of a decrease in the number of Air Force personnel rather than an increase in the number of housing units. Isn't that true?

General REILLY. That has been a factor, yes.

MODERNIZATION OF BACHELOR QUARTERS

Mr. TALCOTT. We haven't made as much progress toward building new units or modernizing the old units as I think we ought to. I would like to commend the services on their modernization programs. We have literally billions of dollars of permanent facilities on hand. If we can modernize these we should save considerable amounts of money as compared to going out and building new units. We have this huge inventory of facilities already available to us, probably located in the right places but needing modernization. I am glad to see you are putting some emphasis there.

General REILLY. I think the figures are correct. We have about 77,000 that we feel are upgradable. They are substandard in some way now but can be made adequate economically. This carries with it a cost of something over \$200 million to do all of that. I certainly agree with you.

Mr. TALCOTT. Do you ever talk with the Housing and Urban Development and private agencies about their modernization programs? I think they and other people are beginning to appreciate the huge inventories of housing in many downtown areas, places that have been vacated and have become dilapidated. With modernization you can

make them much more useful, and usually they are in a better location than some of the new projects. The new developments are further away from main facilities and further away from work. There is great potential in modernization.

General REILLY. Yes, sir.

PLANNED PERSONNEL STRENGTHS

Mr. SIKES. What number of military personnel is the Air Force planning for end-fiscal year 1974?

General REILLY. The fiscal year 1974 military end strength projected in the fiscal year 1974 President's budget is 666,357.

Mr. SIKES. What is the long-range personnel strength which the Air Force is currently planning? Upon what figure is your construction program based?

General REILLY. The long-range personnel strength which the Air Force is currently planning is approximately the level projected for end-fiscal year 1974: 666,357.

The fiscal year 1974 military construction program is based on end strength projections for each individual base. However, end strength is just one of the criteria used for determining requirements. Some other criteria are (a) condition and availability of existing facilities, (b) health, safety, and environmental factors, and (c) changing mission requirements and authorized force levels.

Mr. SIKES. Provide for the record the long-range strength in terms of squadrons, et cetera, upon which your fiscal year 1974 construction program is based. Indicate any areas in which your planning numbers do not coincide with the Department of Defense's approved 5-year plan.

[The information follows:]

LONG-RANGE STRENGTH BREAKOUT BY ORGANIZATIONAL UNITS

(The long term active force structure upon which the fiscal 1974 construction program is based follows. This program coincides with the approved Department of Defense program.)

Type:

Strategic Forces:

Bomber	-----	<i>Squadrons</i>
Tanker	-----	
Reconnaissance	-----	
Interceptor	-----	
Missile	-----	
Airborne warning and control	-----	

General-purpose forces:

Tactical fighter	-----
Other attack	-----
Reconnaissance	-----
Tactical airlift	-----
Aeromedical airlift	-----
Special operations	-----
Tactical air control systems	-----
Tactical drone	-----
Airborne command post	-----

Intelligence and communications :

Cryptological activities-----	[Classified infor-
Technical sensor collection-----	mation deleted.]
Mapping and charting-----	
Weather -----	
Rescue -----	
Airborne command post-----	

(Not assigned in squadron units. 129 aircraft assigned to activity.)

Airlift (industrially funded) :

Aeromedical airlift-----
Strategic airlift-----
Military airlift (special mission)-----

MODERNIZATION

Mr. SIKES. Your fiscal year 1974 request contains a much greater amount for modernization than has been true in past years. Do you feel that at the rate of \$192 million, which you hope to achieve this year, you will be staying even, or catching up, or will you still be falling behind?

General REILLY. Mr. Chairman, if we have roughly \$200 million a year we will catch up. We still have a very large deficit.

Mr. SIKES. When would you catch up?

General REILLY. It would take many years even at that rate. Our total modernization requirement is something over \$3 billion. But the \$192 million represents about an \$80 million increase over our program of last year.

FAMILY HOUSING DEFICIT

Mr. SIKES. What is the estimated current deficit of family housing units?

General REILLY. Mr. Chairman, our programable deficit, the deficit by which we program new housing, is about 20,000 family housing units.

Mr. SIKES. What do these units equate to in terms of dollars?

General REILLY. At roughly \$30,000 per unit, it will take about \$600 million to construct all of them.

Mr. SIKES. At the current rate when would you achieve that?

General REILLY. At our rate now, which is running well under \$100 million a year, we have a long way to go.

TRAILER SPACES

Mr. SIKES. On the subject of trailers, we had a flurry of gusty winds at many places over the weekend, and the press called them all tornadoes. At least insofar as Florida is concerned there were very few tornadoes, if there were tornadoes at all. I think they were just very strong gusty winds. But they turned over some trailers. That is the extent of the damage. No people were killed. Most of them are not tied down and many are of very flimsy construction, generally made without the benefit of building codes. Is it your policy on trailer parks to insure the maximum protection possible for the occupants? Do you require that trailers be tied down? Do you require any code of inspection on the quality of the trailer? I recall there was a serious tornado

some 8 or 10 years ago in the Fort Walton Beach area, with damage primarily to trailers. Quite a few trailers were bounced around in an actual tornado.

General REILLY. Yes.

Mr. SIKES. What do you do to prevent that, anything?

Mr. JOHNSTON. About 2 years ago we instituted a policy where they have to apply tiedowns to the trailers. They are required to either hook them up with cables or in some kind of way tie the trailers underneath.

You remember the hurricane at Keesler 3 years ago. We lost only one trailer because one family was away and didn't get the trailer tied down.

Mr. TALCOTT. I think we should have in the record what the record of the military services is insofar as loss of trailers. I understand they have a policy that is rather superior to most cities, and that your record is outstanding.

Mr. DAVIS. Are you talking about onsite trailers or offsite trailers?

Mr. SIKES. I doubt you would have any control over offsite trailers. You are talking about onsite trailers?

Mr. JOHNSTON. Yes.

[The information follows:]

Mr. JOHNSTON. As previously stated, the Air Force has been most fortunate insofar as loss of mobile homes on our bases is concerned. Our bases have not experienced serious weather problems except in the South in recent years. Of some 51 mobile homes on Keesler Air Force Base, during the recent hurricane, only one was seriously damaged. In our instructions to our bases we address tiedown requirements and have the bases enforce compliance with the local insurance company regulations in order that our mobile homeowners can obtain insurance.

Mr. SIKES. The ones I had reference to, when speaking of the tornado some years ago, were offsite trailers. Of course, you cannot exercise control over those which are not on Air Force property.

Mr. LONG. Will the chairman yield?

Mr. SIKES. Yes.

Mr. LONG. Of your trailers, what percentage are onsite and what percentage offsite?

Mr. JOHNSTON. We have about 4,000 trailer spaces on bases throughout the United States.

Mr. LONG. How many are offbase?

Mr. JOHNSTON. I would say double that amount off bases.

Mr. SIKES. It is probably more than that.

Mr. LONG. Is it more than that?

Mr. SIKES. I would think it would be much more than double, because trailers are a popular thing with military personnel.

Mr. JOHNSTON. The last count we had, I think was around 11,000 total, which included some Government-owned trailers. We have about 1,000 Government-owned trailers in the States and about 600 or 700 overseas. I would say overall it is about 11,000.

Mr. LONG. I am wondering why it isn't the other way around? That would seem to me to be one way in which the military could add something important to the trailer situation, by providing a site. That is beyond doubt the biggest headache military personnel have run into with trailers, in my experience. People are held virtually in peonage to the owner of the sites. If they bat an eye, if they break any of a

thousand petty rules, they are evicted. Once they are off the site, they can't get relocated. There is practically a reign of terror going on in some Maryland trailer parks because of the shortage of trailer sites. People will sell trailers with the understanding the buyer will move into the seller's park. Once the buyer is on that site, he may not have any protection, and the first thing you know, the site is taken out from under him because they have sold another trailer to put in his place. I don't know quantitatively how big this thing is, but it is big enough to make people nervous and raise some real questions.

What is your system of dealing with the security that people have for their trailers on offbase locations, and why aren't a large proportion put on bases? One thing you have is plenty of land.

Mr. JOHNSTON. One problem we have is the OSD policy. We can only program onbase trailers when the local community can't accommodate them. Every year when we take the family housing survey we conduct a survey of the people that live onbase and offbase in trailers. If they say the trailer space is adequate offbase, we cannot build a replacement for it onbase.

Mr. LONG. I think this policy may undergo change, because in the area I am talking about, nobody wants trailers except the people who run the trailer camps. In Harford County, we have a 25-acre minimum on which one can put a trailer, with the exception of a few areas that are zoned for trailer parks. There is a tremendous outcry against trailers everywhere. I expect this is going on all over the United States. So I would think this is one place you could help, by putting trailers on the bases, and getting away from this community problem, and the problem from the standpoint of the trailer occupant.

Mr. JOHNSTON. It has been only the last 4 years we have been able to really program trailer space. During the late sixties, we weren't allowed to program trailer spaces. So we have put some emphasis on trailer spaces and have about \$2 million a year for trailer spaces in our recent programs.

Mr. SIKES. I would say the program is still very small in comparison to the total requirement for housing. Would you care, Mr. Crockett, to discuss Air Force policy on making trailer space available for airmen who have trailers, or on providing Government trailers? What is your policy; what is your planning; what do you propose to do in the future; what is the thinking in back of it?

Mr. CROCKETT. Our provision of trailer spaces on base has simply been a recognition that a portion of Air Force people, like some portion of the general population in the United States, wants to live in trailers. That is their life style. We have recognized that as one facet of the total spectrum of Air Force housing desires, and that is the reason for programing trailer spaces.

Mr. SIKES. But I think the number you are programing is small. Don't you think so?

Mr. CROCKETT. I certainly feel we could increase it, put more emphasis on it.

Mr. SIKES. You could, yes. But should you? I am not sure I am getting the Air Force's feelings on this. Do you think it is a good thing or bad thing for families to live in trailers?

Mr. CROCKETT. Our policy is to provide housing for people, not trailers. The provision of trailer spaces is in recognition that there

are some people who will not be eligible for housing under the current ground rules and some people who though eligible prefer to live in mobile homes and who then will be better served by having a place to put their trailers. We have not changed our policy with regard to providing permanent housing for people. We do not believe that mobile homes provide housing which meet adequate standards for permanent housing under DOD regulations.

General REILLY. It has been our policy not to force anyone to live in a trailer who doesn't want to. If he does desire to live in a trailer, our policy is to try to provide onbase space where they can park their trailer at reasonable costs, and be comfortable.

I agree with you, Mr. Chairman, we are not moving fast enough. I think our most recent surveys show a deficit of between 4 and 5,000 spaces.

Mr. SIKES. What is your policy in areas where a substantial number of trailer courts are available in reasonable proximity to the base? Do you make trailer space available on base, or do you require those uniformed personnel who have trailers to use the space in the community?

General REILLY. Mr. Chairman, in our survey we ask the people who own trailers to state the adequacy of the off-base trailer rental space, and as long as they certify they are happy and pleased with the off-base facilities, then we don't count that as a deficit. Where they say the cost is too high, or the distance they must drive is too far, then that is a deficit and we would like to provide them a space on base.

Mr. SIKES. Are you providing any trailers in this year's program?

General REILLY. Yes, sir, we have 415 spaces.

Mr. SIKES. Are those spaces or trailers?

General REILLY. Those are spaces.

Mr. SIKES. Air Force-wide that isn't very many. I am not arguing you should have more, but it does appear that the number is quite low in comparison with the number of uniformed personnel who have trailers.

General REILLY. Yes, sir.

Mr. TALCOTT. Can we get a statement of how many vacant trailer spaces we have? I think we should not be calling them trailers either. You are going to have people very angry because these are really mobile homes.

General REILLY. Yes.

Mr. TALCOTT. Could we get a statement of how many vacant spaces there are?

General REILLY. On our bases?

Mr. TALCOTT. Yes.

General REILLY. We can provide that.

[The information follows:]

STATEMENT ON NUMBER OF VACANT MOBILE HOME SPACES ON BASES

Based upon our latest report, the Air Force has an occupancy rate of 89 percent for 4,154 on-base spaces. This low occupancy rate results from vacancies at bases where spaces are being modernized and at a few locations where old spaces are being phased out or replaced. Normally, bases with mobile home spaces maintain an occupancy rate of 98 to 100 percent. We have 457 vacant spaces at this time.

Mr. TALCOTT. There are a lot of factors involved here. I think we should be careful not to simplify too much. The economics of mobile

homes are quite different from those of conventional homes. They present some special social problems. When we get too many concentrated in one place we have to develop other support facilities around them, and lifestyles change. We are moving, hopefully, toward more stable assignments for military people, longer tours of duty. The mobile homes are not quite so attractive and depreciation on them is very rapid. I think if we start encouraging military families, particularly young enlisted families, to buy mobile homes we may be opening up some economic problems for them too.

Providing schools is another problem. It is often people with small children who are looking at mobile homes. Repairs are difficult. You don't have the repair facilities on base to take care of mobile homes. There are all kinds of serious considerations that we get into when we try to encourage people to live in mobile homes. But if they want them and are looking for space and can't find it outside, I think we should give serious consideration to providing the kind and number of facilities they need.

It is just not a simple problem. The tax consequences in various States are different. States tax mobile homes differently. In some States they are not taxed as real property, not as a home. This is a consideration that has to be taken into account by servicemen who are using them too. It is a very complicated situation.

Mr. SIKES. That is very well stated. I am glad that you brought that out for the record.

The point, again, is that we are not necessarily arguing for more trailer space. We are seeking to determine what the policy is in view of the fact that many airmen do buy mobile homes or trailers because it is the lowest cost housing they can get, and they can take it with them from place to place.

Mr. SIKES. Mr. Long.

Mr. LONG. It does seem to me that in a lot of areas the commercial trailer parks are literally horrible things from a social point of view, as in several cases which have been brought to my attention, where people are just packed in, unbelievably tightly, in order to make a profit for the people that run the trailer parks. Limitations on zoning may assist people who have a monopoly to exploit it.

I would think that the military would provide much more decent, pleasant parks, because they do not have zoning problems and protests from the community.

I would like to get a comment on that for the record. Also, on the matter of cost and depreciation of trailers, particularly depreciation. I understand trailers depreciate a lot faster than do regular homes. Just why, I do not know. Maybe it is because they do not own the land. Under a normal home, the land goes up in value as the house goes down. The land's increased price offsets the depreciation on the house. So a man, at the end of 10 or 20 years, owns something of greater value than when he bought it.

I understand that is not true of a trailer. Please give us some idea of the economics of the trailer business for the record.

[The information follows:]

STATEMENT ON QUALITY OF BASE MOBILE HOME PARKS AND COST/ECONOMICS
OF MOBILE HOMES

On a whole, we feel that we do provide a better mobile home facility on base for our people than those constructed in the local area. OSD allows us to pro-

gram our spaces in the United States at an average cost of \$4,000. In our mobile home courts we provide the space with a pad, utility connections and distribution lines, roads, streets, sidewalks, storage building, a patio and a community facility, if possible. We construct six to eight spaces to an acre. There are not many courts in local communities having all these amenities, which we feel are necessary.

Mobile homes depreciate in value rather than increasing in value, as regular homes, because there is no land associated with a mobile home. In many states mobile homes are considered vehicles and depreciate in value in the same manner as an automobile, bus, or truck. The manner in which mobile homes are constructed, with metal siding, small wooden or steel support member and thin flooring, causes them to deteriorate faster than conventional construction of brick, stone, heavy timbers, and hardwood flooring. Mobile homes also are considered to be short-term housing where conventional housing construction is permanent or long-term. These are the main reasons why mobile homes depreciate in value.

FAMILY HOUSING MODERNIZATION BACKLOG

Mr. SIKES. What is the backlog of modernization for Air Force family housing? How much are you proposing to spend in the next 5 years in this area?

General REILLY. The backlog of modernization for Air Force family housing is approximately \$300 million. In the next 5 years we hope to spend \$200 million at \$40 million annually.

TRENDS AFFECTING FAMILY HOUSING DEFICIT

Mr. SIKES. What factors have tended to increase or decrease bachelor and family housing requirements in the last year or so? Do you see these as continuing trends?

General REILLY. The decrease in family housing requirements results from a projected decrease in military Air Force manpower authorizations and the increase in BAQ and military pay. With the pay and allowance increases, our personnel can afford better housing which they consider adequate. As a result, this increases the number of adequate available community support assets and decreases the requirements to construct on-base housing. We do not expect this trend to continue. The constant increases in rental housing and the escalating costs of construction should eventually level off this trend.

Several factors have increased bachelor housing requirements while other factors have decreased our requirements. Increased adequacy standards, aging of facilities, desire for more privacy, increased cost of community support housing, and spaces lost due to modernization tend to increase our requirements. New construction authorization, increased pay and allowances, and reductions in force levels tend to decrease our requirements. In the case of the Air Force our actual deficits requiring new construction have been decreasing; however, our modernization requirements are increasing. We see a continuance of this trend for the next few years.

BASING OF F-15 AIRCRAFT

Mr. SIKES. You are procuring 30 F-15's in the fiscal year 1973 program and are requesting 77 more in fiscal year 1974. Also, according to General Ryan's statement before the Defense Subcommittee, the Air Force is requesting the F-15 fighter to "defeat any fighter postulated

for the 1975-85 time frame." From the construction standpoint, 1975 is not very far off.

When do you anticipate that your plans to base these aircraft in the United States and overseas will be firm?

General REILLY. Mr. Chairman, the site for the crew training will be Luke Air Force Base, Ariz.

We have several projects in the fiscal 1974 program to support the F-15 training there. The operational bases have not been selected as yet and final decisions have not been made, but they will be made in time for the necessary construction support to be in the 1975 program.

Mr. SIKES. So there is no listing available, at this time, of bases overseas and at home, other than Luke, at which the F-15 will be based?

General REILLY. Yes, sir.

Mr. SIKES. What special facilities do you anticipate the F-15 will require?

General REILLY. It is not going to take a great deal in terms of new, peculiar facilities. We will have to provide a new facility for the simulators in which the crew members train. It is a much more sophisticated trainer, requiring high ceiling heights.

We will also have to provide sound suppressor equipment for aircraft engine runups.

Mr. SIKES. Will you have a considerable noise problem with this aircraft as compared to others?

General REILLY. Yes, sir, it is a higher thrust aircraft with higher noise. Consistent with our recent policy for all our fighter aircraft, we will provide sound suppression equipment for ground runups supporting maintenance.

BASING OF B-1 AIRCRAFT

Mr. SIKES. Have you identified the bases at which the B-1 will be located?

General REILLY. No, sir, they have not been selected. That is a little further downstream than the F-15 in terms of operation.

Mr. TALCOTT. What are you going to do about the sonic boom problems with the F-15 and the B-1? In addition to the noise, the runup, taking off and landing, there is the sonic boom when you are practicing. This is obnoxious to almost everybody. So where do you go to practice?

General REILLY. There are designated areas. The sonic boom is very carefully controlled by the Air Force. There are areas designated in which supersonic flight is conducted.

Mr. TALCOTT. Mostly over the ocean?

General REILLY. A lot over the ocean and some over land.

Mr. TALCOTT. Is the sonic boom a consideration in selecting the location of an operational base?

General REILLY. That could have some bearing, yes sir. Principally for supersonic flight, we try to do it over water or in remote areas.

Mr. TALCOTT. You talked about the facilities, the special facilities that you will need for run-up testing on ground. But that may not be as obnoxious as the sonic boom, which actually destroys property, breaks windows, this sort of thing.

General REILLY. Yes.

Mr. TALCOTT. This can happen almost everywhere. I would think that would be a larger consideration than the problem of the engine runup.

General REILLY. Engine runup is conducted very frequently and must be done in close proximity to other maintenance facilities. We must suppress that noise to where it is not objectionable and also for the safety of the maintenance people who must work around the aircraft. But we do not envision the supersonic aspects of the F-15 or the B-1 being any more critical than other supersonic aircraft we have at the present time.

Mr. SIKES. When do you anticipate you will be programing facilities for the B-1, in what fiscal year?

General REILLY. Mr. Chairman, I just cannot say at the moment. I think, according to the present schedule, the first aircraft will be procured in fiscal year 1978.

Mr. SIKES. What is your information thus far on facility requirements?

General REILLY. They are several years out.

Mr. SIKES. Insofar as you can, answer the following questions for the record.

The B-1 will be a smaller, lighter aircraft than the B-52, with a shorter take-off distance.

(a) Will the B-1 be able to use existing B-52 facilities, such as hangars, landing fields, et cetera?

[The information follows:]

B-1 USE OF EXISTING B-52 FACILITIES

Airfield pavements and other support facilities, such as hangars, which are used in support of B-52 operations can be used to support the smaller and lighter B-1 aircraft.

(b) What special facilities will the B-1 require?

[The information follows:]

B-1 SPECIAL FACILITIES NEEDED

Existing runways, parking areas, hangars, and other facilities that are adequate for the B-52 will be adequate for the B-1 with some minor modifications. Sound suppressors will probably be required on the engine test facilities and on the aircraft runup facilities. Modifications to accommodate special test and maintenance equipment will be required to field and depot level maintenance facilities.

(c) Could the B-1 operate from most of the runways at bases which support Air Force flying units?

[The information follows:]

B-1 OPERATION FROM RUNWAYS

Air Force runways have been designed and constructed to three basic load bearing criteria: light load, medium load, and heavy load. Many of our runways are heavy load or medium load pavement which will support continued B-1 operations; however, pavements designed and constructed for tactical aircraft operations normally are light load which will not support continued B-1 operations.

(d) Would runways at your major MAC bases require reinforcement for use by the B-1? What about runways at TAC fighter or TAC airlift bases?

[The information follows:]

MODIFICATION OF RUNWAYS—B-1

Runways at most of our MAC bases consist of medium load pavements which will support B-1 operations without reinforcement. Since the B-1 weight is somewhat heavier than the design criteria for medium load pavement, continued B-1

operations would reduce the life of these pavements. The extent of this reduced life would depend upon the number of operational cycles involved. Runways at most TAC bases consist of light load pavement which would require reinforcement to support continued B-1 operations.

Mr. SIKES. For the record, compare the dimensions of the B-1 with those of the B-52, KC-135, C-9, C-141, F-111, and F-4 aircraft.
[The information follows:]

COMPARISON OF DIMENSIONS OF B-1 BOMBER

(In feet)

	Length	Span
B-1.....	157.5	¹ 88.0
B-52G.....	157.6	185.0
KC-135.....	136.2	130.8
C-9.....	119.3	93.3
C-130.....	97.9	132.7
C-141.....	145.0	160.0
F-4.....	58.2	38.4
F-111.....	75.5	² 32.0

¹ Extended 136.7 feet.

² Extended 63 feet.

SAC SATELLITE BASING

Mr. SIKES. We will discuss the Air Force's SAC satellite basing programs in detail in the classified session, but tell us what you can about your program now.

General REILLY. The satellite basing program is nearing the completion of the so-called phase 1 that we reported to the committee in prior year for which, you will recall, some \$21 million in appropriations had been provided. The SAC bomber fleet and tanker fleet will be located at 26 main operating bases, supplemented by 18 satellite bases.

Now 14 of those 18 are operational at the present time, 3 additional ones will be readied this fall, and the fourth one about this time next year.

We have no plans at the moment to go beyond that phase 1 of the program.

SPACE SHUTTLE

Mr. SIKES. Is there money in this year's budget for the Air Force portion of the space shuttle?

General REILLY. No, sir.

Mr. SIKES. Do you have estimates of construction costs?

General REILLY. Mr. Chairman, it has been estimated at something around \$200 million.

Mr. SIKES. In what fiscal year do you expect to begin to need this money?

General REILLY. We do not know. We expect maybe the initial money in say, the 1977 time frame—fiscal year 1977 and then building up after that. But really, the program is just not defined that well yet to see just what year.

MAJOR TEST FACILITIES—HIRT AND AERO PROPULSION SYSTEMS TEST FACILITY

Mr. SIKES. Are you prepared at this time to tell us about the Air Force's long-range plans for the construction of major test facilities

such as the high Reynolds number tunnel and the Aeropropulsion Systems test facility which we discussed last year?

General REILLY. We are progressing or proceeding with the early planning for both of these facilities.

The aeropropulsion systems test facility is a large facility and will cost approximately \$240 million. We have been working for just about a year now on the preliminary design and engineering to define the scope of the project and to develop realistic cost estimates.

We expect to move into the second phase of the design within the next year. Now the HIRT, the high Reynolds number tunnel facility, is a smaller facility and less costly, at something around \$40 million.

We are just in the process now of getting the first phase of design underway. It is my understanding that the Office of Secretary of Defense will probably ask that the high Reynolds number facility be put in the fiscal 1975 program. The larger facility we expect to come in the following years.

Mr. TALCOTT. Could you explain the relationship between what NASA is doing and what the Air Force is doing in research and development in the aeronautics field? It is my understanding that NASA was doing a considerable amount of the research and development in the aeronautics field for the Air Force, or at least that the Air Force had an agreement that NASA would do this sort of research development and testing.

General REILLY. Yes, sir.

Mr. TALCOTT. I do not know whether it relates to these two projects or not, but it seems to me we should not be duplicating our facilities, especially for programs costing \$280 million.

General REILLY. Yes. There has been a high level NASA Department of Defense Board—the Aeronautics and Astronautics Coordination Board (AACB), which has had the task of coordinating the requirements for, and who will be responsible for recommending the acquisition of these very large and costly research and development facilities. These are national facilities, that is, large, unique, expensive aeronautical test facilities that will satisfy the aeronautical test requirements of any given service, agency, or firm. Thus, the Nation will have a one-of-a-kind aeronautical test facility for all users. The AACB decided that the high Reynolds number facility and the Aeropropulsion Systems test facility (ASTF) would be assigned to the Air Force for acquisition and the so-called V/STOL tunnel was assigned to NASA for development. Those three facilities are the major facilities now in the planning stage. But the activities of NASA versus the Air Force are very carefully coordinated.

Mr. SIKES. Mr. Nicholas?

Mr. NICHOLAS. We have discussed the facilities in support of the Space Shuttle program at Vandenberg, the high Reynolds number tunnel, and the Aeropropulsion Systems test facility. Are these types of things in your 5-year program at the present time? If so, are they responsible for increasing your deficit in the manner which we have talked about?

General REILLY. No, sir; they are not definitely in the 5-year program at the present time. I think it is the intention of the Secretary of Defense to put the HIRT facility in the program, but we have not yet incorporated either the Space Shuttle or the ASTF into the 5-year program.

Mr. NICHOLAS. So this would be in addition to the \$6.8 billion which you see as your deficit?

General REILLY. Yes, sir.

Mr. SIKES. Mr. Davis?

FISCAL YEAR 1974 REQUEST

Mr. DAVIS. I have a few general questions on your 1974 request, General.

BACHELOR HOUSING—COST AND SQUARE FEET PER MAN

Upon how many net and how many gross square feet per man is this bachelor housing program based?

General REILLY. For E-1 recruits, we have 72 square feet net, 132 square feet gross; E-2's through E-4's, 90 square feet net, 157 square feet gross; E-5's and E-6's, 135 net, 227 square feet gross, and for our three top NCO's, 270 square feet net and 452 square feet gross. Now this is consistent with our triservice policy.

Mr. DAVIS. What average unit cost are you using in this budget for bachelor quarters?

General REILLY. Our bachelor airman quarters are programed at \$28.50 a square foot, our officer quarters at \$30.50 a square foot, a slight increase over last year.

Mr. DAVIS. That compares to what for last year?

General REILLY. Last year it was \$27 and \$29, just \$1.50 less per square foot.

NUMBER OF MEN PER ROOM

Mr. DAVIS. What changes—I suppose we would consider them improvements—in typical bachelor housing units are included in the 1974 program as contrasted with the 1972 program?

General REILLY. Actually, sir, our 1974, 1973, and 1972 programs have all been on the same basic criteria. Our objective has been to have not more than two men to a room with private bath. In the 1974 program, our dormitory design provides two sizes of rooms: 180 square foot room with private bath in which we will put two E-2's to E-4's, and then a 270-square-foot room which is larger, again with its own bath, where we will put two E-5's or E-6's or one E-7, E-8, or E-9. That is the same criteria that we are building in the 1972 program except we did not program any spaces for grades above E-4.

Mr. LONG. Will you yield?

Are those not somewhat more luxurious and commodious quarters than the Army is providing in its construction for enlisted quarters?

General REILLY. No, sir. The figures I have just quoted are—

Mr. LONG. I am not talking about money.

General REILLY. The space?

Mr. LONG. It seems to me the enlisted people in the Army were not given quite such a good deal insofar as the number of men to a room and bath.

General REILLY. I think the only difference, Mr. Long, is that the Army does put three men to a room.

Mr. LONG. That is what I meant. And you have two.

General REILLY. We have felt two should be the maximum.

Mr. LONG. That is quite a difference. Can you justify that?

General REILLY. Yes, sir.

We feel that that additional privacy is important.

Mr. LONG. I mean how can you ask for it and not the Army, and how can we justify giving it to you and not giving it to the Army?

General REILLY. The Office of Secretary of Defense has taken the position that as long as we can get those accommodations within the dollars that are provided, within the statutory limitations, they have no objection.

Mr. LONG. I suggest then, that we ask the Army to review what the Air Force is doing, to see if they cannot come up to the same standards, since it is not costing any more. Why can they not provide as much for the Army people?

Mr. SIKES. Are you sure it is not costing any more? How can that be?

General REILLY. It costs more to put two men in a room than three.

Mr. SIKES. What the Army has to learn is, you do not get poor from asking. You were not here when I brought that out.

Mr. LONG. So, we are giving a better deal for the Air Force people than we are for the Army. I just do not know how you can justify that.

General REILLY. We have continued to resist the three men to a room.

Mr. LONG. I wonder how you can justify the discrimination between Army and Air Force.

Mr. TALCOTT. The space and money criteria are the same. But the Army is putting three men to a room and the Air Force is trying to avoid doing that. That is the only difference, as I understand the testimony.

General REILLY. Yes.

Mr. LONG. I did not quite hear you.

Mr. TALCOTT. I think the space and the money criteria are the same for all the services. What the Army does is build three-man rooms whereas the Air Force is only putting two to a room.

Mr. LONG. Will you tell us in the record how many square feet you are allowing per man, whether that is the same in the Air Force as it is in the Army.

General REILLY. Yes, sir, it is.

[The information follows:]

Each of the services uses the same space criteria for bachelor housing. These criteria are as follows:

Grades:	Net living area per man (square feet)
E1 (recruit)	72
E2-E4	90
E5-E6	135
E7-E9	270
O2 and below	330
O3 and above	460

Mr. SIKES. Do you not find also that the Army is using a little different concept in that they are using more space for lounge facili-

ties, et cetera, and the Air Force is providing more space per individual?

General REILLY. Yes. I am really not too familiar with just how much lounge space they are putting in. We rather minimized the amount of lounge space that we put into our buildings; we have some but we have not gone overboard on it. We would rather have the space in the individual rooms.

Mr. SIKES. I think that enters into it.

I think we also must give credit for the fact that it was not until recent years that the Army and the Navy began to get away from the open barracks facilities. The Air Force has not built those for a long time.

General REILLY. Yes, sir.

Mr. SIKES. The other services are working toward better facilities. They had further to go. It has taken time and it is costing money, but they are building better facilities.

Mr. LONG. I raise these points partly for the reasons I have indicated, and also because I think it is unfair to your fighting men if there is created the idea that certain services are elitist and are entitled to better living.

We all know that the Army has a hard time recruiting people, particularly for the infantry. There is always a preference for these other services. The infantry has the hardest time getting people and keeping them. That is certainly going to be true if they are going to be discriminated against in any way in housing. I for one object to that. I feel they all should be treated the same.

Mr. TALCOTT. I think there are some other considerations. The configuration of a company in the Army is a little bit different than the squadron or whatever the basic element is in the Air Force; a different number of men are involved in each one. But my overall impression is that the same space and money criteria apply to all three services. How they work it around to suit their peculiar requirements may be different.

Mr. LONG. If that is true, that is all right with me. But I would like to bring that out clearly and make sure it is true.

General REILLY. The Army is basing their design around a 270-square foot room, providing 90-square foot minimum, and they put either three, two or one man in it, depending on the grade.

It has also been the feeling through the years that the Army works a little differently than the Air Force. The lower grade Army men are in the field during the days and back in the quarters at night; whereas, in the Air Force, it is hard to get three men who are in the same job. You have greatly varying jobs on an air base. That is one of the problems with three men in a room. One guy working the night shift, another working the day shift. We feel that can be somewhat minimized by just having two men to a room.

Mr. SIKES. Since the matter has been brought up, and in order to have a clear record, will you obtain from the other services the criteria which they follow? Give us a summation of the criteria followed by each of the services on space per man in enlisted barracks.

Mr. LONG. And the cost.

Mr. SIKES. And the cost.

General REILLY. Yes; Mr. Chairman.

[The information follows:]

SUMMARY OF CRITERIA AND COST PER MAN FOR BACHELOR HOUSING FOR ALL SERVICES

The three services use the same criteria to design dormitories with one exception; i.e., the number of lower grade enlisted men (E-2—E-4) assigned to a room. For these grades the Army and Navy provide a 270-net-square-foot room with a private bath for three men; whereas the Air Force plan provides a smaller room of 180 net square feet with a private bath for two men. For grades E-5—E-9, the services provide the same 270 net square foot with bath; shared by two E-5—E-6 or occupied solely by one E-7—E-9. Thus, the Air Force design objective provides slightly more privacy for the lower grades and the Army and Navy plans allow more common use areas. All services are programming their fiscal year 1974 bachelor housing at \$28.50 and \$30.50 per square foot for dormitories and officer quarters, respectively. These unit costs are adjusted by the applicable area cost factor as required and authorized by the public law.

Mr. SIKES. Of course there should not be favoritism toward one of the services. They should all have equal treatment. Presumably each is attempting to achieve what it thinks is best with the money available, but let's get the facts for the record.

Mr. DAVIS. You do have the same gross space criteria and the same overall cost criteria?

General REILLY. Yes, sir, essentially the same gross, net, and cost.

Mr. DAVIS. So it is the differences in the design of your building that account for the variation in the number of men assigned to one room?

General REILLY. Yes, sir.

Mr. NICHOLAS. Is there not a provision in the OSD regulation which allows you to request greater gross square feet per man if you feel you can do it within the maximum average cost limitation?

I think the Army has used this to a certain extent; they program up to 165 gross square feet per man.

Colonel SHOOK. The only provision is that the standards that are established by OSD are minimum standards. If the Air Force, as an example, could obtain a higher gross or a higher minimum than is in the standard now, they would be allowed to do so as long as it is within the cost limitations and the funds provided.

The Air Force is building exactly the same square footage for an E-2, 3, 4, as the Army is. The only difference is that we are building 180-square-foot rooms, they are building 270-square-foot rooms for an E-2, 3, 4; we assign two men, they assign three.

Our main reason for wanting that, sir, is the fact that the current Air Force inventory is predominantly in Korean vintage or later facilities. When OSD raised the minimum standards, last year, from the 72 to the 90 square foot except for recruits, we went essentially from three-man to two-man rooms in order to provide these standards. If we were to do the same as the Army does, we would be regressing to three-man rooms.

The Army has gone, conversely, from open bay, building toward room configuration, and they are working toward the new standards. So they are moving ahead for the Army, but it would be a regression for the Air Force if we went back to a three-man room.

Mr. DAVIS. When did you go to the same overall criteria as to space and cost as the Army?

Colonel SHOOK. The 90 square-foot criteria was approved in May of last year by OSD. That is applicable to all three services.

SAVINGS FROM PRIOR YEAR PROGRAMS

Mr. DAVIS. It is indicated here that \$10 million of prior year savings, as well as recoupments from Southeast Asia appropriations will be applied to this year's military construction budget.

Can you tell us the sources from which those funds are going to be derived?

General REILLY. Yes, sir. Mr. Lee, will you answer please.

Mr. LEE. The \$10 million of prior years' appropriations to be applied against the fiscal year 1974 appropriation request is not derived from funds appropriated for Southeast Asia operations. They were derived from many projects mostly in the fiscal years 1971 and 1972 for which favorable bids were received.

SOUTHEAST ASIA BALANCES

Mr. DAVIS. In addition to that \$10 million, are there unobligated balances remaining in the Southeast Asia account?

General REILLY. Yes. We have some very small ones.

Mr. Lee?

Mr. LEE. About \$7 million unobligated in an \$843 million program. We are still constructing in Thailand.

Mr. SIKES. There is construction going on in Thailand?

Mr. LEE. Yes, sir, in Thailand.

Mr. TALCOTT. Does Southeast Asia include Guam or Okinawa?

Mr. LEE. Yes, sir, it did include Guam, Okinawa, and some construction in Japan.

Mr. TALCOTT. It that Southeast Asia, too, Japan?

Mr. LEE. Yes, sir. There was some in the United States.

Mr. SIKES. Let's have a breakdown of the entire Southeast Asia program for fiscal 1974.

Mr. LEE. There is nothing in this program for Southeast Asia. These are all older programs that are still going on.

Mr. SIKES. There are no funds being requested for new construction in Southeast Asia?

Mr. LEE. No new construction in Southeast Asia.

Mr. SIKES. Very well.

Mr. DAVIS. So that we can have it available to us, would you just provide us in the record the status of obligations and expenditures?

Mr. LEE. Yes, sir.

[The information follows:]

STATUS OF OBLIGATIONS AND EXPENDITURES IN SOUTHEAST ASIA PROGRAM

The following table shows the status of program, obligations, and disbursements by country for the \$843 million appropriated in fiscal years 1965 through 1969 for military construction for Southeast Asia operations. No funds were appropriated after fiscal year 1969. None are requested in fiscal year 1974.

[In thousands of dollars]

Country	May 31, 1973 program	Apr. 30, 1973 obligations	Apr. 30, 1973 disbursements
Vietnam.....	399,807	396,535	388,980
Thailand.....	250,558	250,486	244,730
Laos.....	7,093	6,988	6,950
Korea.....	48,175	48,129	47,607
Taiwan.....	27,317	27,299	27,294
Okinawa.....	30,939	30,925	30,792
Japan.....	2,826	2,826	2,826
Philippines.....	21,534	21,527	21,135
Guam.....	12,901	12,764	12,764
Wake Island.....	3,036	3,036	3,036
United States.....	11,999	11,999	11,999
Design.....	23,000	23,000	23,000
Undistributed ¹	3,908	0	0
Total.....	843,093	835,514	821,113

¹ 2,200 reserved for Vietnamization projects; 509 reserved for Joint Casualty Resolution Center, Thailand; 1,199 not reserved.

Mr. SIKES. There is no new money in this request for Southeast Asia. Is there construction for Southeast Asia?

Mr. LEE. There is construction still going on using old money.

Mr. SIKES. Is there any new construction to be initiated in fiscal 1974?

Mr. LEE. Not that I know of.

General REILLY. No, sir.

Mr. SIKES. All right.

SAVINGS FROM PRIOR PROGRAMS

Mr. DAVIS. A year ago you gave us an estimate of savings from sources other than Southeast Asia. I am not sure it was a year ago, at least some time ago you did. How do your estimates compare with your actual savings? Do you have any information on that?

Mr. LEE. It would be hard to say until the entire program is under contract.

As General Reilly indicated, at the present time our 1973 program is running about 97 percent of the program cost. Whether we will finish out that well or not, I am not sure.

General REILLY. I think it will pretty well balance out by the time we have it all under contract.

REPROGRAMINGS

Mr. DAVIS. In order that we may have it all in one place, would you provide for the record the amount of money for which the Air Force, in its military construction program, has requested reprogramming authority in the current fiscal year?

General REILLY. Yes, sir.

[The information follows:]

AMOUNT OF REPROGRAMING AUTHORITY IN MCP REQUEST

Deficiency authorization, Public Law 91-142, Military Construction Act, 1970. Williams AFB, Ariz., \$546,000. Increase from \$4,462,000 to \$5,008,000.

Realine headquarters structure U.S. Air Force in Europe. Section 303 of Public Law 92-145, Military Construction Act, 1972. \$3,351,000.

Armament research test facility, Kirtland AFB, N. Mex. Section 303 of Public Law 92-145, Military Construction Act, 1972. \$5,656,000.

Various facilities damaged by Hurricane Agnes, McGuire AFB, N.J. Title 10, U.S. Code 2673. \$1,577,000.

Depot aircraft overhaul facility, McClellan AFB, Calif. Section 301, Public Law 92-545, Military Construction Act of 1973. \$3,807,000.

CINCLANT airborne command post, Langley AFB, Va. Section 303, Public Law 92-545, Military Construction Act of 1973. \$3,960,000.

**MILITARY CONSTRUCTION AND FAMILY HOUSING PROJECTS NOT REQUIRED
DUE TO BASE CLOSURES**

Mr. DAVIS. The base closure announcements have had some impact on previously provided funds. Can you give us the information as to the military construction funds from prior years that have been affected by the base closure announcements, and give us a separate breakdown for the family housing?

General REILLY. Yes, sir.

Mr. SIKES. Thank you very much, Mr. Davis.

Also, I would like to have a listing, by bases, of where there will be projects deleted because of this closure action, for the record.

[The information follows:]

LISTING OF PREVIOUSLY APPROVED PROJECTS AFFECTED BY BASE REALIGNMENT

[In thousands]

Base	Fiscal year	Military construction	Family housing	Total
Hamilton AFB, Calif.		0	0	-----
McCoy AFB, Fla.		0	0	-----
Forbes AFB, Kans.		0	0	-----
Westover AFB, Mass.	1973	\$455	0	\$455
Squadron operation facility.	1973	(455)		-----
Laredo AFB, Tex.	1973	133	\$4,316	4,449
Security police facility.	1973	(133)		-----
New family housing.	1973		(4,316)	-----
Ramey AFB, P.R.		0	0	-----
Total.		588	4,316	4,904

CRITERIA FOR BASE REALIGNMENT ACTIONS

Mr. LONG. Provide the committee with the Air Force's criteria on base utilization and realignment actions.

[The information follows:]

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CRITERIA FOR BASE REALIGNMENT ACTIONS

PURPOSE: The purpose of this document is to present the major considerations and criteria used within the Air Force in developing basing programs which result in realignment actions.

BACKGROUND: The base posture of the Air Force exists to support the assigned forces. Since forces are a dynamic element, the base posture is also dynamic in its nature. As forces change, base requirements change, and as a result realignments in the base posture are required. The major considerations and criteria used to determine base realignments must insure that the action selected from the available alternatives best meets the various operational, geographic, facility, environmental and economic parameters and is the most consistent with the overall mission requirements of the Air Force. The Air Force has pursued a policy of achieving an optimum base structure to support the currently assigned and projected forces. As force levels and oversea deployments have reduced during the last twelve years, the number of Air Force bases has also reduced. The following table reflects the reduction in Air Force major installations since FY 1960.

<u>MAJOR INSTALLATION</u>	<u>FY 60</u>	<u>FY 64</u>	<u>FY 68</u>	<u>FY 70</u>	<u>FY 72</u>	<u>FY 73</u>
CONUS	163	151	129	116	112	111
Overseas	<u>90</u>	<u>65</u>	<u>69</u>	<u>62</u>	<u>49</u>	<u>46</u>
Total	253	216	198	178	161	157

The reduction in the number of Air Force bases world-wide has been the result of a continual evaluation of the forces' base requirements. The most effective bases are selected for retention when base closure actions are initiated.

MAJOR CONSIDERATIONS AND CRITERIA: In determining the effectiveness of an installation, several major considerations are germane. First is the need to provide installations which meet the various operational and training requirements of assigned forces. Second, there is the need to provide bases to support the force deployments envisioned in the United States strategy. Third is the policy that multi-mission bases, i.e., ones at which various force types (strategic, logistical, airlift, etc.) are stationed, will be used to the maximum extent possible. Fourth, that the base posture should retain the flexibility to beddown the force when unprogrammed changes occur.

The above considerations have evolved into broad criteria which are used in the Air Force in developing and evaluating base realignment actions. These are: geographic location; facility availability and condition; community support available for Air Force activities/population; potential to accommodate future force requirements; existing or future encroachment which might impact Air Force operations; budgeting considerations inherent in the proposed realignment action; possible adverse environmental impact; and mission degradation as a result of force turbulence.

In developing realignment actions, the major considerations and criteria have to be evaluated for each proposal in total, as opposed to each one being independent, with the goal of achieving an optimum balance. A discussion of the four major considerations and the resultant criteria is provided below.

MAJOR CONSIDERATIONS:

Operational and Training Requirements: Since the Air Force base posture exists to support the mission of the assigned forces, the ability of each base to meet the unique operational and training requirements of the assigned force is of paramount importance. Each force element, such as strategic offense, tactical fighter, strategic airlift, etc., has its own peculiarities in terms of mission and training which manifests itself in terms of airspace, range requirements, deployment and employment routes, availability of lines of communications, survivability, facility requirements, etc. The current base posture reflects a force beddown in which the forces' operational and training requirements are best supported. Realignment of forces can make alterations of the base posture necessary, however, the resulting beddown must, to the extent possible, enhance the ability of the force to meet its unique operational and training requirements. These requirements are summarized below.

Strategic Offense (Bombers/Tankers): Pre-launch survivability of the alert force coupled with geographic locations which allow proper bomber-tanker mating after launch and optimum entry into primary employment routes to target areas.

Strategic Defense (Fighter Interceptors): Peripheral coverage of the Continental United States.

Tactical Fighter: Accessibility of weapons ranges (air-to-air and air-to-ground) plus sufficient airspace to allow for extensive operational training in flight maneuvers such as formation flying. Maximum "good weather" days to facilitate operational flight training under visual conditions.

Tactical Airlift: Accessibility to training areas for assault landing and drop zones and close proximity to Army elements which use tactical airlift support in training and during deployment.

Strategic Airlift (MAC): Accessibility to transportation networks which can carry cargo/passengers to and from the terminal complex, coupled with proximity to cargo generation areas.

Pilot Training: Availability of a large area of dedicated airspace which is required for student flight activities coupled with minimal poor weather days which could preclude visual flight activities.

Air Reserve Forces: Potential to man assigned units.

Force Deployment: The Air Force force structure is based on the national strategy. This strategy determines potential areas in which forces would be used and determines which forces should be deployed forward in overseas locations and which forces would be deployed or employed from the CONUS. This strategy then serves to determine how many and what kind of bases we need overseas versus the CONUS.

Use of Multi-Mission Bases: A major expense of each installation is the resources required to "open the door". That is the basic number of people and things needed to support any assigned mission. This base operating and support force, however, does not increase in a direct proportion to a growth in assigned base missions. Addition of new missions to an existing base results in significantly less base operating and support resources than does establishing a new base or retaining and operating a single-mission installation which is not limited by geographic or other requirements. Therefore, when missions are compatible and facilities available or obtainable, it is cost-advantageous to develop multi-mission bases. This is particularly true when one of the missions is of a support nature such as headquarters, materiel depot, or research and development activity and the other is operational such as tactical fighter, strategic bomber, etc. Additionally, missions which have a relatively small number of personnel or equipment are most economically accommodated on bases which have other major missions. An example is the stationing of ADC fighter interceptor squadrons on bases which have other major missions such as airlift or strategic offense. Although multi-mission bases are economical, the compatibility of missions must be given prime consideration. Certain missions, such as pilot training, do not lend themselves to multi-mission installations. Additionally, the more missions assigned to an installation the greater the difficulty in closing the installation if a major mission at the base is reduced, since relocation of residual missions often proves impractical. In this sense, on the basis of a reduced base structure, multi-mission bases may inhibit future flexibility in restructuring the overall base posture.

Future Flexibility: Base realignment actions which result in base closures or contribute to the maximum utilization of an installation, especially Air Force bases which contain a relatively small amount of land, can result in a limiting of future flexibility to meet various programmed and non-programmed force adjustments. Although base closures and maximum base utilization are economically sound objectives, the selection of bases to be closed, should, to the extent possible, therefore, result in closure of the least flexible bases. If flexibility were the sole determinant, bases which have constraints in the nature of airspace, encroachment of civilian activities, single missions, limited real estate, poor community support facilities, poor physical facilities, etc., should logically be considered for closure prior to bases which have the potential to accommodate additional or new missions.

CRITERIA:

Geographic Location: The geographic location of an installation influences many factors which bear on the ability of assigned forces to execute their mission. These include weather, availability of training areas, proximity to employment/deployment routes, survivability, airspace availability, transportation networks, etc. For each mission there are optimum geographic locations which provide maximum operational effectiveness. These locations, to the extent possible, should be used in selecting bases to beddown missions. In some cases certain

mandatory elements may present themselves. For example, Undergraduate Pilot Training requires 216 good weather work days during each year in order to maintain the course schedule. Locations which cannot meet this weather criteria should not be considered for such a mission. Tactical fighter activities require that appropriate air-to-ground and air-to-air ranges be in close proximity (200 miles). Lack of these ranges requires that training be degraded by reduced mission time as a result of increased ferry time to and from the range. Therefore, lack of a range in close proximity to a base eliminates it from consideration as a tactical fighter base. However, other geographic factors are not as binding in developing base realignments. For example, survivability of strategic offensive forces is a prime consideration. If submarine launched missiles are postulated to be the most critical threat, inland bases provide the greatest survivability due to the longer flight time of the missiles. However, this does not imply only inland base should be considered for strategic offensive forces. Consideration of factors such as the inability of the runway complex to support strategic operations, lack of needed large maintenance facilities to house strategic bombers and tankers, poor quantity and quality of personnel support facilities, and lack of munitions storage capability all may negate the use of an existing inland base for a strategic force main operating base and dictate continual use of a coastal base where these facilities are available. In this case, survivability can be achieved through reposturing and dispersal of the alert force at satellite locations to achieve the needed time to safely launch the force.

Facility Availability: Maximum practical utilization of existing government facilities with minimum expenditures for new facilities should be a primary goal in realignment actions. This includes mission related facilities as well as support facilities. The facility types that are of prime concern in base realignment actions vary dependent on the mission under consideration. For example, if the unit is an operational flying activity, the runway complex (number, width, length, load bearing capacity), capacity of the aircraft parking ramp, and a maintenance complex capable of supporting the assigned aircraft (e.g., proper sized docks and hangers, sufficient communications-electronics and avionics maintenance space, etc.) are of major concern in evaluating the proposed action. Conversely, for administrative and headquarters activities, the proper amount of administrative space is essential. For training activities, classroom and student housing are key factors. For all actions, availability of housing (bachelor and family) for any increase in population is a significant element. However, facility availability varies in importance and influence on base realignment actions. In some cases, mandatory requirements exist. For example, parallel runways are an absolute requirement for Undergraduate Pilot Training since the mix of training aircraft and number of air movements cannot be accommodated on a single runway. Bases with single runways do not meet the facility requirements for this mission and generally would not be considered as a feasible alternative in realignment of pilot training bases without construction of additional runways. Additionally, certain unique facility requirements are generated by intelligence, communications, logistical, and research and development activities; relocation to installations which do not have facilities available to accommodate these functions may be infeasible due to the cost of new facilities. This, however, is a matter of economics. Also, due to mission requirements, these facilities must often be duplicated and in being prior to shutting down the current activity. This can often be expensive in terms of delay in savings to be realized as well as redundancy in equipment and facilities. Similar circumstances exist in relocating other missions such as strategic airlift which requires large terminal complexes to receive and process cargo. However, other facility requirements might not be less critical. Requirements for small missions may be provided with minor modification. This is particularly true if the unit's equipment consists of small aircraft or if no aircraft are assigned. Requirements for administrative space can be met in various ways such as conversion of excess space in other functional areas. Additionally, in considering bases for closure, the overall condition of the real property facilities at the base is an important element in the selection process. Often, if an activity is housed on an installation which has a great deal of substandard deteriorated facilities - both prime mission as well as support then relocation to a base with permanent facilities may be most effective even if certain facility criteria cannot be initially met. Over a

period of time, provision of a few additional facilities would prove economically beneficial as opposed to providing a large number of expensive replacement facilities at the previous base. An additional facility consideration is the extent a base's facilities support other installations in the area. For example, if a base provides hospital, housing, and other support facilities for surrounding installations, then it may not be possible to completely close the base. As a result, savings from the realignment may be significantly less than at a base where all activities can be shut down and facilities declared excess.

Community Support: Civilian support resources (e.g., community housing, medical, schools, and recreational facilities) are a consideration in developing base realignment actions. When possible, base realignment actions should take maximum advantage of already developed civilian resources which can be used to support the assigned personnel. Of particular importance is family housing. Areas which have residual capability to adequately house Air Force families will negate the cost of providing government housing and facilitate rapid completion of the proposed action. Conversely, areas in which community support facilities are limited place an increasing degree of importance on the base facilities. Adequate support should exist on or off a gaining base to avoid a realignment action being counter productive in terms of personnel morale. Since excess personnel support capability on our installations is limited, the contribution of the civilian community in this area is very important.

Potential: Since the future forces cannot be predicted with certainty and are subject to unprogrammed changes, flexibility to accommodate these changes within the base posture should be preserved when possible and economical. This entails developing reasonable assumptions on what unprogrammed force changes might occur and determining how the various basing options could support the assumed force changes. However, flexibility is difficult to quantify and, as a result, tends to be a subjective consideration. There are some instances though which do lend themselves to objective analysis. For example, pilot production capacity at each Undergraduate Pilot Training base can be determined. Based on the required levels of pilot production, the degree of flexibility (unused production capacity) within the system can be determined and the degree that the system can meet increases can be calculated. As a result, the degree of flexibility in the system can be predicted and controlled. Similarly, workload versus base capacity can be determined in a quantifiable manner for other training activities and depot activities. As a result, flexibility in these areas is to some degree quantifiable. Conversely, the degree of flexibility of the base systems to meet other program changes not the result of clear cut workloads is difficult to determine. For example, the flexibility of the base system to accommodate tactical units in the CONUS currently deployed overseas depends on many variables such as type of unit, activity levels of the unit, if they are to be retained as active duty forces or as reserve forces, etc. In these instances the underlying assumptions are subjective and the requirement for flexibility is also subjective. Notwithstanding the subjectivity, it is important that base realignment alternatives be weighed in terms of their potential to meet unprogrammed force changes.

Encroachment: Urban and airspace encroachment into vital areas surrounding installations is of continuing concern. Some installations which were originally remote have attracted major population growth and, as a result, continued air operations have been threatened through urban expansion. The increased civil and private air activity has served to restrict the airspace available for military operations. Encroachment, therefore, is an element in determining the future viability of an installation and is a consideration in determining base realignment actions. Currently, programs to protect installations from encroachment are being instituted. These are comprised of efforts to obtain zoning, easements, or fee ownership of properties adjacent to bases so that only activities compatible with air operations will be developed in these areas. As a result, encroachment should be brought under control. However, where encroachment has become a major problem, its impact should be considered during development of base realignment actions.

Budget: High-cost, single-mission installations with limited real estate and outmoded, old, functionally inefficient facilities requiring large investments for replacement facilities are prime candidates for closure. Significant annual savings result from the closure of such bases. However, the relative cost effectiveness of retaining installations is also a major factor in determining base realignments. Consolidation of missions on a single multi-mission

installation which allows a base closure generally results in significant annual savings. However, these savings are offset in some instances by the required investment, particularly in facilities needed to consolidate. Additionally, one-time relocation costs are a factor. In evaluating the budget implication of base realignments it is necessary that initial and annual savings be weighed against the one-time construction and movement costs of the various options. Consideration should be given to consolidations which minimize the investment in new facilities while maximizing the annual savings. In general, large outlays in construction or equipment funds are not feasible and options which depend on such outlays should be avoided unless no other viable alternative exists.

Environment: All actions must be assessed to determine their impact on the environment. Base realignment options must have an initial assessment during the preliminary planning. If significant environmental impact is indicated, for example at a gaining installation, as a result of the assessment, then an environmental impact statement must be filed.

Mission Degradation: Realignment actions, by their very nature, result in turbulence both in personnel and in mission output. The degree of turbulence is a consideration if the resulting mission degradation is of such a proportion as to be significant. Certain activities cannot be allowed to "stand down" and, as a result, realignments of these activities require in being capability at the new location. Also, work force composition is a consideration in that a highly specialized or unique work force of civilians may not facilitate relocation. These factors should be considered in evaluating realignment actions.

Mr. LONG. Would you discuss the application of these criteria to Hamilton, Otis, Forbes, McCoy, and Westover Air Force Bases.

Colonel REED. Sir, first of all, the Otis action was simply a reaffirmation or continuation of an announcement last year in which we determined that the Air National Guard would be the primary user and that starting in January 1973 the base would revert to Air National Guard status and that we announced then in April that we would continue and put the Air National Guard on a self-sustaining basis and close down all the support facilities.

This decision last year resulted from the fact that the Bomarc missile, which was one of the major active units, was phased out of the force and we could relocate the residual air defense system evaluation mission to another base.

So that that particular installation had been earmarked for closure prior to this time.

In the case of Hamilton and Ramey, these two installations had relatively small active duty units.

Mr. LONG. Please give us the location of these bases.

Colonel REED. Yes, sir.

Hamilton Air Force Base in California and Ramey Air Force Base in Puerto Rico. In the case of Ramey the installation housed only a small weather reconnaissance unit of nine C-130's and with drawdowns in other areas and reductions, we found it possible to relocate that to a base which had a large or larger continuing mission and satisfy one of the major considerations we have established, that is, multimission bases. We were then able to draw down a base and get rid of the base operating support or the opening door support cost by relocating the mission to other ongoing bases. Similarly, at Hamilton Air Force Base, Calif., we had a small air defense unit which we could relocate and a rescue unit which we could relocate. The air defense unit is going to Castle, in facilities that used to house an F-106 outfit. Castle is in California in the bay area and basically in the same air defense area as Hamilton AFB. The rescue unit is going to McClellan AFB.

In the case of Westover Air Force Base, Mass., and McCoy Air Force Base, Fla., we are dealing with a situation where the B-52 force has been scheduled for reduction—B-52D's being drawn down. We reviewed all of the B-52 bases and concluded that, predicated on our criterion that both of these bases were coastal bases and for some considerations of survivability, they become less desirable than some of our other B-52 bases.

In the case of McCoy we also had increasing civilian traffic and encroachment in and about the base, since it had become a rather large international airport with Disney World and so forth developing in that area, and the base was far south from our normal deployment routes. Therefore the inactivation of the B-52's enabled us to relocate the residual missions and close the base.

In Westover we were faced with a situation in which we had many, many obsolete World War II type facilities generating large construction requirements in the area of the officers' open mess, considerations of the hospital, commissary, and so forth.

In addition, it is rather a populous area and from a weather standpoint not appropriate for many of the flying activities which we might conduct in that area.

Therefore, we selected Westover as another base at which the B-52 drawdown would allow us to relocate the mission to other active installations and let us have a major savings.

Now one other base involved in the announcement for major closure was Laredo. This was a result of a reduction in requirement for overall pilot production. In viewing the pilot production bases, we determined that Laredo, particularly, from its geographic location on the Mexican border, which curtails the flight area and the flight patterns we can fly because we cannot penetrate Mexican air space, and the fact that this location had allowed the city to envelop the base primarily to the south and to the east, we would close that installation because it had the least long-range potential from the standpoint of encroachment and geographical location.

Additionally, there were a large number of World War II facilities at the base. It faced the only total housing deficit, in fact it had housing deficits in family and bachelor housing; no other pilot training base had deficits in the family housing area. Laredo did. That is generally how we applied the criteria as we developed them.

There were details provided in more expanded form in the case justification folder provided to the Appropriations and the Armed Services Committees.

Mr. SIKES. That is a good answer.

Mr. TALCOTT. Where did the Ramey weather station go?

Colonel REED. To Keesler. They are hurricane hunters, as they are called; they will be operating from Keesler Air Force Base. We are phasing down a mission there that involves foreign pilot training; so that the facilities did become available.

FUTURE BASE CLOSURES

Mr. LONG. You have indicated the Air Force has reduced its base structure to an optimum level. Yet Secretary Richardson indicated that there may be further base realignment announcements in the not too distant future. Is it unlikely that the Air Force will close or substantially reduce any bases in the next year or two?

Colonel REED. Sir, it is unlikely if the existing force structure which the current base posture is predicated on is not altered. We will not have any major closures or reductions in the foreseeable future if the force structure remains stable.

Mr. LONG. What do you mean by major? In other words, you could have some base closures?

Colonel REED. We—

Mr. LONG. How do you define a major base? That gives you quite a bit of maneuvering room.

Colonel REED. No, sir. A base of over 250 population which is closed, would be a major closure. A major reduction I would term as those things which occur say, when we reduce to Air Force Reserve status only, such as at Hamilton Air Force Base.

Mr. SIKES. Let's see if I can explore the background of the reason for your answer.

What is likely to change the force structure? Certainly, the projected force structure is the minimum which the Air Force felt that it could effectively utilize; is that correct?

Colonel REED. Yes, sir.

Mr. SIKES. Then insofar as this budget level is concerned, you are anticipating the force level which is presented in this year's budget?

Colonel REED. Yes, sir.

Mr. SIKES. Are you saying that reductions by Congress might require further base closures?

Colonel REED. Sir, two major things can affect forces, as I see them.

First of all, a change in the threat: None of us are aware of any major changes in the threat as postulated. The forces are needed to meet that threat. The other considerations are budgetary constraints which I am really not prepared to speculate about—would occur in a future budget or as a result of congressional actions. However, if a specific cut reduced forces, particularly large numbers of forces, or changed the deployment concept of the Department of Defense as relates to overseas versus Conus deployment of our forces, then, yes, we would have to readdress the base structure and perhaps base reductions or closures might result.

Mr. SIKES. I think that is a good analysis.

Mr. LONG. There is going to be a review of the fiscal 1975 budget request this summer and fall?

Colonel REED. Yes, sir.

Mr. LONG. Could decisions be made during this review to cause the Air Force to further reduce its force level at Air Force bases?

Colonel REED. They could, sir; if such reviews result in lower levels of forces. However, I am not aware of any.

Mr. LONG. You are not aware of anything at the present time?

Colonel REED. No, sir; my personal awareness.

Mr. LONG. Would you be helping to formulate the information that would lead toward that?

Colonel REED. Our main—where I work, the main concern is to take the force posture that is prepared to meet the threat within the constraints of the budget and "bed it down" on bases. We do not enter the arena of determining what forces are required. That is an operational plans decision more than it is a resources decision.

Mr. SIKES. There are some questions which this committee will have about base structure and utilization, particularly with regard to SAC coastal locations.

This, I take it, is more flexible than some other features of your program?

Colonel REED. Yes, sir. We anticipate and are aware of the committee's concern in this area and are prepared to answer the questions.

Mr. DAVIS. Off the record.

[Discussion off the record.]

Mr. SIKES. Proceed.

Mr. LONG. Where do you stand with respect to your base utilization decisions? Are the base realignment actions which have been announced based upon the force levels allowed in the fiscal year 1974 budget?

Colonel REED. Yes, sir. In conjunction with the 1974 budget, the decisions, the force levels that were postulated are the forces on which the base posture is based.

Mr. LONG. To the extent that the Department of Defense's current long-range program calls for a further reduction in your forces in the outyears, will further base realignments be possible?

Colonel REED. Sir, it completely depends on the nature of the forces and the residual requirements, but it would be possible if the force reductions were significant.

Mr. LONG. If there are any further reductions in forces in the long-range plan, or if forces are reduced below that anticipated in the current long-range plan, would the criteria which you have developed apply to future base reductions?

Colonel REED. Yes, sir.

Mr. LONG. You would not have to change your criteria?

Colonel REED. No, sir.

Mr. LONG. Have you examined all of the projects in the fiscal 1974 request to be sure that none are at weak installations?

Colonel REED. Sir, all the projects are required, and there are no weak installations within the Air Force inventory. Each installation supports its portion of the force and is a required asset.

Mr. NICHOLAS. To the extent that there may be future force reductions as a result of budgetary or other constraints, and you do have to reduce bases in order to realine your forces properly, do you have now identified, or can you apply your criteria in a reasonable way so as to indicate, which of the bases you have at this time may be firmer bases and which may be weaker bases?

Colonel REED. No, sir. It really is not possible to apply criteria in the abstract against the base structure and determine which might be the next to close, because the decision has to stem from a force decision, and we can assume almost any force posture and all relating or inter-relating pieces; in other words, you can stipulate a drop in strategic forces, but what are the next pieces as they relate to training, military airlift, and tactical airlift?

All of these things have to be weighed. It may very well be that a reduction of a strategic mission at a base will make that a prime candidate for the assignment of a tactical mission. If we were to bring forces back from Europe, for example.

So it would be not very profitable to exercise the myriad of options we could, or assumptions we could, make.

Mr. NICHOLAS. No, but on the other hand, in programing military constructions requests, it would seem you would be well advised to be aware of which were some of the weaker bases in each of the commands. Having your criteria in hand, and knowing what the assets and limitations of each of the bases are, you could avoid wasting construction dollars.

In fact, you have reassured the committee from year to year that you are not programing projects at installations which are expected to be closed. How can you do that?

Colonel REED. I think we continue to assure the committee that we do not have any projects at installations for which we have plans to significantly alter the mission or close the mission, and those are true facts. At this time, we have no plans to further make any major reductions or alterations in missions or close bases.

Again, sir, it would be difficult to provide any list that would be meaningful because the assumptions that we would use in making the list might change the following day. So therefore we are cognizant that certain bases have need for concern as far as encroachment and so forth, and these things are considered; however, to term these as weak

bases in the sense that they may not be needed or the next base to close, I think is an unfair connotation to the base.

HOSPITAL, WARREN AIR FORCE BASE, WYO.

Mr. TALCOTT. May I ask then about the hospital development at Warren Air Force Base in Wyoming?

Colonel REED. Yes, sir.

Mr. TALCOTT. I understand that the ABM missile site is not going to be located there, yet we are developing a hospital in Wyoming.

Colonel REED. F. E. Warren, sir, supports a strategic missile Minuteman wing and strategic missiles being a major element of our strategic defense, there is no envisioned change in that mission into the future. It will support the F. E. Warren mission.

Deployment of the Safeguard missile was a separate issue and not one which we were, I think, involved in at that point.

Mr. TALCOTT. Were you not considering the hospital development at the time you were considering the Safeguard development?

Colonel REED. I think the hospital, as I remember it, having been in contact with these programs since 1966, has been in the back of the minds of our medical people for many years, since it is an 1880 building or thereabouts. Replacement was predicated on the Minuteman missiles.

Mr. TALCOTT. Not on Safeguard?

Colonel REED. That is correct.

Colonel BAIRD. That is correct; on the Minuteman.

Mr. TALCOTT. General Reilly, I have a couple of questions.

LAND UTILIZATION

I was impressed by your statement on land use planning. You referred to a recently-established multidisciplined capability. Could you expand on this and tell us how it works?

Mr. SIKES. What is it?

Mr. TALCOTT. Yes.

General REILLY. Mr. Talcott, we have found that land use planning, both on the base and around the base, and our relationship to the community from an economic, social, and environmental standpoint, has become much more complicated, much more encompassing than ever in the past. We just do not work in isolation, or should not, at our bases any more.

This has brought us into a number of areas that require a special expertise. Within my particular directorate we have found that we do have people who have experience in landscape architecture, urban planning, and various engineering disciplines, especially those related to environmental protection.

What we have done is establish a small group, I am not talking of more than 10 to a dozen people, who bring all of these disciplines together. Our objective will be to analyze the problems that are facing our bases, the encroachment problem on the outside, the siting of our facilities within the base, and our relationship to the communities. The environmental protection issue alone is bringing us much closer and involving us to a much greater degree with the cities and the regions in which we are located.

Mr. SIKES. Tell us about some of the ways in which you accomplish this? Do you have meetings with community leaders? What do you do?

General REILLY. Sir, we are going to do several things.

First, we are going to insure that we implement this policy in the field, that it gets to our bases, to our commanders, so that all of our bases can be addressing these problems, their relationships with the communities, in some kind of a standard way.

Mr. TALCOTT. Is there a directive from you telling your people to go out and talk with the planning commissions of the cities, the boards of supervisors, the city councilmen and the adjoining landowners?

General REILLY. Yes. We will be doing more and more of that. We are working right now in some areas in helping the States enact the necessary zoning legislation.

For example, in Texas we found that law does not exist for enabling legislation under which zoning ordinances can be enacted to protect the land around some of our bases, both for the benefit of the Air Force as well as the community.

So we are assisting in introducing into the State legislature the necessary bills that will bring that about.

In the noise area we are trying to refine our criteria so that it is much more realistic. When we first went into our compatible use zone concept, we were thinking in terms of a rectangular area around the bases. We found that must be refined now. We must have new approaches to determine the impact of aircraft noise on the community.

Mr. TALCOTT. It seems to me that you have to have a reversal of several attitudes. As you have said, the Air Force is not an island. You have to cooperate and coordinate your activities with the civilian community, and they have to do likewise. The sooner you can eliminate the distinction between the blue-suiters and the civilians, the better it is going to be for both.

Mr. SIKES. I had thought you were doing quite a bit of this before now. What is new about it?

General REILLY. We have been doing it, Mr. Chairman, but we have not had the overall policy established and the refinements we would like to have.

Mr. TALCOTT. They have been doing it in sort of a passive way. But I think it has to be a little bit more aggressive.

At the present time you find a lot of communities which are sort of nibbling at military installations. They see a big piece of land out there and say, gee, this would be great for a racetrack or a community center or some other kind of facility.

That attitude has to be changed. We have to get the zoning around the base to prevent not only the nibbling, but also to make the facility more usable, zones such as air travel zones, noise zones, this sort of thing.

General REILLY. Yes.

Mr. TALCOTT. So that there will not be this problem of encroachment in the future. I judge from this, Mr. Chairman, that there is a little bit more aggressiveness, here, and more effort to really get out into the community and meet some of these problems head on, rather than just being prepared to fight them when they develop. This is dif-

ferent from post to post or airfield to airfield or commander to commander.

General REILLY. Yes.

Mr. TALCOTT. I think it has to be a more general and uniform policy throughout all the airbases.

EXECUTIVE ORDER 11508 SURVEYS

Has the Air Force had any serious problems as a result of the Executive Order 11508 surveys?

General REILLY. No, sir.

Mr. TALCOTT. That is the directive telling GSA to check over all installations to see if there is any underutilization or excess land.

General REILLY. Yes.

Our installations have been surveyed by three groups, by the General Services Administration, by teams working out of the Office of Secretary of Defense, and by our own in-house Air Force teams.

We have had no major problems. Quite a bit of land has been found that could be made available for other uses without in any way varying our mission.

Mr. TALCOTT. So generally you have been in accord with this rather dramatic new policy to try to make sure that our Federal facilities are properly utilized?

General REILLY. Yes.

There have been over 160 surveys accomplished at our bases; some 20,000, almost 30,000 acres of land have already been reported to the Congress for disposal.

Mr. TALCOTT. For the record, this is distinct from the base closures and consolidation programs?

General REILLY. Yes, sir, that is correct.

LAND EXCHANGE

Mr. TALCOTT. Why do you feel that you have not had more success with land-swapping under the Air Installations Compatible Use Zone program?

General REILLY. Really, we have not worked too hard at the land-swapping approach. We have been working principally in obtaining the necessary local zoning which would accomplish the desired end. We are having success with this.

That is our first approach, to achieve the compatible use through zoning; if that is not successful, through exchanging land. Of course we need authorization to do that.

Mr. TALCOTT. Would you supply for the record any place where you have had any success in convincing the nearby property owners, or community owners, to rezone or swap land for air zoning?

General REILLY. Yes.

[The information follows:]

EXAMPLE OF AIR INSTALLATIONS COMPATIBLE USE ZONE PROGRAM

Tinker Air Force Base, Okla.—On May 8, 1973, the county of Oklahoma passed a capital improvement bond issue in the amount of \$10,800,000 for the purchase and removal of 836 houses, an elementary school, and the purchase of 32 vacant tracts of land located within the air installations compatible use zone (AICUZ)

for the north-south runway. (There were 88.7 percent of the 90,000 votes in favor of the land issue.)

Offutt Air Force Base, Nebr.—Approximately May 29, 1973, the city council of Bellevue, Nebr., rezoned the area off the northwest end of the northwest-southeast runway to prevent a developer from constructing residential facilities within the AICUZ at that end of the runway.

General REILLY. In fact, Oklahoma City has made a very dramatic move.

Mr. CROCKETT. The Oklahoma City action was not a land swap or land exchange.

General REILLY. You are talking about exchanges?

Mr. TALCOTT. There can be trades of land for air uses, which might be very useful trades or swaps for you.

Will the legislation which is being proposed in fiscal year 1974 to allow the military to exchange land without specific authorization help in your land use program?

General REILLY. Yes, sir, it certainly will.

It will permit us to move ahead on a much more timely basis as opposed to waiting for the annual authorization cycles. It will also permit us to use surplus land of other Federal agencies being excessed by GSA.

Mr. TALCOTT. How is the Congress going to keep track of all these things?

How are we going to exercise our congressional mandate, or responsibility, or prerogatives, to make sure the executive branch does not usurp all of our functions?

General REILLY. The title 10 proceedings, of course, where everything with a value of over \$50,000 must be reviewed and approved by the Congress will continue. There will still be that check by the Congress.

Mr. TALCOTT. Are you trying to steal any of our prerogatives away from us so that we are nonfunctioning in this field?

General REILLY. No, sir.

Mr. TALCOTT. I want to be aware of that if I can; I do not want you to do any of those kinds of things.

Mr. SIKES. I think, possibly, we had better suspend until 2 o'clock.

Mr. TALCOTT. Thank you, Mr. Chairman. I will take your suggestion.

USE OF LAND FOR PARKS

Mr. SIKES. May I ask this one question on land utilization before we begin the subject of depot utilization, which we will at 2 o'clock.

Has the Air Force given thought to making land available for playgrounds and parks, land which is not surplus to your requirements, land for which you anticipate a future use but which is not currently required?

I am thinking of whether this type of land can be used jointly for playgrounds, parks, et cetera, under the sponsorship of nearby communities. In that way their requirements for recreational space could be met, and base property used which now has no specific use. Has that sort of thing been given any careful study?

Mr. CROCKETT. Yes, sir.

Such use is one of the items that has proved to be acceptable to the GSA, in the conduct of its surveys. They have agreed, readily, where

we have been able to share use with the States and communities. A case in point was the survey of Myrtle Beach AFB, S.C. There have been other instances in which such uses were accepted as plausible reasons for our holding onto the land.

Mr. SIKES. I do think that it has very good potential. I am glad to hear you have gone as far into it as you have.

Mr. CROCKETT. Yes, sir. That is one of the prime things we are looking at. When we have an area, for example, that is not specifically required for family housing on a base until fiscal 1978, we are going to have a long-term military need for it, and it is on the fringe of the base, we might very well use it for this purpose.

Mr. SIKES. If you will, provide for the record some illustrations of what has been done.

[The information follows:]

The Air Force continuously reviews its land requirements as a matter of policy. As a result of these reviews and the interest of the general public numerous areas on many installations have been made available for outdoor recreation and activities such as hiking, hunting, fishing, and camping. Currently there are 28 outgrants in effect covering 1,705 acres for public parks and recreation. In addition, ten installations are periodically open to the public for hunting, 13 installations for fishing, and 15 installations for general outdoor recreation. The Air Force tries to limit most recreation on its installations to "dispersed activities" such as hunting, fishing, hiking, et cetera, as opposed to permitting specific areas for public use where facilities could be constructed that may interfere with base missions. The primary considerations in permitting land for public use are safety and mission interference. No land can be made available where the general public will be exposed to safety hazards. This is especially true at our test bases where new weapons systems are continually developed and tested, and new dangers or mishaps could arise during the various stages of development and test.

Mr. TALCOTT. I would like to suggest you be a little chary. I had an experience in one place where the military permitted the community to construct a racetrack on their property. Then GSA came along. They looked down on the topographic map and they saw a racetrack, they said "No military use." So it is going to be excessed.

The military says, "Gee, you have us dead to rights, we allowed the community to use this as a racetrack." We could get it back in a future mobilization, but by then it will have been excessed and the Army, in this case, will not have it any more.

So I think you have to be careful. One of the toughest things to close up when you need to is a kids' camp. If you have a lot of kids around there and you need that for a legitimate military facility, you are in trouble when you try to run the kids off.

Mr. SIKES. The sort of joint use operation that I had in mind, and which I assumed you are doing, would envisage playgrounds, park areas.

Mr. CROCKETT. State parks.

Mr. SIKES. I did not necessarily mean semipublic facilities such as a racetrack. A playground or a recreation area is, of course, something without permanent structures, in fact very few, if any, structures, that could speedily be turned back to military use. Whereas a racetrack, has, at least, semi-permanent facilities and some problems about getting rid of them.

Mr. TALCOTT. Just a track.

Could I just suggest one other thing?

One of the things I have noticed most in the change from a wartime Army or Air Force to a peacetime force is the need for leisure time, meaningful leisure time activities. When the guys are not fighting a war, they do not have the pressures of really fighting a war and are not geared up for that every day. It seems to me your requirements for leisure time activities or programs are going to be a great deal accelerated in the next year or so.

I do not see this acceleration in your budget; gymnasiums, theaters, hobby shops for doing peacetime work, not only overseas but here in the United States.

I think some of your base commanders are going to have some problems with the morale of your personnel if you do not provide facilities and programs to keep them occupied.

General REILLY. Yes, sir.

Mr. SIKES. Very well, gentlemen, we will reconvene at 2 o'clock.

NATURAL RESOURCES PROGRAM

Mr. SIKES. Before we leave the subject of land utilization I think it well to call attention to a program that has been in operation for a number of years which deals with the development and utilization of the resources of the reservations themselves—timber, game and fish resources, and recreational opportunities.

Would you tell us something about the additional progress that has been made in recent months under that program?

I think generally the Air Force has made good use of the legislation that is on the statute books in this area.

General REILLY. The Air Force natural resources program has been expanded and improved during the past fiscal year. Our policy is to manage overall natural resources for the greatest net public benefit. First priority is given to the protection of irreplaceable resources such as rare and endangered species, wetlands, and historical and cultural sites. Second priority is given to areas capable of supporting concentrated outdoor recreation such as picnicking, camping, and winter and water sport sites. The remaining area is managed on a multiple-use basis for fish and wildlife, forage and timber production.

Fifty-two installations have updated fish and wildlife plans and 51 have submitted outdoor recreation plans as a result of new guidance published last year. Following the evaluation and approval of these plans by technically qualified personnel, installations will be encouraged to enter into cooperative agreements with their respective States. In accordance with 16 United States Code 670 these resources will be made available to the general public when such use is compatible with the military mission. The amount of use will be based upon the capacity of land to support such use without degradation of environmental qualities. Installations have also been requested to support the 1973 "National Hunting and Fishing Day" as a means of acquainting the general public with the resources that are available.

Forest management continues to be an important program on installations which have this resource. During fiscal year 1972, receipts of over \$420,000 were received from the sale of forest products. These receipts resulted from the application of forestry practices necessary to achieve a sound multiple-use management program.

AFTERNOON SESSION

ECONOMIC ANALYSIS OF DEPOT MODERNIZATION PROJECTS

Mr. SIKES. There have been various estimates aired with respect to savings to be achieved from the Air Force Logistics Command's depot modernization program. Last year we discussed at some length the validity of some of the economic analyses for projects in this program. I believe, as a result, the Air Force has changed somewhat its methodology in conducting these studies. Is that correct?

Colonel MORROW. Mr. Chairman, yes, sir; it is true that the Air Force has incorporated some changes in methodology that were recommended by the investigative staff of this committee during last year's hearings.

Mr. SIKES. Tell us something about these changes and what you are doing.

Colonel MORROW. Substantive changes have been made primarily in three areas. One area, whereas in the past we had claimed reductions in insurance rates as a consequence of improved facilities, that reduce risks to material and personnel, and where we were improving the safety environment, we no longer do this. We were advised by the committee investigative staff that it was inappropriate for the Government to claim credit for insurance reduction.

Another area is where we had claimed residual value of facilities after completion of an economic life of 25 years, we no longer claim these. We realized, and so did the investigative staff, these do still have value but they feel it is inappropriate. We no longer do that.

A third area which was probably the most significant; we now discount our dollars to the current year, the year in which the appropriations are made, which does, in effect, reduce somewhat the benefits we claim.

Mr. SIKES. What is your present estimate of the total savings as a result of this program?

Colonel MORROW. We now estimate and project we will have \$1.2 billion in hard factual savings as a consequence of the \$390 million investment. That is somewhat less than the \$1.4 billion that we reported to the committee last year, partly as a result of this change in methodology, partly as a result of the decrease in the military construction program, and in a small sense as a result of the decrease in maintenance workload. There are benefits from other efforts such as fiscal year 1971 forerunners and the redistribution of equipment that will be in addition to the \$1.2 billion.

Mr. SIKES. Do you think it is a realistic assessment, that you are going to save that kind of money?

Colonel MORROW. Yes, sir, it is. We believe it is conservative, Mr. Chairman. We think and the committee's staff has agreed with us in the past that while other savings are there, these are the ones that we can factually quantify. There are also those unquantified, that we realize as a consequence of improved reliability and better quality of maintenance repair we will be effecting.

Mr. SIKES. Give us a detail of the savings estimate for the record.
[The information follows:]

Anticipated present value of benefits from the \$390 million proposed for investment under the 5-year program are very conservatively calculated at \$1.2 billion. Those calculated benefits are discounted at 10 percent per year over the economic lives of the investments to obtain their present value. They do not

include intangible benefits. For example, increased quality in work performed will result in more reliable weapon systems, decreased stock levels, decreased transportation and decreased maintenance and supply personnel requirements in both the field and at the depots. However, since this is generally not quantifiable, benefits of this type are not included in the \$1.2 billion. Another benefit not claimed is when depot flow times are reduced but the procurement of the component or aircraft affected will not be reduced. In this case, of course, more assets become available to field units at no additional cost to the Government. Details of the \$1.2 billion are shown below :

	<i>Dollars in millions</i>
Personnel -----	\$533.3
Operating -----	548.3
One time -----	118.2
Total -----	1,199.8

Mr. TALCOTT. They complied with the investigative staff position on not counting what would ordinarily be saved by reducing the amount of insurance. I think this was based on the fact that the Government is self-insured and therefore they are not entitled to take credit for reduction in insurance rates or anything of that sort. I think it is very important that these changes do reflect less risk to the Government, and that is very beneficial. Whether or not they get dollar savings that would be related to premiums or compared to premium savings, nevertheless we have a reduction in the risk of a loss, and that is important. I think we should take credit for it whether we deduct it in dollars and cents or not.

Colonel MORROW. Yes, sir; the investigative staff agreed there was some intangible benefit that would accrue. We had been claiming about one-tenth of 1 percent of our benefits were in this area of reduced insurance premiums. But we agreed with the investigative staff that it was probably inappropriate to classify those as reduced insurance rates since we really don't pay insurance.

IN-HOUSE VERSUS CONTRACT WORKLOAD

Mr. SIKES. What ratio of work do you plan to do in-house and by contract for fiscal 1974?

Colonel MORROW. We estimate that we will continue at about 60 percent of the total depot level maintenance workload being accomplished in-house and the balance on contract.

Mr. SIKES. That is about the same ratio as at present?

Colonel MORROW. Yes, sir. About 57 or 58 percent at the present time, a slight increase over the years, but we will maintain about 60 percent of the total.

INTERSERVICE DEPOT REPAIR

Mr. SIKES. Are you increasing or decreasing the amount of work done on an interservice basis?

Colonel MORROW. We are increasing the amount. Since last year we have increased the amount of interservice repairs by 25 percent for those items common to other services.

CONSTRUCTION MANAGEMENT

Mr. SIKES. For what portion of the fiscal year 1974 program will the Air Force act as construction agent?

General REILLY. The Air Force will do about 11 percent of its design under its own supervision and about 5 percent of construction.

Mr. SIKES. How does this compare with previous years?

General REILLY. It is a little less than we had in 1973. We had 18 percent of design and 9 percent of construction.

I might add these figures are consistent with the request we made to the OSD. Both 1974 and 1973 represent a major increase in each area over what we did in 1972.

Mr. SIKES. Is the Air Force satisfied with these levels?

General REILLY. Yes, sir. We expect it to vary from year to year. We made a very selective choice of projects and are satisfied with what has been approved this year.

Mr. SIKES. Does the Air Force feel that further reductions in the costs charged by DOD construction agencies are feasible?

General REILLY. Mr. Chairman, I think the 5 to 6 percent level we are now being charged is about as far as the agencies can go. I don't see much reduction below that level.

INDUSTRIALIZED CONSTRUCTION

Mr. SIKES. What do you feel is the likelihood of increased use of industrial processes in future military construction programs?

General REILLY. We are experimenting now. We have pilot programs underway. I frankly think that the advantages inherent in industrial construction will provide very promising programs in the future. However, we found at this point in time that industry wasn't quite as ready for our work as we had presumed. But I do expect expanded use in the future, and based upon the experience we get from our current program.

Mr. SIKES. Tell me just what it means that industry isn't ready.

General REILLY. Mr. Chairman, we found that, for our particular type of construction, while industrial processes are being used to a very large extent in industry, they just weren't tuned to meet the varied requirements of the Air Force. I think our family housing program is an example of that. While industrial houses are being built in great numbers throughout the Nation, our combination of different sizes of houses, different combinations of bedrooms, varying density factors around the country, just didn't fit into the pattern as well as we first expected.

Mr. SIKES. Does that mean that your required standards are unreasonable by industry standards?

General REILLY. No, sir, I don't think so. I think probably the type of facilities that we are asking for are not being mass produced in industry at this time. It involves too much change to their production lines.

Mr. TALCOTT. I am disappointed at that response. The Defense Department is one of the largest landlords in the world and we ought to be leading the way rather than following what they do in industry. I just hope there is more emphasis on research, development, and testing and evaluation to try to develop a better system of building not only the kind of family housing but the other kinds of buildings we need. It seems to me we have a responsibility to the taxpayer and to the peo-

ple who will live in the housing to develop the best system we possibly can, rather than just waiting and seeing what private industry does. We have to lead because we are in a leadership position because of the large number of units that we do construct and own.

Mr. SIKES. What did you learn in the past fiscal year from your own R. & D. in construction management?

General REILLY. Would you restate that?

Mr. SIKES. Have you learned anything of significance in recent months in your own research and development into construction management?

General REILLY. Are you speaking, Mr. Chairman, of management of construction, or the construction processes?

Mr. SIKES. Both.

TURNKEY CONSTRUCTION

General REILLY. You are speaking now probably of the application of one- and two-step procurement. In our experience with that we have been extensively using the turnkey approach to construction. We have used both one- and two-step procurement for well over \$100 million worth of construction in the family housing area. As we mentioned earlier we hope to have at least \$40 million involved in the fiscal 1972 construction under turnkey procedures. We expect in our 1974 family housing program to apply further the onestep approach, which is proving to be very promising.

Mr. SIKES. Have you learned anything from industry in your construction management or construction programs that could be incorporated into the fiscal 1974 program? Supply that for the record.

General REILLY. I would have to review that.

[The information follows:]

We are learning from industry with our centrally managed two-step turnkey fiscal year 1972 industrialized construction program for bachelor housing and various support facilities. In absence of evaluation data to be obtained upon completion of the fiscal year 1972 program, we have no plans for specific use of industrialized techniques in the fiscal year 1974 military construction program. Experience gained in the procurement of the fiscal year 1972 military family housing program demonstrated the validity of one-step turnkey as a reliable, cost-effective procurement method when selectively applied in locations where adequate competition among qualified house builders can be expected. We consider validation of one-step turnkey significant and intend to utilize this procurement method in the fiscal year 1974 military family housing program.

Mr. SIKES. For the record, tell us what has been the Air Force's experience with regard to the use of one- and two-step turnkey procedures and if you concur with the guidelines set out by OSD in this regard?

[The information follows:]

As you are aware, we have used two-step turnkey procedures to acquire various projects in prior year programs. During fiscal year 1973 we awarded two large contracts and are in the process of awarding a third large contract for acquisition of approximately \$40 million worth of facilities based on industrialized construction techniques and procedures. This dollar volume represents a large amount of construction being acquired by two-step turnkey procurement procedures for our regular military construction projects. Since these projects are just now getting underway, we prefer to wait until construction is completed and then evaluate the end products before proceeding with another large volume of construction based on two-step procurement procedures. We have not used one-step turnkey procedures recently for any regular MCP projects, although we have for several military family housing projects. The guidelines established by DOD for turnkey projects are realistic and we concur with them.

RELOCATABLE FACILITIES

Mr. SIKES. Tell us what experience you had in obtaining relocatability in the various packages in the fiscal 1972 program.

General REILLY. Of our industrial packages in 1972 relocatability was obtained in two of them. The dormitory and officer's quarters construction we found lent itself very well to relocatability. Also in our warehouse project at Robins Air Force Base. We found, however, with the operations, administrations, and training facilities it could not be economically obtained.

Mr. SIKES. Are you proposing any relocatable facilities in the fiscal 1974 program?

General REILLY. Not relocatable per se, sir, at the present time, although we are continuing to study all approaches to our construction.

Mr. SIKES. Does the Air Force concur in the OSD instruction with regard to the use of relocatable structures?

General REILLY. The DOD instruction of relocatable structures was staffed with the three services, including the Air Force, and it represents a coordinated policy.

Mr. SIKES. What is your present situation on three- and four-bedroom housing in view of the problem of costs? We hope you are not going to turn back to two-bedroom housing because of the cost of building three- and four-bedroom housing.

General REILLY. No, sir, we aren't. As mentioned earlier, our 1974 program is almost exclusively four bedroom and at an increased cost per unit to \$27,500.

Mr. SIKES. Can you build it for \$27,500?

General REILLY. We think we can.

Mr. SIKES. It will be close, won't it?

General REILLY. It will be close but I think we can.

REPORT ON GEORGE AND NORTON AIR FORCE BASES INDUSTRIALIZED HOUSING

Mr. TALCOTT. Could you tell us what stage you are in in your evaluation of the George Air Force Base industrial or modular construction, whatever you call it?

General REILLY. There are two projects actually, Mr. Talcott. The George project, of course, has been complete for some time.

Has the report been completed, Mr. Johnston?

Mr. JOHNSTON. Yes, sir, it has been completed.

Mr. TALCOTT. Has it been filed with our committee?

Mr. JOHNSTON. I don't think so.

Mr. TALCOTT. Would you have any objection to sharing it with the committee?

General REILLY. We will be happy to get that. A part of that project was the requirement to develop a detailed report and I think that has been completed.

As you know, that was a very successful project, and we applied the basic principles of that project further into the Norton project using the same factory, going to a fully relocatable single-story house, 250 units. That project is now completed.

[The information follows:]

GEORGE AFB

EXECUTIVE SUMMARY

The 200-Unit Family Housing Project at George Air Force Base, California, was initiated in mid-1970, and was successfully completed in September, 1971. As the first Department of Defense Industrialized Housing Project, it was the final portion of a three-phase DOD program, initiated in July 1967, to explore the development of industrialized housing as a means of reducing military family housing costs at no sacrifice to dwelling quality or livability features.

The General Electric Company, which was competitively awarded contracts in all three phases of the program, conducted Phase III at George AFB in joint venture with the Del E. Webb Corporation. Under the major elements of the joint venture arrangement, General Electric was responsible for overall program management, factory housing production, and housing module transportation over the 17 miles distance from the factory at Apple Valley, California, to the site at George AFB. Del E. Webb was responsible for all site development work as well as house erection and finishing at the site.

The Phase III effort was essentially an experimental project which successfully achieved the following overall objectives:

- (1) The Project experience clearly demonstrated that factory-built housing is technically feasible and operationally practical. Two-hundred dwelling units, encompassing townhouse, apartment, and single unit designs, were built and erected four weeks ahead of schedule.
- (2) While user evaluation, per se, has yet to be performed, positive indications of user acceptability and satisfaction have been expressed by the Air Force prototype review team, the many Base personnel and their families who have examined the houses, the numerous visitors to the houses including top management and officials from DOD, the Congress and HUD, and the representatives of the home building and material industries who have toured the site. Most importantly, the overall balance of design and producibility features used in the dwelling units virtually eliminates any appearance associated with the factory origin of the houses, and presents to the user the appearance of a conventionally constructed community.
- (3) From an economic point of view, the Project accumulated data and experience which were used for cost extrapolations to high volume production. While the experimental nature of the Project does not directly indicate the unit cost of a mature industrialized housing system, the data has shown that an average cost reduction in excess of \$1700 per unit can be realized on a yearly production of 2000 houses via high-volume production optimizations alone. On yearly production beyond House #2000, the cost savings will increase to \$3000 per unit due to continuing favorable "learning curve" factors in the factory and the elimination of start-up costs. Additional unit cost savings are also expected to accrue as further improvements are made to adapt the house designs to high-volume production.

In addition to fulfilling the overall objectives cited above, the Project accumulated a significant catalogue of experience relative to housing factory operations, new and innovative processes, module handling, transportation and erection techniques, and methods for optimizing factory and field operations for high-volume production systems. Key among the several design and process innovations that were successfully employed to demonstrate the various quality and production features that can be used in industrialized housing were:

- o Steel wall studs
- o Cast plaster walls and ceilings
- o Honeycomb-plywood floors
- o Plastic plumbing

The report summarizes the significant Project accomplishments and lessons learned in Section 2, discusses the details of the Project as they occurred in Section 3, and provides a postulated high-volume system based on the George AFB experience in Section 4. Several photographs of the Project are included throughout the report, including selected photographs of the factory operations in Appendix D.

GENERAL ELECTRIC,
REENTRY AND ENVIRONMENTAL SYSTEMS DIVISION,
Philadelphia, Pa., April 14, 1972.

THE 200-UNIT HOUSING PROJECT, GEORGE AIR FORCE BASE, CALIF.—
SUMMARY REPORT

(Contract No. F04609-70-C-0132 For Department of Defense, Office of the Assistant Secretary, Installation and Housing and U.S. Air Force Office of Family Housing, Washington, D.C.)

I. INTRODUCTION

The objective of the George AFB family housing project was to select the combination of modern design, material, construction, and management techniques that would provide quality housing at the lowest possible cost. Quality considerations were broad, including those factors relating to attractiveness and liveability as well as to sturdiness, trouble-free operation and low-cost maintenance. Cost considerations included both the initial cost of construction and the continuing costs of operation and maintenance. While immediate improvements in construction cost effectiveness were desired, it was considered equally important to select approaches that would offer continuing gains, at least offsetting the unusually rapid rise in such costs which have been experienced in recent years.

The concept was to approach present and future housing needs for military personnel on a total-system basis. An obviously attractive route to lowering cost was to turn to mass-production techniques—(that is, the factory-built house). Too often, past efforts in this direction produced a product that clearly displayed its origin, entailed high maintenance costs, and lacked the degree of individuality and finish that gives people pride in their homes and pleasure in living in them. This unfortunate result had to be avoided. Another problem with the factory construction approach was that of moving the product to its site. Movement of complete dwellings entails high cost, plus complexity in scheduling and regulatory requirements; this approach appeared unsuitable. It was necessary to find the desirable balance between the cost of transportation and erection and the size of the house section, or module, that should represent the completion of the factory effort. The modular approach offered, with sufficiently ingenious design, the possibility of assembling different house plans by using different mixes of the same basic modules. Site planning was required to lead to a pleasant, safe, and functional neighborhood, but at the same time to provide for economical installation of utilities, roadways, and storm drainage. The list of balances and tradeoffs which had to be considered was long; these are just a few major examples.

Phase I of the family housing project entailed studies by three different groups of the potentials of innovative approaches, on a generalized basis—et cetera, without regard to a specific requirement or site. The General Electric

Co.'s participation is reported in reference (1); consideration of the problems of architectural design, manufacturing, and site engineering showed good possibilities that a carefully planned and integrated effort could produce a quality product at reduced cost.

In phase II, a concept was selected, and a demonstration planned around the fiscal year 1969 increment for the housing program at George Air Force Base, near Victorville, Calif. This plan called for 200 units in the enlisted housing area, distributed among the following types :

Type :	<i>Amount</i>
3 bedroom townhouses.....	90
4 bedroom townhouses.....	90
2 bedroom flats.....	16
4 bedroom single dwellings.....	4

The Phase II effort was conducted as a joint venture by the General Electric Co. and the architectural firm of Hugh Gibbs, FAIA, and Donald Gibbs, AIA. The end result was a complete set of plans for the site, dwellings, and all construction details, as well as specifications for process development and for the actual construction project. Subassembly selection was accomplished, and based on this, the supporting manufacturing facility and production processes were outlined, as well as the proposed methods of transportation and site erection. Costs were estimated in detail. An essential concept in planning this part of the project was to maintain recognition that in itself, the project would be a test case, requiring careful attention to completeness of data both as estimates and as actually accrued. The material resulting from the phase II analysis and planning is presented in detail in reference (2).

The phase III implementation was conducted by a joint venture of the General Electric Co. and the Del E. Webb Corp. It is the purpose of this report to describe the activity, report the results as they are presently known, evaluate the performance and resulting product with reference to the projections of phase II, and estimate the future applicability and growth potential of the chosen approach. It is further intended that this report bring out the principal aspects of the project, so that problems and their solution can be seen in relationship to one another.

Figures 1 through 4 show floor plans of each of the dwelling types.

References

(1) "Final Report, Research and Development, Military Family Housing," prepared for Department of Defense Family Housing, Contract DACH 15-68-CO158, GE, Missile and Space Division, and Community Development Division, December 1967.

(2) "Final Report, Design Development, Prototype Demonstration Family Housing Project," Department of Defense, Office of Family Housing, Contract DACH 15-69-CO147, General Electric Re-entry and Environmental Systems Division and Hugh Gibbs, FAIA, and Donald Gibbs, AIA, Architects, June 25, 1969.

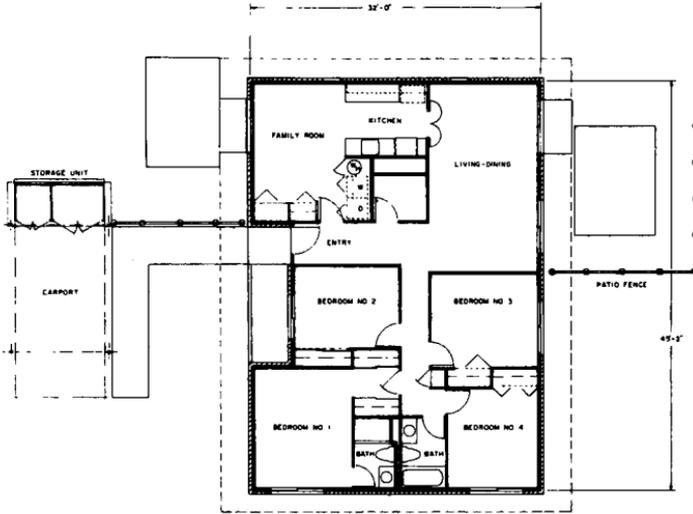


Figure 1. Four-Bedroom - Single Detached Unit

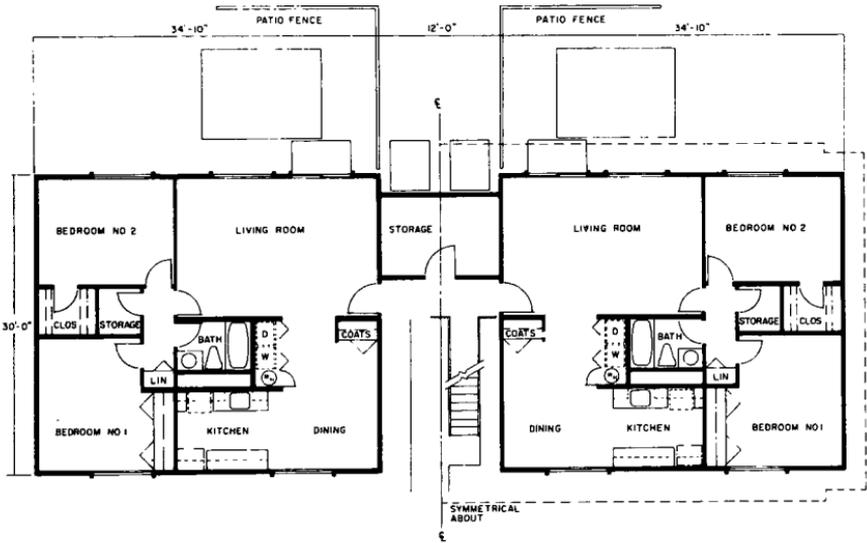


Figure 2. Two-Bedroom Apartment Units

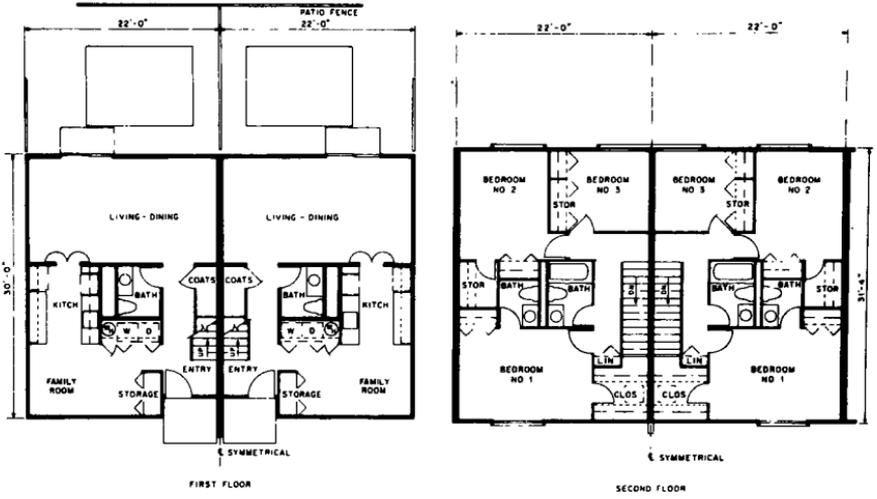


Figure 3. Three-Bedroom Townhouse Unit

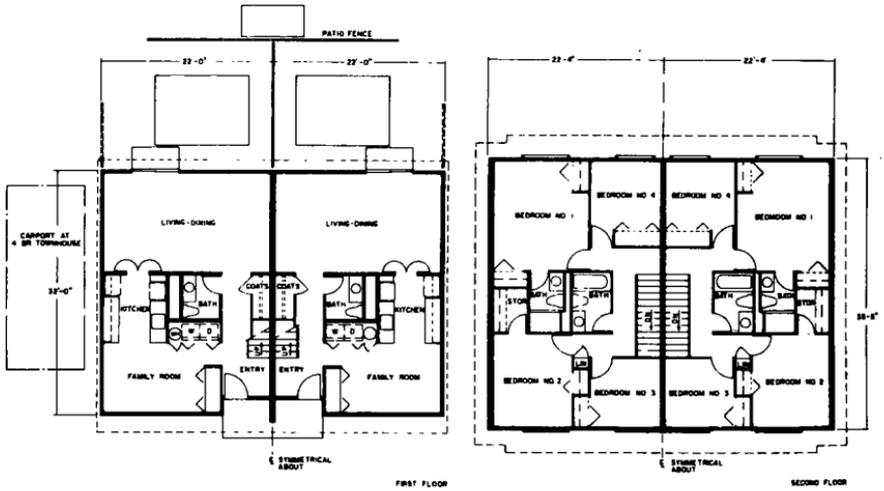


Figure 4. Four-Bedroom Townhouse Unit

II. APPROACH

A. *Dwelling design*

The key to the approach chosen is the maximum use of factory construction. The primary advantage is that of cost; by proper design, it is possible to have many operations performed in a repetitive fashion, not only permitting reduction of time as the skill for that operation improves, but also providing economic justification for use of special fixturing and tooling for higher efficiencies. A significant factor also lies in the opportunity to use skill levels lower than those of the trade journeymen employed in field construction, with consequent lower rates of pay. Ability to operate in a factory independent of weather is another asset. (An important point requires expression here—such approaches as those described herein are in no way aimed at revising the labor structure of the home construction industry; national housing needs still exceed national capacity by a considerable margin, and the use of the approaches discussed here can help fill the gap, as well as provide a valuable feeder route to the higher skill levels.)

The decision as to how far to go at the factory before moving the resulting product to the site for assembly and completion covers a large range of choices. At the lower end of the range of factory accomplishment are panel systems with separately identifiable structural systems. At the upper end are fully closed modules—one or more completely equipped rooms in the shape of a box—which have structural integrity such that they can be easily shipped and handled as a unit.

Study of this spectrum leads to some interesting observations. The amount of work performed in the factory is maximized for the closed-module case, not only in terms of fit-up and assembly, but in terms of interior surface finishes, which can be fully protected from weather and handling during transportation and erection.

In terms of the most efficient use of materials from a structural point of view, neither end of the range is optimum. It is difficult, in the case of panel and frame construction, to achieve the full efficiency of having the skin or shell of the unit serve simultaneously both the structural and weather-protecting functions. While the panels can provide stiffness, the frame still carries most of the load, as in conventional construction. Thus, use of material is not minimized. On the other hand, when closed modules are stacked together in a final building, redundancy of adjacent wall or floor ceiling surfaces is bound to occur. Again, material usage is not optimum.

A similar consideration exists in the architectural design. Panel and frame systems allow considerable flexibility of space arrangement, but they tend toward monotonous exterior appearance. Complete, enclosed modules permit diversity in stacking arrangements and treatment of external surfaces, but they are fixed in shape.

Consideration of the logistic aspects of the approaches leads to similar pros and cons. It is desirable to buy materials in bulk and in quantity. Both in procurement and in production, attention must be given to material storage, including raw material and in-process subassemblies. The ability to vary house design when using already-manufactured components is greatest at the simple component level, and least at the complex, complete-module level. This consideration is important in relation to efficiencies gained by steady production rates and the need to be able to "build for inventory". The simpler system permits design variations of the house after manufacture.

Transportation is the remaining area for this type of evaluation. Broadly speaking, it is cheaper to handle bulk, high-density materials. The handling of subassemblies below the complete-module level requires auxiliary structure for proper support, in addition to weather protection.

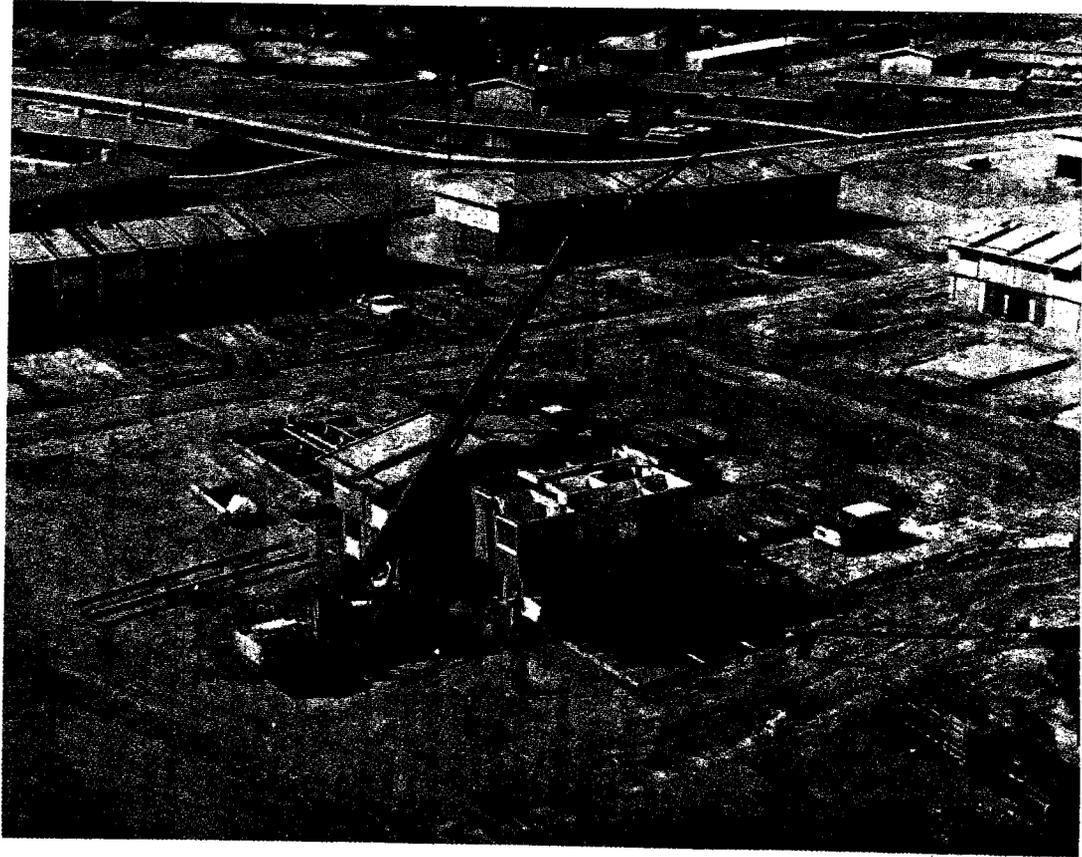


Figure 5. House Erection On Site

In phase II, the final result of all of these interacting considerations was a decision to manufacture to the "major subassembly" level. An example would be a 12-foot by 30-foot floor section (half of the unit's floor), with side wall and partial wall turns at each end. In such a module, sufficient rigidity could be obtained to provide good structural efficiency; control of planes, angles, and lines to permit accurate field assembly; versatility for use in several different house design combinations; and acceptable transport and storage problems. Figure 5 shows such a module. In the townhouse design (forming the largest part of the George AFB project), two such modules join to form one floor, with a utility core module fitted in a central position. The core (figure 6) also forms the partitions separating the first floor rooms, and contains the powder room. The end-wall openings are closed by "glazing panels," consisting of a flat section of wall with emplaced door and window units. The glazing panel provides a means to accommodate any dimensional variance between the two end-wall turns by customized joining pieces. It also permits variation of external color and texture.

Two more modules and two glazing panels form the second floor in similar fashion. The second floor modules contain the partitions forming bedrooms, baths, and closets. Following their assembly, the roof unit is lowered in place in two sections and secured. The building is now complete and ready for finishing work such as taping and spackling of interior wall joints, necessary interior and exterior painting, closing of roof joint, et cetera.

Thus, a townhouse unit originally consisted of 11 modules, or subassemblies. Experience, early in the production run, showed that tolerances were being maintained sufficiently well to eliminate the adjustability offered by field installation of the glazing panels. These were thenceforth installed at the factory, reducing the number of modules shipped for each townhouse unit to seven. As is seen in the illustration, figure 7, variations are provided in setback so that blocks of two units each can be offset in single, central, or echelon fashion to provide variety of appearance to the 6-unit buildings. Coupled with the variation in clustering provided by the site layout, typical row-house regimentation does not appear.

The major decisions regarding fabrication techniques were as follows:

Floor fabrication.—Use of sandwich construction was chosen where a resin-impregnated paper honeycomb layer is bonded by synthetic resin to a top and bottom layer of plywood, forming a composite structure 6 inches thick. (This type of fabrication has been used in aircraft structures in recent years; in wood or metal, it provides excellent structural strength and rigidity with minimum weight.) The first-floor ceiling/second-floor floor was filled to a $\frac{3}{4}$ -inch depth with sand, to absorb and deaden sound transmission. Figure 8 shows typical floor construction.

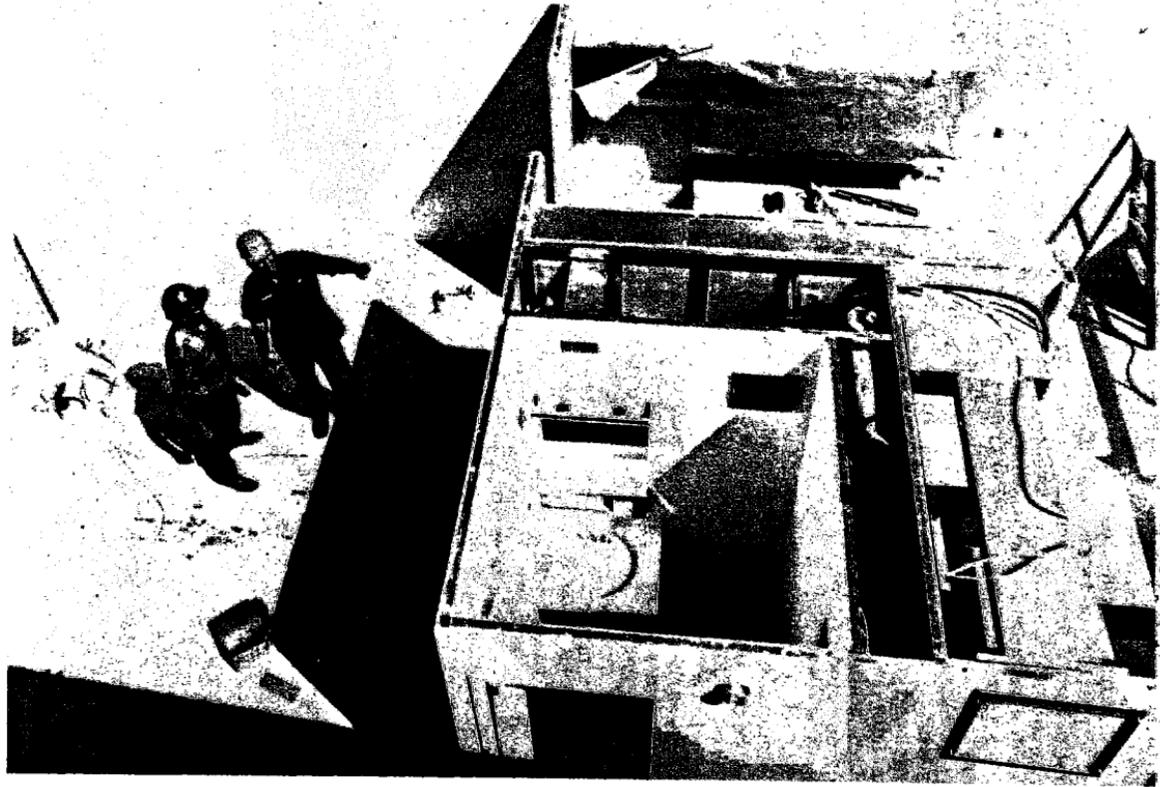
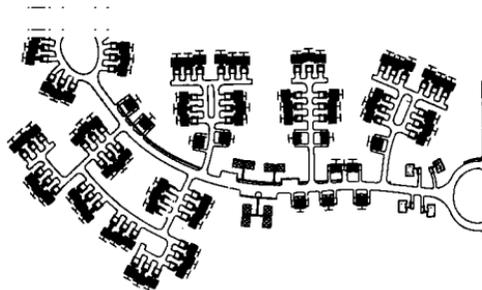


Figure 6. Core Module

George Air Force Base site plan

- SINGLE FAMILY UNITS
- APARTMENT UNITS
- TOWNHOUSES



Micro-neighborhoods



Figure 7. George Air Force Base Site Plan

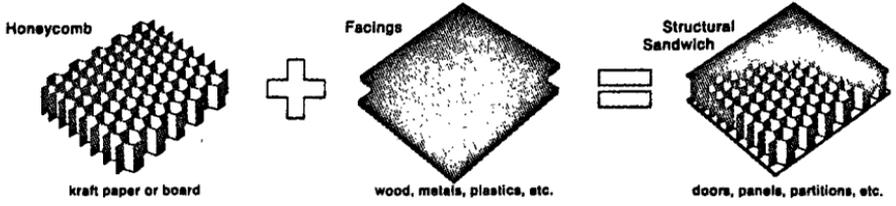


Figure 8. Typical Floor Construction

Wall fabrication.—Rolled steel frame members were used, in the form of channel-shaped members of 16-gage galvanized steel, of the same exterior dimensions as ordinary 2 x 4's. The slightly higher cost was offset by the advantage gained in rigidity, stability, and dimensional accuracy of such framing. (Overall structural design was selected to be able to withstand earthquakes.) All frame joints were welded, strips of metal lath were attached to anchor the plaster, and then the entire frame was lowered into a ½-inch bed of plaster on a flat table. Although freshly mixed, a special plaster formulation cured sufficiently in 30 minutes so that the entire wall panel could be lifted from the casting table and moved on for further assembly. It should be noted that outlet boxes for all electrical connections were welded in place in the frame before insertion in the plaster. Figure 9 shows the plaster bed being prepared to receive the wall frame hanging from the crane to the right.

Roof fabrication.—Sets of wooden trusses were sheathed with plywood and the upper surface covered with asphalt shingles. This conventional roof unit was then plaster-coated on the underside by the same casting technique, to form the ceiling of the second-floor rooms. Two roof sections made up the roof for each house unit. The casting of the plaster ceiling is shown in figure 10.

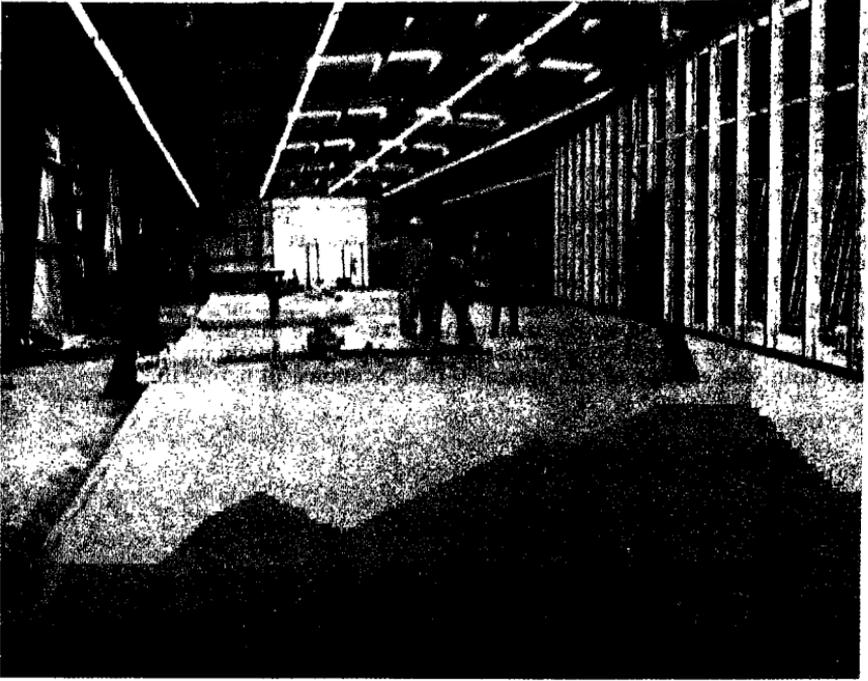


Figure 9. Work Station C1 - Wall Casting

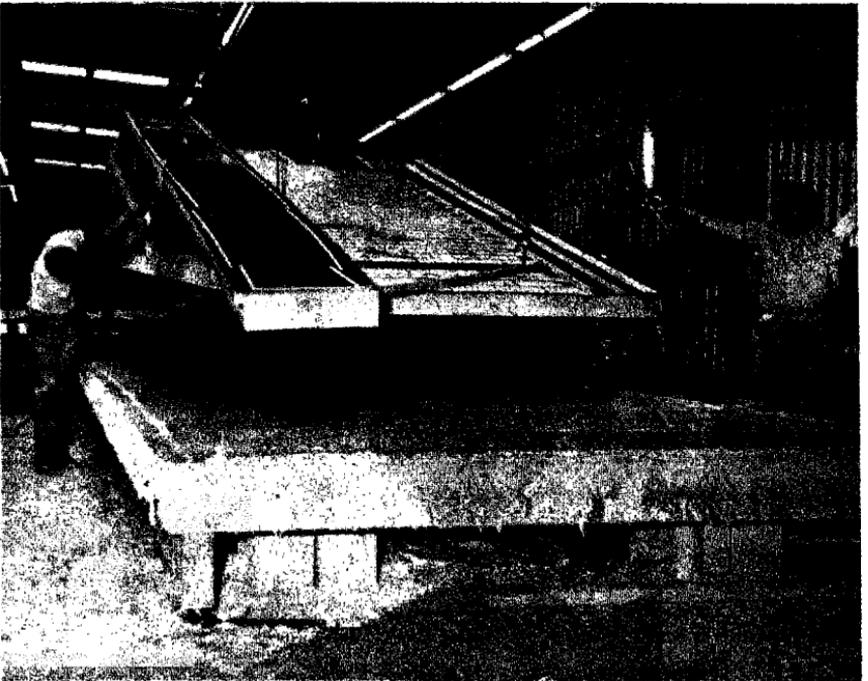


Figure 10. Work Station D2 - Ceiling Casting

The advantages of the cast-plaster technique are the resulting solidity, strength, and appearance, as well as freedom from intermediate joints and from the "nail-popping" so often encountered with dry-wall construction. Yet at the same time, the materials are those well known to the construction industry and are available in bulk form at reasonable prices.

Mechanical systems.—Another essential feature of the design is the arrangement of all mechanical and service systems in the central utility "chase."¹ The chase is a narrow, rectangular shaft built as part of the first-floor core module. The core also contains the powder room, enclosure for washer and dryer with furance/air cooler suspended above, and range hood and kitchen cabinets. The chase extends the full height of the first floor, connecting with a continuation formed at the junction of the two second-floor subassemblies, thus passing on through to the attic space. All water supply, drains, venting, and heating and ventilating duct "trees" were assembled in jigs at the factory, and installed in the utility core chase. Thus fieldwork was limited to connecting to the pre-assembled utility manifolds in the crawl space, connecting all plumbing and appliances in or adjoining the core, connecting air ducts emplaced in the roof structure to supply the second-floor rooms, and installing the roof terminations of stacks, vents, and the single plumbing vent in the false chimney. The use of plastic piping for all pumping systems, except hot water represented another significant innovation, speeding factory assembly and field alinement and connection. (CPVC plastic pipe was used for hot water later in the run.)

The only systems extending beyond the core and chase were the electrical wiring, outlets, and fixtures emplaced in the module walls and the television and telephone circuits. Connections between these modules and the chase were made in the field, using connectors rather than the more expensive junction boxes.

Flats and single dwellings.—Very similar approaches were followed in these units. The two-bedroom flats, arranged in two, two-story units centered on common outside stairway and storage units, each consisted of three floor-wall-partition subassemblies plus two end-closure panels. In the case of the four-bedroom single dwellings, smaller subassemblies mounted on a concrete pad were used. Fifteen modules, plus the roof, comprised the dwelling proper.

Improvements.—During the early phases of the demonstration program, design review and value engineering techniques were applied to determine more efficient ways to satisfy the design requirements. This activity resulted in a number of changes in approach being introduced, with some retained and others rejected after evaluation. Examples are as follows:

- (a) Elimination of glazing panels—incorporated.
- (b) Use of CPVC instead of copper for the hot water system—incorporated.
- (c) Elimination of lath as an attachment method for plaster to steel studs; replaced by a series of loops roll punched into the studs—incorporated.
- (d) Shingle roof replaced by GE silicone roof, having 30-year life—incorporated on the four single units.
- (e) Joist floor used on several units to obtain a direct cost and performance comparison with the stressed-skin/honeycomb composite floor—incorporated.

B. Community planning and site engineering

In terms of total quality and cost, the same careful attention was given to these areas of the project, as was directed to the design and construction of the dwelling units themselves. Overall project orientation and density distribution were carefully worked out to make use of the outlook over the Mojave Valley and, coupled with the variability of building design (setbacks, etc.), to avoid the sterility of a conventional rowhouse community. Buildings were grouped in clusters, or "microneighborhoods," to gain both esthetic and social functioning values (e.g., play areas, tree-shaded areas, etc.). Figure 7 shows the arrangement.

In site engineering, full use was made of modern materials and methods, such as plastic (ABS) pipe instead of cast iron or vitrified clay for underground services. ABS pipe offers less flow resistance and has higher strength, thus permitting smaller line sizes. High-pressure gas distribution using PVC plastic pipe also permitted smaller line sizes, and present-day sheathing for power and communication cabling permits its underground placement. Surface access points for sewer cleanout replaced conventional, more costly manholes. Water distribution systems were optimized to provide adequate domestic, firefighting, and irrigation sprinkler supply with minimum cost.

¹"Chase 'n'. * * * 3. A hollowed out groove for drainpipes in a wall, etc. * * * " Webster's New World Dictionary).

Moderate adjustment of contours made possible the use of existing terrain to achieve a distributed storm drainage pattern, thus eliminating the need for street drains and piping, and gaining better ground water recharge.

C. Construction method

1. The factory

The characteristics of the manufacturing facility, as analyzed in phase II, depend on the number and type of operations to be performed, the rate of production, and the degree of stability or fluctuation of production rate. The operations to be performed depend, in turn, on the manufactured level at which incoming material is received, compared with the manufactured level at which it will leave. Economically, these levels depend on the geographical relationship of the factory to material sources and to the erection site, or sites, among other factors previously discussed.

The following guidelines were used in planning the materials flow and plant layout:

- Supply of materials in large quantities to the field factory in dense, shippable forms.

- Require minimum handling of pieces needed by a specific component.

- Eliminate chances for human error.

- Carry the product as close to its highest "value state" as possible under these controlled factory conditions.

- Corollaries of these are:

- Minimize requirements for worker skill and supervision.

- Move the job to the worker, maximizing the use of his time to perform his particular manufacturing operations.

- Provide working conditions essential to good performance: Shelter, comfort, and transportation.

Underlying general principles were to plan in terms of emulating the activities of the supplier to the construction industry, rather than the field construction industry itself, and to buy instead of making those components already deriving the benefits of factory operation, when economically preferable.

The desirability of having the factory close to the erection site led to the concept of a mobile factory, possibly operating as a satellite to a more permanently based "feeder" factory. In phase II, this concept was considered in a trailer-mounted plan, where dropable side panels and trailer beds could be linked to form the working floor, and an air-inflated structure would serve as weather protection.

This concept was not actually employed in the phase III demonstration program. Mobile facility design problems would have been costly to implement experimentally, and labor availability and stability would have been difficult to achieve. Since it had already been planned to do warehousing and wall frame welding at an available facility in Apple Valley, 17 miles from George AFB, the decision was made to establish the entire factory at that location.

A key element relating to the type of factory operation planned was that of establishing satisfactory union relations. The Del E. Webb Corp. (who had contracted to supply the factory work force under GE technical direction) and the carpenters, plumbers, and electricians locals reached an agreement covering rate

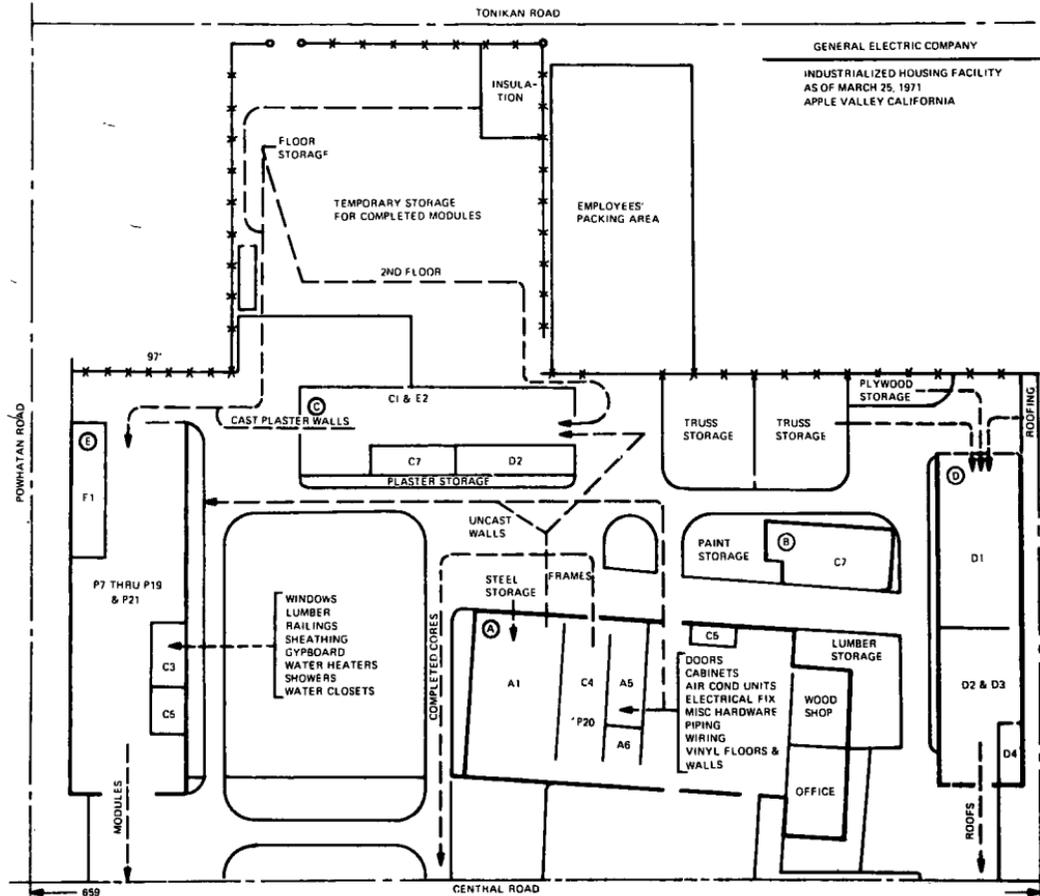
structures and factory work assignments. Under this agreement, good relations were maintained and few problems encountered. This was largely due to the positive and cooperative attitude of the unions and their trade coordinators. The history of the labor relationships throughout the project bore out the keynote expressed by Clarence Briggs, general representative of the Carpenter's International, at the groundbreaking ceremony: "Speaking on behalf of the several unions represented here today, I want everyone present to know, we are completely in accord with this special project * * *. We further join the use of modern factory procedures to create such housing * * *. It will be our intentions to do everything within our powers to assist in having a smooth running factory, movement of materials to the jobsite, and finally, it is our hope this will prove to be an erection project that will work out all the problems and prove this type of housing feasible, adequate, and attractive, thereby leading to many other similar projects around the country."

To the two existing buildings at Apple Valley, three more were added, one of which was constructed with ease of dismantling in mind, the thought now having turned to the idea of a relocatable, rather than mobile, factory. All were erected on concrete pads, which turned out to be desirable in terms of providing dimensional stability to such fixtures as the plaster-casting tables. Quonset-type structures were originally considered, but rejected in favor of straight sided, warehouse-type buildings, which were more readily available. Being straight sided, more working space with adequate overhead clearance was available. At the same time, it was becoming evident that the A-frame and jib-crane approach to handling materials and subassemblies was going to be inadequate, and that traveling cranes would be necessary. The Pascoe buildings were chosen because they also provide the necessary load-bearing capabilities and clearances in their structure.

The location of the buildings, the operations contained in each, and the flow of materials is shown in figure 11. While generally satisfactory, much was learned that will lead to improvement in future projects, as will be discussed later. The overall facility was planned with the capacity of one housing unit per day, on a single 8-hour shift, 5-day week, with support of a small second shift, and a three-shift operation on wall frame welding (due to equipment and space limitations). This capacity was easily met; in fact, the rate was doubled to two units per day during the latter half of the program.

The major purchased subassembly was the honeycomb floor; these units were vendor-manufactured and shipped to the factory as complete assemblies.

Another significant decision was the granting of approval to have the household appliances provided as contractor-furnished rather than Government-furnished equipment. (These included the hot water heaters, kitchen ranges, refrigerators, disposers, and dishwashers.) This was contingent on the provision of General Electric appliances meeting or exceeding the quality of the planned Government-furnished equipment, and at the same cost. This represented an important savings, since the appliances could be installed at the factory, thus eliminating one or more cycles of handling, warehousing, and shipping, thereby saving associated cost and paperwork, and greatly reducing handling damage or loss.



- A1 WALL WELDING
- A5 PIPING SUB-ASSY.
- A6 WIRING SUB-ASSY
- C1 WALL CASTING
- C3 STAIR ASSY.
- C4 CORE ASSY.
- C5 GLAZING PANEL ASSY
- C7 PAINTING
- D1 ROOF FABRICATION
- D2 CEILING CASTING
- D3 CEILING PAINT
- D4 DUCT WORK
- E1 FLOOR VINYL & LAYOUT
- E2 PARTY WALL CASTING
- P7 WALL ERECTION & CONN.
- P8 SHEAR PANELS & SIDING
- P9 GYPBOARD APPLICATION
- P10 CORNER BEAD-TAPE & SPACKLE
- P11 WALL VINYL
- P12 SHELVING
- P13 FRAMES DOOR & HARDWARE
- P14 BASE MOLDING
- P15 BATH FINISH
- P16 KITCHEN CABINETS
- P17 PICK-UP WORK & MISC
- P18 INSULATION
- P19 INSTALL PLUMBING
- P20 INSTALL WIRING
- P21 REWORK

Figure 11. Factory Layout and List of Work Stations

2. Transportation

The transportation system chosen consisted of a set of 15 open-frame trailers, 1 fitted to handle core assemblies, 4 for roof assemblies, and 5 each for the 10-foot and 12-foot wide modules. A single tractor was provided initially, and a second added later. A stake body truck served the movement of miscellaneous material. The size of the trailer fleet was based on turnaround time at factory and site and road time. Mounting and tiedown features were incorporated, as well as ballasting to provide stability. All State highway regulations were complied with. Figure 12 shows a second-floor module being transported to the site.

3. Site preparation, creation and completion

Site preparation was planned and conducted for the entire project at one time, including roads, all grading, utilities, and foundations. Poured-concrete foundations with center steel beams were used for the townhouse buildings, concrete pillars, and steel beams for the two-story apartment units, and concrete slabs for the single dwellings. Two utility trench networks were used, one for water, sewer, and gas, and one for electricity, telephone, and television. It was originally planned to use surface assembly on utility networks, lowering into the trench after assembly. Poor slope-holding characteristics of the local soil made this impractical at this site.

A single large crane, with appropriate spreader and sling assemblies for the various modules, was used to lift units from the trailers and place them in position.

In addition to field completion on the dwelling units as previously discussed, the remaining site work consisted of installing street lights, final cleanup, seeding, and landscaping.

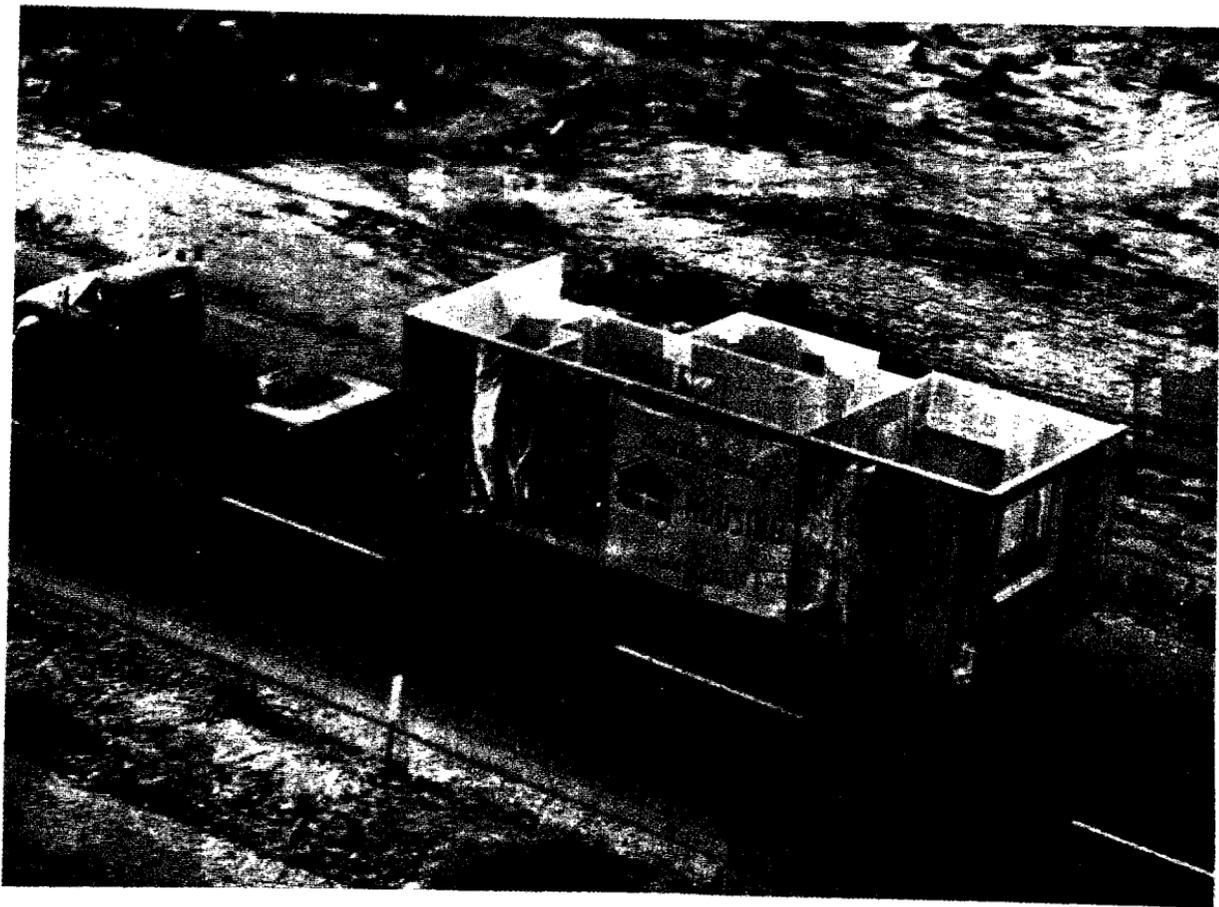


Figure 12. Module Enroute From Factory to Site

D. Organization

In organizing the joint venture between the General Electric Co. and the Del E. Webb Corp., the division of responsibilities was as follows: General Electric—Program management; housing production; transportation, factor to site; project evaluation; all material procurement (except for site development, carports, storage units).

Del E. Webb—Site preparation; house erection; house finishing; site finishing; preparation for final inspection.

The overall organizational relationships within the project are shown in figure 13.

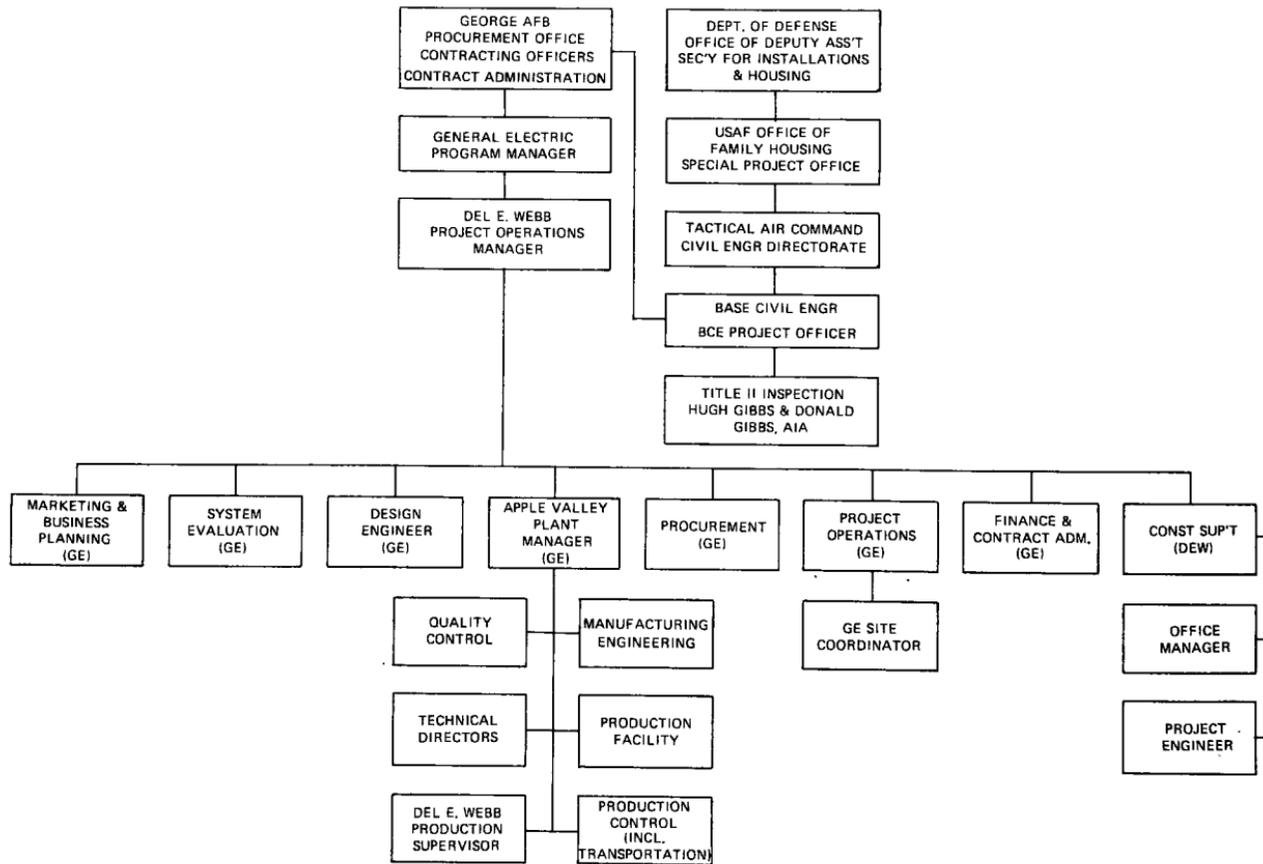


Figure 13. Project Organization

III. OPERATING EXPERIENCE

A. Factory

The factory erection began in mid-June 1970, and was completed on schedule in September 1970.

In general, the concepts on which the manufacturing plan was based turned out to be sound. The breaking down of house construction to a unit-operation level, and corresponding manning of the work stations, was proven to be practical and effective. Many difficulties were corrected as operating experience was gained; most of these had to do with improving materials flow between buildings, and interim storage procedures, including weather protection.

The work stations were based on providing manageable elements of fabrication that could produce an item ready for the next level of buildup at each succeeding station. The list of stations is shown in figure 11.

The initial approach to processing the work at each station was to provide completely detailed, explicit instructions for each operation to be performed. This turned out to be cumbersome and time-consuming for the operators. The substitution of simple, one- or two-line instructions on wall charts at the stations, plus adequate operator training, provided a much more satisfactory flow of effort.

The initial factory workforce was composed mostly of employees with direct job-related experience. Attrition and selective replacement progressively led to a younger and more aggressive work force, but with less job-related experience as noted below:

Labor force skill, January 1971

	<i>Percent</i>
Directly related experience.....	28
Some related experience.....	24
No related experience.....	48

Evaluations indicated that initial skills and direct job-related experience are not as important for factory labor as is motivation and the ability to quickly acquire on-the-job training. The judicious categorization of work tasks and the simplification of various job elements contributed significantly to the ability to use inexperienced labor. As an overall factory average, inexperienced personnel were able to perform a work assignment within the first week, and become proficient at the job within the second week. The factory force consisted largely of residents of the local area.

As production proceeded, close observation of all operations revealed instances where additional powered equipment was called for, such as the use of a powered screed on the plaster casting line (the tool used to spread and level the poured plaster, and to control its thickness), and the use of pneumatic nailing tools in final assembly.

Quality control was a prime consideration throughout. Numerous inprocess inspection points were incorporated, and deficiencies were recorded for later analysis of the process, as well as for immediate correction. Each discrepancy was referred to a material disposition board consisting of the plant manager, production engineer, and the quality control engineer, and decisions were made to scrap, return to vendor, rework to drawing, or rework not to drawing (providing form, fit, and function were not affected).

Procurement of materials, supplies, and those subassemblies which were purchased (floors, window and door units, and roof trusses) required careful planning and scheduling. A normal bid procedure was used to select vendors from those offering products meeting the specifications, and thorough receiving inspection was conducted. In general, the flow of incoming material went smoothly, with few delays. In order to take advantage of quantity prices, all items were purchased in lots sufficient to supply the entire project, with deliveries coordinated to maintain the necessary factory inventory.

B. Transportation

Transportation from the factory to the site required careful coordination of schedules and equipment, since the 15 trailers moved 14 modules (two houses) per day during the second half of the project.

Adjustments were made to the trailers for balance for safe road handling. At first, sand bags were used; these were replaced with concrete ballast outriggers. Fenders were added to prevent the throwing of mud and rocks by the wheels, and cosmetic damage was eliminated. In total, the transportation operation proceeded more smoothly than had been anticipated. A module en route to the site is shown in figure 12.

C. Site Activity

Site preparation activities proceeded smoothly, and according to plan. As mentioned previously, grading, road, and utility work was completed for the entire project, as well as construction of the foundations for the 46 different buildings.

The erection of the townhouses consisted of the use of a crane to lift each subassembly module from its trailer and to put it in place. Figure 5 shows such an operation. It also included completion of all structural connections necessary to tie the four modules, core assembly, and two roof sections together. A seven-man crew handled erection, including the crane lift and structural fastening. They rapidly developed proficiency, and the operation became routine. The main problem was the high wind prevalent in the area; the crew, however, learned to cope with this well so that only five instances occurred when erection was delayed by weather. The basic schedule called for erection of two houses per day; it was found possible to step this up to three per day on those few occasions where there was a need to make up for a delay in shipments from the factory.

Interior finishing of the townhouses included carpentry; taping and spackling of joints; painting; connecting of electrical, plumbing, heating, and air conditioning systems; installation of floor vinyl, shade and drapery rods; and cleaning. The finish coat of paint was a persistent problem, in that much of the factory-applied finish to such items as shelving, doors, trim, etc., had to be redone in the field to obtain the desired quality. This was due mainly to blemishes resulting from the handling, transportation, and erection environment to which the modules were subjected. Walls were finish-coated in the field, as had been originally planned. Representative interior views are shown in figures 14 through 18.

Exterior finishing of the townhouses included closure of the field joints in the roof sections, exterior painting (including the application of silicone paint, stain or synthetic stucco), installation of roof soffits, and exterior closure and trim. Exterior finishing also included assembly of the prefabricated carports and storage units. Several views of completed units are shown in figures 19 through 21.

The 16 apartment units used a stucco exterior finish. After the field installation of "K-Lath," the stucco finish coat was applied, resulting in a very satisfactory finished appearance. All other aspects of the finishing (which generally included the same activities as with the townhouses) were accomplished successfully. The four single units were erected on a conventional concrete slab using a panel technique from 15 wall subassemblies. This experiment demonstrated the adaptability of cast-plaster walls to that approach and also the flexibility of the various component build-up methods that could be considered in industrialized housing. On these units, the roofs were coated with a silicone rubber-granule covering in lieu of asphalt shingles. This method resulted in an outstanding appearance when in place on site. The closure of the field joint on this roof was a much simplified procedure and the joint was undetectable to the eye.

Site finishing in terms of paving, curbing, landscaping, seeding, sprinkler installation, and erection of street lights was accomplished in a conventional manner with no problems of consequence.

All in all, the operation of the George Air Force Base project was highly successful. Much was learned, and a large part of the knowledge acquired was incorporated in the ongoing program. The remainder was cataloged for use in succeeding projects. The nature of the results can be attributed to the degree of care and level of detail and coordination which was maintained by all elements concerned during the planning phase. The same conscientiousness, plus careful observation of, and quick response to, problems as they occurred during the execution phase was equally vital. A very key area in this whole dwelling construction concept is that of coordination between site and factory activities. Not only the definition of the planned interfaces, but the ability to responsively and effectively modify the interfaces, either temporarily or permanently, was essential to success.

The quantitative results of the project are discussed in the following section.

IV. EVALUATION

A. Schedule and quality

All 200 units of the George Air Force Base project were completed 4 weeks ahead of the planned schedule. This demonstrated the workability of the industrial manufacture/field erection concept chosen. The Air Force specifications regarding structural integrity, functionality of all systems, and quality of work-

manship and appearance were detailed and stringent. Each unit was carefully inspected for acceptance at this level of specification, indicating that the qualities desired in the product were achieved.

Formal evaluation by occupants has not yet been conducted. Evaluation by the Air Force prototype review team, base personnel and their families, Members of Congress and their staffs, officials from the Department of Defense and the Housing and Urban Development Department, and representatives of the building and materials industries have been uniformly enthusiastic. All agreed that the architectural characteristics common to many of the factory-produced designs of the past had been successfully avoided, and early indications are that maintenance costs will be significantly reduced.

B. Cost

The increase in efficiency which is anticipated in a well-planned production operation was realized. The first unit delivered by the factory had a recorded total of 3,360 labor-hours; the final unit required 325 hours. These gains were a combined result of the expected improvement in repetitive production operations (or "learning curve"), of design improvements, and of production process improvements. Additional gains will continue as further learning and innovations are introduced.

In the cost studies conducted in Phase II, for a mature factory production operation, an equivalent 4-bedroom townhouse was estimated to reach a cost of \$16,900. This was on a basis of mobile factories capable of producing 200 units at each of five sites, per year (total, 1,000 units per year), with a factory life of 5 years. Independent sources estimated the equivalent dwelling, built by conventional methods, to cost \$20,500. In comparison, in the demonstration project at George Air Force Base, the average cost of this same type unit was \$23,400. Considering that this was an initial, small run (180 units), with costs of many developmental problems included, this comparison appears quite favorable and confirms the economic potential indicated by the studies.

The flexibility of the approach was demonstrated by the shift from the townhouse design to the 2-bedroom flats and then to the 4-bedroom single dwellings. Such versatility does have its cost, in comparison with standardization of manufacture to a single design; the determination of the best approach must be made for the specific project, or projects, contemplated. This is true in all aspects of design of such a housing construction system. For example, the type and size of factory, the making or buying of components, and similar questions can only be optimized for specific case. Experience in this program indicates that a fixed factory probably lends itself better to this type of fabrication than does the mobile type originally conceived. Since transportation from factory to site proved less troublesome than expected, a factory's effective radius can be enlarged. Larger production quantities then possible would justify increasing the amount of investment in facilities and automated equipment.

V. FUTURE

This implementation of the concept at George Air Force Base has demonstrated a utility and a number of advantages that can be of immediate value in meeting current and near-future needs for both military and civilian housing. Specifically, it has been shown possible to produce attractive dwellings of good quality and operability in pleasant community settings at a much shorter than usual development cycle, and at an attractive cost saving. Increased learning will continue to reduce cost in similar projects. Another significant cost benefit is gained by having a large portion of the fabrication performed in a facility staffed by labor in the unskilled, light manufacturing category, where the characteristic rise in wage patterns has been 3 percent annually. Compared to the 7-percent rise seen in the construction trades, a continuing benefit is available in terms of cost, added to the basic savings available from a continuous production operation.

Equally important to the possibility of obtaining more house for the dollar than present trends permit is the better ability to control quality of product under factory conditions. While the quality of any product is essentially established during the design process, it requires good quality control discipline to insure that the quality level desired is actually effected during the manufacturing process. With fabrication consisting of a number of well-defined unit operations, all conducted in a central facility, the ability to maintain quality economically is greatly enhanced when compared to conventional field construction operations.

In addition to establishing the validity of the concept for immediate application, the experience and results of this project point the way towards a number of extensions. These fall into several categories. One such is that of improved manufacturing methods for materials and design concepts now used. An example is the continuous-wall casting machine now in operation at General Electric's Development Manufacturing Center at King of Prussia, Pa., shown in figure 22.

Here the plaster is applied to a moving belt, screeded, and frame weldments are set in place. By the time the unit has reached the end of the belt, sufficient set has occurred to enable lifting the wall and transferring it overhead to the conveyors for movement to the assembly area. All walls for one townhouse can be produced in less than 40 minutes.

An additional example in this category is the in-plant roll forming of studs and channels, including roll-punching of loops for plaster attachment, in place of lath. Coupled with semi-automated welding fixtures, a highly integrated and efficient wall frame production system will result.

Another area for innovation lies in new materials and their application for the current designs. While the plywood skin, paper honeycomb floor is superior in quality and function to the conventionally built floor, it was more expensive. However, current work shows that other material combinations and bonding techniques can lead to equivalent quality at competitive cost.

Again, another example of this type will be the use of foamed-in wall insulation. Polyurethane foam will be sprayed in place as well units move along the cast-plaster belt line, thus eliminating the installation of insulation as a sequential step.

There are also possibilities of use of new combinations to achieve lighter, stronger modules of "stressed skin" construction. These may well lead to new designs, with accompanying departures from conventional appearance, and this will require careful determination of customer, or occupant, acceptance, as well as life testing under all conditions of use.

The promise in such extensions of the art of housing design and construction is great. The essential factor, for any given undertaking in any given time period, is to understand and define clearly the achievement that is desired, and to ensure that all aspects of the undertaking—social, economic, and technical—have been carefully analyzed and their requirements and results placed in proper balance.

The proof that this kind of careful and thorough analysis can actually be executed, and the results achieved as planned, is perhaps the single, most important outcome of the family housing project. The precise definition of requirements by the Department of Defense and the Air Force, coupled with meticulous design and execution by Gibbs & Gibbs, General Electric, and Del E. Webb, plus the many subcontractors, working as a closely coordinated team throughout, has shown what an effective combination of skills and capabilities can do to meet a key national need.

[Editor's note: More detailed reports were provided for the committee files.]

NORTON AFB SUMMARY HIGHLIGHTS

SIGNIFICANT PROJECT ACCOMPLISHMENTS

The Norton AFB project successfully demonstrated the objectives planned for the program. Several elements of the project were key contributing factors in this regard and are identified as follows:

Management

The union relationships throughout the project were again excellent. In particular, successful negotiations were concluded, without work stoppage, for a 2-year extension to the factory labor agreement and for the resolution of jurisdictional disagreements on site concerning the finishing of modular joints.

The critical path management (CPM) network was effectively employed as the basic program plan for work implementation and the value for each activity became the basis for contractor monthly payments.

The joint venture of A-J Construction and the General Electric Co., created for this project, was an efficient and trouble-free operation that was realized, to a major extent, by establishing the split in field responsibilities at the dwelling unit sill plate.

Design

The single, ranch style units utilized various architectural features, exterior finishes, and site layout arrangements that eliminated any appearance associated with their factory origin and presented the appearance of a conventionally constructed community.

The conventional joist floors proved to be stable platforms for module handling, lifting, and transportation, yet were significantly lower in cost than the honeycomb plywood floors used at George AFB.

The design incorporated relocatability (i.e., the ability to readily disassemble, move, and reassemble a unit at a minimum cost) which was successfully demonstrated via the relocation of the finished prototype unit from Apple Valley to site 1 at Norton AFB.

At approximately project midpoint the roof system was changed from built-up stone to a silicone rubber membrane for weather seal and with imbedded granules for cosmetic effect. This roof feature, which was first demonstrated on four units at George AFB, should provide the dwellings with a projected long life, maintenance-free roof with attendant savings in the total life cycle costs of the units.

Factory/Production

The factory at Apple Valley was significantly expanded and improved prior to project initiation in order to successfully achieve a production of 12 modules per day (i.e., 3 houses per day). These improvements included various building additions and modifications, a more efficient material handling system and the installation of several new tools and fixtures. In addition to the above, a special silicone spray facility was designed and constructed with virtually no interruption to the normal production activities. This resulted in the on-schedule introduction of the application of the silicone roof system in the factory per item 7.

Transportation/Site Operations

Module transportation over the 58 miles from factory to site was a relatively trouble-free operation, despite the almost constant winds of Cajon Pass and the traffic restrictions (e.g., load size) imposed by the State Highway Department during commuting hours.

On-site erection was a smooth, efficient operation with an average of 20 modules installed per day. Under peak load, 28 modules (7 houses) were erected in one day to maintain schedule.

Buy-off and acceptance activities were particularly timely and efficient due to a program which included the following factors:

- (a) The conduct of a comprehensive quality control program at the factory.
- (b) The establishment of the prototype unit as a quality acceptance standard for workmanship and finish.
- (c) The on-site implementation of a timely prefinal inspection by a joint Air Force-General Electric team.
- (d) The accomplishment of a final Air Force inspection and buy-off with a minimum of discrepancies and corrective actions—due primarily to the three factors above.

RANK OF INSPECTORS

Mr. TALCOTT. One complaint I have heard about your construction management is that you have too many new second lieutenants as inspectors on jobs. A second lieutenant can break a contractor. Some are just plain ignorant and inexperienced, and you insist on having brand new second lieutenants act as inspectors on important big facilities. One in particular I have heard about involved Vandenberg Air Force Base where 15 or 16 subcontractors went broke or went insolvent because of inspections.

Mr. LONG. Is this because you have a person who tried conscientiously to do his job and broke all the contractors?

Mr. TALCOTT. He may have been conscientious but he certainly lacked experience. It seems like an inspector ought to have a little rank.

General REILLY. I was not aware of any problem out there. It is true we have used young officers on many occasions. These boys are extremely well educated and with proper supervision we feel provide a very good on-site representative for the Air Force. I would hope we aren't using second lieutenants without proper supervision either from the major command or my office.

Mr. TALCOTT. It can discourage people from bidding on Air Force projects, and I understand that is the situation.

General REILLY. I will certainly look into that, because I am not aware that we have had problems in this area.

Mr. TALCOTT. Is there nobody in here who is aware of that?

[The information follows:]

We have reviewed our new housing construction projects and our project engineers, with two exceptions, are graduate engineers or architects with the rank of captain or civil service GS-11 or 12, all having previous construction experience. One project engineer is a first lieutenant graduate civil engineer with prior experience in civilian housing construction. One project engineer is a civil service GS-11 construction management engineer with considerable field experience. Inspectors are either civilians provided under title II architect-engineer service contracts or civilian and military inspectors from the base civil engineer forces.

Regarding Vandenberg Air Force Base, we cannot find a project that fits those conditions. The only project we could find in the area that appears applicable is the fiscal year 1970, 300 airmen unit project we constructed at Davis-Monthan Air Force Base, Ariz. The contractor was from Redlands, Calif. Our project engineer was a civil service GS-11 architect, registered in Arizona and California. He was assisted by a first lieutenant graduate civil engineer who provided direct liaison between the project engineer and the title II architect-engineer inspection. This first lieutenant was under the direct supervision of the well qualified registered architect. After this first lieutenant had been on the job approximately 15 months, he did accomplish some inspection. We believe we had a highly qualified and experienced team to manage this construction in an equitable manner. We do not have any knowledge of any subcontractor having gone out of business as a result of this project.

It is our policy to use second lieutenants as inspectors only when their actions can be closely supervised by experienced construction managers. This provides them valuable experience to becoming well qualified construction managers.

WIVES' VIEWS ON FAMILY HOUSING

Mr. PATTEN. We will go into the details of the Air Force's family housing program later in our hearings. Can you tell us now what you have learned from the Air Force wives you have talked to and what steps are being taken to follow their suggestions?

General REILLY. An extensive survey was conducted last year to find out just what the housewives' views were regarding housing and what things they felt were not being provided. Highest on their list was central air-conditioning for housing. They felt a half bath on the first floor of a two-story townhouse was important, and a fenced-in yard especially where children are involved. They felt better soundproofing was required where we have duplex units. They felt additional storage space both inside and outside the house was needed.

I think our present housing designs incorporate these features. We are not building any houses now without air-conditioning in those areas where it is authorized, and we are making a concerted effort to provide additional amenities.

COMMUNITY SUPPORT

Mr. PATTEN. Has the Air Force reached the point where you are unable to program substantial numbers of new family housing units at bases which you know will have long-range utilization?

General REILLY. Yes, sir, there are a number of our long term hard core bases where the deficit has been reduced to the point where it is very difficult to program a sizable project.

Mr. PATTEN. Has the community support situation for upper grade personnel improved at many of your U.S. bases?

General REILLY. Yes, sir, it has changed. We find with increased pay and benefits that more and more people want to invest in a house in a community as opposed to on-base housing. This has, of course, made more housing within the communities available.

Mr. PATTEN. What progress is being made in housing the so-called "ineligibles"?

SECTION 236 HOUSING

General REILLY. The HUD 236 program, this committee is very familiar with, has helped us a great deal. It has permitted many of our lower grade airmen to be able to have adequate housing at reasonable costs.

Mr. SIKES. Are you going to need additional legislation if that program is reinstated—and I think it may be—in order to overcome the problem of increased income making the eligibles ineligible?

General REILLY. Yes; it could very well be.

Mr. SIKES. Have you suggested changes in the language?

General REILLY. We have not as of yet, sir.

Mr. SIKES. Is that a good point?

General REILLY. Yes, sir, it is a very good point.

SUBSTANDARD HOUSING

Mr. PATTEN. What use has been made of the additional units which were declared substandard as the result of legislation passed last year?

General REILLY. Of the 20,000 units the Office of Secretary of Defense could declare substandard, 6,659 was the Air Force's share. We fully implemented our portion as of the first of this calendar year.

Mr. NICHOLAS. There has been some question as to whether the provision passed last year actually will provide additional housing which can be declared substandard. Apparently there is some thought that the new legislation may have wiped out the previous authorization to declare units substandard. Have you heard of any problems along this line?

Mr. JOHNSON. No, sir, we haven't had any problems along these lines at all. Our old inadequate quarters are being administered under the old policy. New inadequate quarters won't be able to come under the old policy until we get the eligibles out. We are letting them move out by attrition. We cannot move all eligibles out at once.

Mr. NICHOLAS. There is no problem with the existing legislation in terms of the number of units in your inventory which can be declared substandard?

Mr. CROCKETT. We just got our share.

Mr. NICHOLAS. Would you double check that for the record?

Mr. CROCKETT. Yes.

[The information follows:]

Out of the 20,000 units allocated to OSD in existing legislation the Air Force was allowed to declare 6,659 units inadequate. The Air Force has additional units that could be declared inadequate if the number of units authorized to be declared substandard were increased in fiscal year 1974 or future years legislation. The Air Force still has approximately 10,000 to 15,000 units that are below present-day standards but have not been declared substandard. When they are declared substandard they would eventually be made available for lower grade airmen.

Mr. PATTEN. Are less Air Force personnel eligible to use HUD programs?

General REILLY. Yes.

Mr. PATTEN. Are you concerned with this trend?

General REILLY. We think it is a good trend, Mr. Patten. If I understood the question right that is.

Mr. PATTEN. If you can use the HUD programs less, your problems will increase won't they?

General REILLY. Oh, yes. I am sorry.

Mr. PATTEN. You said you have made good use of the 236 program.

General REILLY. Yes.

Mr. PATTEN. With the fixed guidelines and increase in military wages you may have some people who are no longer eligible.

General REILLY. That is correct. I misunderstood the question.

DEFICIT IN OVERSEAS HOUSING

Mr. PATTEN. What part of your remaining deficit is at overseas locations?

Mr. JOHNSTON. More than 50 percent of our program deficit is at overseas locations at this particular time. These are primarily in the areas of Kadena, Clark, and some of the European countries.

RENTAL GUARANTEE AND LEASE-CONSTRUCTION

Mr. PATTEN. Do you see the leasing and rental guarantee programs as producing much additional housing to meet your needs overseas?

Mr. JOHNSTON. Yes; we see the program continuing to provide a means of acquiring houses overseas. We started the rental guarantee. We are hopeful the increase per month payment of \$275 contained in this year's bill will provide for additional application of the rental guarantee overseas. We do see both of these programs providing continuing benefits.

Mr. PATTEN. What has been the Air Force's experience with lease-construction family housing in England?

Mr. JOHNSTON. We have had good success with the lease-construction program in the United Kingdom. Presently we have obtained about 1,000 leases in the United Kingdom, and about 500 to 600 of these were acquired under the lease-construction program whereby we entered into an agreement with the lessor while the project was under

construction. We obtained as many as 150 units in one project we got under this technique.

Mr. PATTEN. Do you agree with the GAO's conclusions that, in England, lease-construction has been more economical than the rental guarantee program, but has provided a house which is not as near U.S. standards?

Mr. JOHNSTON. Yes, sir; we agree with the GAO report in general. Our rental guarantee unit, which costs a little more than the leasing program, provides a little more house and is a little bit more to American standards. The lease-construction units we usually obtain in the construction stages, and we can't get them exactly to our specifications. The standards are a little bit less but they cost a little bit less.

Mr. NICHOLAS. In view of your large deficit overseas in some of the locations which you mentioned, which programs are you looking at to try to meet this deficit, if indeed you are proposing to meet it, in the next few years?

Mr. JOHNSTON. We are looking at both programs. In some particular areas, rental guarantee is not feasible because you have no residual value. In other words, if a man can't amortize his project in 10 years, he won't put his money in it. This is what we find in places like Okinawa. If we build a rental guarantee project and we have to move out in 7 or 8 years, nobody else will move into it, so the guy loses his money. We have to depend on both programs.

Mr. SIKES. Are these the only two now in use?

Mr. JOHNSTON. Yes, sir, with the exception of military construction.

Mr. SIKES. So you feel there is a place for both?

Mr. JOHNSTON. There is a place for both; yes, sir.

Mr. TALCOTT. There is a better place for leasing in England than there would be in Spain or some other country where they don't match our requirements. We don't want too much lease construction in Spain where it would have to be used by the Spaniards after we leave if it is to be economical.

Mr. JOHNSTON. But in Spain we have gone to lease construction because of our country-to-country agreement. The country-to-country agreement in Spain is 5 years. We don't want to extend ourselves to 10 years. So we go to the lease construction which fits the country and our tenure the best.

Mr. SIKES. How does lease construction operate in comparison to rental guarantee?

Mr. JOHNSTON. Under the lease construction program, the Government itself pays the bills to the sponsor. In rental guarantee, the individual living in the quarters gets his quarters allowance and station allowance to cover the payments. In addition, the rental guarantee is usually on a 10-year basis, and the lease construction we get on a 5-year basis. We get the standards we want in the rental guarantee program more so than we do in the lease-construction program.

Mr. SIKES. Does the lease-construction program actually involve newly constructed housing?

Mr. JOHNSTON. Yes, sir. In other words, we might catch a builder building a building, and he might have 2 or 3 stories built of the 10. If we can catch him at that particular stage, we could say it would generate new construction; yes, sir.

OVERSEAS LEASING

Mr. SIKES. You also have a leasing program comparable to the leasing program in this country?

Mr. JOHNSTON. Yes, sir. In Germany, we have about 100 units under lease under these particular arrangements; and in the United Kingdom we have approximately 500 or 600 under individual lease agreements. But these are for units already constructed when we enter into the agreement.

Mr. SIKES. Do I take it from your answers and from the number of units under lease, that this hasn't generally been a satisfactory method of obtaining housing?

Mr. JOHNSTON. We feel it is a satisfactory method of obtaining housing; yes, sir.

NEW FAMILY HOUSING CONSTRUCTION OVERSEAS

Mr. PATTEN. In which overseas areas would the Air Force consider new construction as a realistic alternative?

Mr. JOHNSTON. As you know, Mr. Chairman, we have two projects in the 1973 program, one at San Vito, Italy, and one at Incirlik, Turkey. Also in the 1974 program we have a project for Guam. We feel that in particular areas where we can't get rental guarantee we have no other alternative but military construction. In Turkey we feel there is insufficient residual value in rental guarantee projects; therefore, we have gone to military construction. And we ran into the same difficulty in Italy. We did two or three feasibility studies in Italy and found rental guarantee infeasible, so we programed the units as military construction.

Mr. TALCOTT. You don't try to put Americans in 10-story buildings overseas do you?

Mr. JOHNSTON. No, sir.

Mr. TALCOTT. You inferred if you caught somebody on the second floor of a 10-story building you could work out a deal with them. I hope you don't force our people to live in beehives.

Mr. JOHNSTON. No, sir. I think one of the projects in Germany is maybe a seven- or eight-story building, but they have elevators. In Europe the economics of housing construction lead to multiple family dwellings as opposed to single units.

Mr. TALCOTT. You can't afford to compress people either.

Mr. SIKES. Mr. Obey.

BACKLOG OF ESSENTIAL MAINTENANCE

Mr. OBEY. What is the present Air Force backlog of essential maintenance and repair, and what do you anticipate at the end of fiscal year 1974?

General REILLY. In 1974, sir, we anticipate about a \$200 million backlog of maintenance and repair. It is essentially that now.

Mr. OBEY. There is no change in this year over last year?

General REILLY. It is a small increase over last year?

Mr. OBEY. A small increase of about how much?

General REILLY. It has been more than I thought. It has been from about \$171 to \$200 million. About a \$29 million increase—1973 over 1972.

Mr. OBEY. Is the maintenance floor which is set in the operation and maintenance appropriation sufficiently high to prevent the BEMAR from increasing?

General REILLY. Yes, sir, it is. In fact the floor is sufficiently high, and considering our anticipated BEMAR fundings, we think we will be able to reduce our backlog by about 3 percent over the next year. Not a great deal but some reduction.

Mr. OBEY. There are a series of tables, charts, lists, et cetera, which should be inserted in the record at this point. They are:

AIR FORCE TRAINING WORKLOAD

(a) The current and projected Air Force training workloads, including pilots and basic training, broken down by training center.

CURRENT AND PROJECTED AIR FORCE TRAINING WORKLOADS

The following tables contain actual and programmed production figures for each Undergraduate Pilot Training (UPT) base and Technical Training Center for fiscal years 1968 through 1978.

UPT PRODUCTION BY BASE, LAST FIVE YEARS

<u>BASE</u>	<u>FY1968</u>	<u>FY1969</u>	<u>FY1970</u>	<u>FY1971</u>	<u>FY1972</u>
Moody	384	330	417	449	430
Laughlin	412	430	411	434	404
Reese	414	440	419	437	456
Columbus	-	-	-	395	410
Craig	380	334	376	332	365
Laredo	338	361	431	459	475
*Randolph	96	240	379	370	134
Vance	420	457	500	475	417
Williams	452	469	544	558	577
Webb	404	418	425	413	423
**Sheppard	-	-	67	68	83
TOTAL	3,300	3,479	3,969	4,390	4,174

* Randolph discontinued UPT operations with Class 72-3.

** USAF production only. German Air Force production reported separately.

UPT PROGRAMMED PRODUCTION

<u>BASE</u>	<u>FY73</u>	<u>74</u>	<u>75</u>	<u>76</u>	<u>77</u>	<u>78</u>
Moody	372	358	392	395	371	371
Laughlin	376	403	407	410	400	400
Reese	384	396	406	406	395	395
Columbus	349	350	414	415	400	400
Craig	320	295	337	340	310	310
Laredo	402	93	0	0	0	0
Vance	365	362	372	400	390	390
Webb	379	363	352	352	373	373
Williams	499	441	495	498	490	490
Sheppard ^{1/}	87	86	35	2/	2/	2/
TOTAL	3,533	3,147	3,210	3,216	3,129	3,129

^{1/} Indicates USAF graduates only.

^{2/} USAF inputs to the German UPT program have not been programmed.

TECHNICAL AND MILITARY PRODUCTION
ACTUAL PRODUCTION

<u>BASE</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>
Lackland	106,299	136,013	113,767	120,191	119,864
Sheppard	37,478	46,726	42,292	40,638	38,940
Keesler	24,516	35,606	31,864	24,792	29,122
Lowry	21,420	26,904	25,884	22,135	24,036
Chanute	24,665	28,469	26,169	22,690	26,876
TOTAL	214,378	273,718	239,976	230,446	238,838

TECHNICAL AND MILITARY PRODUCTION
PROGRAMMED PRODUCTION

<u>BASE</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>
Lackland	117,066	100,643	123,167	126,529	126,529	126,529
Sheppard	38,990	35,074	38,584	39,245	39,245	39,245
Keesler	32,295	34,698	38,170	38,825	38,825	38,825
Lowry	27,334	23,378	25,718	26,159	26,159	26,159
Chanute	24,577	24,293	26,724	27,182	27,182	27,182
TOTAL	240,262	218,086	252,363	257,940	257,940	257,940

CONSTRUCTION CONTRACTS AWARDED OTHER THAN BY COMPETITIVE BID

Mr. SIKES. (b) A listing of all construction contracts awarded in the past year other than by competitive bid basis.

[The information follows:]

NEGOTIATED CONSTRUCTION CONTRACTS DURING FISCAL YEAR 1973

Base	Line item	PA	Award date
Hawthorne ¹	Bombardment scoring evaluation facility.	\$51,000	September 1972.
Peterson ²	Library.	449,000	July 1972.
Eglin ²	Gymnasium.	623,000	October 1972.
Keflavik ³	Aircraft shelters.	1,438,000	December 1972.
Do. ³	Nondestructive inspection shop.	579,000	Do.

¹ Part of package item.

² Minority business set-aside.

³ Negotiation required by country-to-country agreement.

NONAPPROPRIATED FUND AND GUESTHOUSE CONSTRUCTION

Mr. SIKES. (c) A listing of all guesthouse construction planned in the next year. Also show the nonappropriated fund projects accomplished in the past year and the major ones planned.

[The information follows:]

No guesthouses or temporary lodging facilities (TLF's) are planned next year. The nonappropriated fund TLF's projects accomplished in past years are:

	<i>Units</i>
Norton AFB, Calif.	40
Travis AFB, Calif.	40
Luke AFB, Ariz.	40
Lowry AFB, Colo.	40
Keesler AFB, Miss.	40
Homestead AFB, Fla.	40
Mather AFB, Calif.	40
George AFB, Calif.	40
Robins AFB, Ga.	40
Ent/Peterson AFB, Colo.	40
Williams AFB, Ariz.	40
Minot AFB, N. Dak.	40
Langley AFB, Va. ¹	40
Andrews AFB, Md. ¹	60
McGuire AFB, N.J. ¹	30
Griffiss AFB, N.Y. ¹	35
Wright-Patterson AFB, Ohio ¹	40
Scott AFB, Ill. ¹	36
Malmstrom AFB, Mont.	40
Grand Forks AFB, N. Dak.	40
MacDill AFB, Fla.	40
Eglin AFB, Fla.	40
Lackland AFB, Tex.	60
Offutt AFB, Nebr.	60

1,001

No additional TLF projects are planned.

¹ Anticipate award of construction contract in June 1973.

PT. I.—PROJECTS OVER \$25,000 BUT LESS THAN \$300,000 STARTED OR PLACED UNDER CONTRACT
DURING THIS PERIOD

PROJECT LISTING—NONAPPROPRIATED FUNDED CONSTRUCTION, DEPARTMENT OF THE AIR FORCE

[Fund source code: 1—Recreation or welfare funds; 2—Club/mess funds; 3—Commissary store excess surcharge funds;
4—Exchange funds; 5—Motion picture service funds; 6—Private funds]

Installation	Project title	Cost (thou- sands)	Total cost (thou- sands)	Fund source
(a)	(b)	(c)	(d)	(e)
FOR THE PERIOD JAN. 1, 1972, TO JUNE 30, 1972				
Eielson AFB, Alaska	Renovate main retail store	\$137.7	\$137.7	4
Elmendorf AFB, Alaska	Relocate Alaskan Exchange Headquarters	152.5	152.5	4
Total, Alaskan Air Command.			290.2	
Baudette AFS, Minn.	Construct recreation multipurpose building	36.4	36.4	1
Calumet AFS, Mich.	Construct recreation workshop	36.4	36.4	1
Charleston AFS, Maine	Add to NCO club	38.5	38.5	2
Duluth IAP, Mich.	Construct child-care center	153.0	207.5	1
	Construct officer open-mess addition	54.5		2
Ent AFB, Colo. (Peterson Field)	Construct golf facility	155.0	529.9	1
	Construct exchange cafe snackbar	175.7		4
	Construct golf course, 9 hole	199.2		1
North Truro AFS, Mass.	Construct NCO open-mess addition	35.4	35.4	2
Total, Air Defense Command.			884.1	
Richards Gebaur AFB, Mo.	Alter officers open mess	150.0	150.0	2
Total, Air Force Communi- cations Command.			150.0	
Hill AFB, Utah	Construct recreation workshop	199.0	199.0	1
Kelly AFB, Tex.	Add to and alter NCO open mess	150.3	582.0	2
	Add to and alter commissary	210.8		3
	Alter swim pool, bathhouse	50.0		1
	Construct child-care center	170.9		1
McClellan AFB, Calif.	Support facilities, multipurpose recreation	44.1	236.3	1
	Add to arts and crafts shop	164.9		1
	Construct youth center	27.3		1
Newark AFS, Ohio	Alter open mess, NCO	31.0	31.0	2
Robins AFB, Ga.	Add to gym	55.2	55.2	1
Tinker AFB, Okla.	Alter base restaurant	148.0	148.0	6
Wright Patterson AFB, Ohio	Construct youth center	182.8	380.6	1
	Construct branch exchange	197.8		4
Total, Air Force Logistics Command.			1,632.1	
Kirtland AFB, N. Mex.	Alter commissary building	269.4	461.8	3
	Construct recreation workshop	192.4		1
Laurence G. Hanscom Field, Mass.	Add to and alter commissary	240.0	541.2	3
	Add to NCO club	157.8		2
	Construct youth center	143.4		1
Los Angeles AFS, Calif.	Alter officer open mess	185.7	185.7	2
Total, Air Force Systems Command.			1,188.7	
Chanute AFB, Ill.	Renovate commissary meat market	42.2	42.2	3
Columbus AFB, Miss.	Construct lighted softball field	52.8	177.0	1
	Construct arts and crafts workshop	124.2		1
Craig AFB, La.	Add to and alter golf house	38.3	38.3	1
Lackland AFB, Tex.	Alter and convert building for BX	173.0	173.0	4
Laredo AFB, Tex.	Construct softball field	40.0	40.0	1
Moody AFB, Ga.	Alter officer open mess	62.4	347.6	2
	Construct 4 lighted tennis courts	42.0		1
	Construct recreation bowling alley	243.2		1
Randolph AFB, Tex.	Construct facilities at Canyon Lake	198.2	198.2	1
Reese AFB, Tex.	Alter BX main store	33.9	33.9	4
Sheppard AFB, Tex.	Renovate snack bar	27.0	27.0	4
Vance AFB, Okla.	Construct child-care center	122.1	122.1	1
Webb AFB, Tex.	Alter interior auto hobby shop	27.5	59.3	1
	Alter officer open mess	31.8		2
Williams AFB, Ariz.	Air-condition base library	30.9	131.1	1
	Construct credit union	61.0		6
	Alter base restaurant	39.2		6
Total, Air Training Com- mand.			1,389.7	

PT. I.—PROJECTS OVER \$25,000 BUT LESS THAN \$300,000 STARTED OR PLACED UNDER CONTRACT
DURING THIS PERIOD—Continued

PROJECT LISTING—NONAPPROPRIATED FUNDED CONSTRUCTION, DEPARTMENT OF THE AIR FORCE—Continued

[Fund source code: 1—Recreation or welfare funds; 2—Club/mess funds; 3—Commissary store excess surcharge funds;
4—Exchange funds; 5—Motion picture service funds; 6—Private funds]

Installation (a)	Project title (b)	Cost (thou- sands) (c)	Total cost (thou- sands) (d)	Fund source (e)
Gunter AFB, Ala.	Alter commissary sales store	\$298.0	\$298.0	3
Maxwell AFB, Ala.	Renovate regional exchange administrative offices	214.0	214.0	4
Total, Air University			512.0	
Andrews AFB, Md.	Install golf course sprinkler system	289.9	457.4	1
	Construct commissary warehouse	167.5		3
Total, Headquarters com- mand, USAF			457.4	
Altus AFB, Okla.	Add to and alter golf course	199.3	199.3	1
Dover AFB, Del.	Construct youth center	278.9	576.2	1
	Renovate service station	207.3		4
	Addition to golf club house	90.0		1
Lajes Field, Azores	Addition to bowling alley	26.3	53.3	1
	Repair recreation bowling alley	27.0		1
McCord AFB, Wash.	Construct golf course	164.2	458.2	1
	Construct/add to bowling center	115.0		1
	Construct auto hobby shop	179.0		1
McGuire AFB, N.J.	Add to cafeteria	82.7	82.7	4
Scott AFB, Ill.	Construct Airmen swimming pool	286.8	456.0	1
	Alter golf club house	169.2		1
Total, Military Airlift- Command			1,825.7	
Ching Chuan Kang AB, Taiwan	Air-condition recreation workshop	45.6	45.6	1
Clark AB, Philippines	Convert to exchange service outlet	25.7	259.9	4
	Alter commissary store	121.0		3
	Construct addition transient personnel facility	113.2		1
Hickam AFB, Hawaii	Construct MAC terminal branch exchange	287.3	1,527.4	4
	Construct arts/crafts center	251.1		1
	Construct auto hobby shop	200.0		1
	Construct multipurpose courts	28.0		1
	Construct NCO open mess	177.0		2
	Construct food drive-in	287.5		4
	Install lights athletic field	157.6		1
	Relocate/construct ball fields	113.3		1
	Renovate snack bar	25.6		4
Kadena AB, Ryuku	Alter interior officer open mess	45.9	248.9	2
	Construct lighting softball fields	73.0		1
	Renovate lighting and bleachers	130.0		1
Korat AB, Thailand	Activate cafeteria	66.1	66.1	4
Kunsan AB, Korea	Construct education center	36.6	126.5	1
	Construct service club	89.9		2
Nakhon Phanom Airport, Thailand	Relocate main BX store	52.3	52.3	4
Osan AB, Korea	Alter open mess NCO	36.0	374.9	2
	Construct recreation workshop	149.5		1
	Construct swimming pool	189.4		1
Taegu AB, Korea	Construct education center	35.0	137.7	1
	Construct recreation bowling alley	102.7		1
U Tapao AB, Thailand	Air-condition base library	32.0	32.0	1
Wheeler AFB, Hawaii	Alter gym handball court	33.0	292.9	1
	Construct auto paint workshop	87.7		1
	Install lights football field	106.0		1
	Renovate service station	66.2		4
Total, Pacific Air Forces			3,164.2	
Andersen AFB, Guam	Renovate service station	187.8	524.6	4
	Construct canopy, officer open mess	42.5		2
	Alter/add to terminal snack bar	115.6		4
	Expand/renovate food preparation facility	178.7		4
Blytheville AFB, Ark.	Construct commissary storage	289.1	289.1	3
Carswell AFB, Tex.	Alter store commissary	178.9	411.1	3
	Construct service station	232.2		4
Ellsworth AFB, S. Dak.	Renovate main BX	76.0	76.0	4
F. E. Warren AFB, Wyo.	Alter service club	40.8	40.8	2
Fairchild AFB, Wash.	Convert/alter building to credit union	109.5	177.7	6
	Construct gasoline station	68.2		4
Grissom AFB, Ind.	Construct/alter commissary	289.7	289.7	3

PT. I.—PROJECTS OVER \$25,000 BUT LESS THAN \$300,000 STARTED OR PLACED UNDER CONTRACT
DURING THIS PERIOD

PROJECT LISTING—NONAPPROPRIATED FUNDED CONSTRUCTION, DEPARTMENT OF THE AIR FORCE

[Fund source code: 1—Recreation or welfare funds; 2—Club/mess funds; 3—Commissary store excess surcharge funds;
4—Exchange funds; 5—Motion picture service funds; 6—Private funds]

Installation	Project title	Cost (thous- ands)	Total cost (thous- ands)	Fund source
(a)	(b)	(c)	(d)	(e)
K. I. Sawyer AFB, Mich.....	Alter fence, 2 softball fields.....	\$50.0	\$242.0	1
	Construct exchange service station.....	192.0		4
Lockbourne AFB, Ohio.....	Renovate cafeteria.....	42.5	121.5	4
	Renovate 4 seasons store.....	27.5		4
	Renovate swimming pool.....	51.5		1
Loring AFB, Maine.....	Construct youth center.....	169.0	423.3	1
	Add to and alter commissary.....	254.3		3
Malmstrom AFB, Mont.....	Add to and alter NCO open mess.....	176.9	758.4	2
	Add to officers open mess.....	120.7		2
	Convert commissary.....	283.3		3
	Addition to handball court.....	48.0		1
March AFB, Calif.....	Alter recreation workshop.....	129.5		1
	Addition to NCO open mess.....	32.5		2
	Alter sprinkler system, golf course.....	123.2		1
	Renovate laundry/drycleaning pickup facility.....	29.8		4
Offutt AFB, Nebr.....	Construct youth center.....	264.9	264.9	1
Pease AFB, N.H.....	Convert to commissary.....	56.6	56.6	3
Wurtsmith AFB, Mich.....	Construct extension to branch exchange.....	34.8	34.8	4
Total, Strategic Air Command.....			3,896.0	
Bergstrom AFB, Tex.....	Addition to bowling alley.....	110.8	334.8	1
	Construct Credit Union Building.....	224.0		6
Cannon AFB, N. Mex.....	Construct golf facility.....	140.8	140.8	1
Eglin 09 Airfield, Fla.....	Add to bowling alley.....	109.7	605.1	1
	Add to and alter NCO open mess.....	251.1		2
	Renovate service station.....	43.0		4
	Construct golf course, 9 hole.....	201.3		1
England AFB, La.....	Construct recreation bowling alley.....	242.3	242.3	1
George AFB, Calif.....	Construct credit union.....	155.9	155.9	6
Holloman AFB, N. Mex.....	Construct recreation workshop.....	127.9	127.9	1
Homestead AFB, Fla.....	Construct golf facility.....	185.0	185.0	1
Little Rock AFB, Ark.....	Alter NCO open mess.....	168.7	168.7	2
Luke AFB, Ariz.....	Construct bowling center.....	273.0	273.0	1
McConnell AFB, Kans.....	Addition to credit union.....	53.8	53.8	6
Mountain Home AFB, Idaho.....	Alter exchange service outlet.....	47.9	218.9	4
	Construct recreation workshop.....	171.0		1
Myrtle Beach AFB, S.C.....	Renovate officer open mess.....	44.5	44.5	2
Nellis AFB, Nevada.....	Construct golf club house addition.....	28.0	28.0	1
Seymour Johnson AFB, N.C.....	Alter auto hobby shop.....	42.2	42.2	1
Shaw AFB, S.C.....	Construct gasoline station.....	162.7	302.7	4
	Activate branch exchange.....	140.0		4
Total, Tactical Air Command.....			2,923.6	
U.S. Air Force Academy, Colo.....	Construct cadet picnic area and install utilities.....	126.8	159.8	1
	Renovate snack bar.....	33.0		4
Total, U.S. Air Force Academy.....			159.8	
RAF Alconbury, United Kingdom.....	Construct child-care center.....	72.1	72.1	1
Ankara AS, Turkey.....	Add to gymnasium.....	59.6	156.0	1
	Construct 6-lane bowling alley.....	96.4		1
RAF Bentwaters, United Kingdom.....	Construct child-care center.....	60.0	144.4	1
	Construct thrift shop.....	39.4		1
	Construct youth center.....	45.0		1
Bitburg, AB, Germany.....	Repair/alter NCO open mess.....	131.4	131.4	2
Hahn AB, Germany.....	Add to and alter commissary.....	63.1	104.6	3
	Addition 2-lane bowling facility.....	41.5		1
Incirlık AB, Turkey.....	Air-condition NCO open mess.....	48.2	48.2	2
RAF Lakenheath, United Kingdom.....	NCO open mess addition.....	57.1	95.8	2
	Alter officers club kitchen.....	38.7		1
RAF Mildenhall, United Kingdom.....	Construct child-care center.....	40.0	40.0	2
Ramstein AB, Germany.....	Alter bowling alley.....	183.2	602.3	1
	Alter commissary store.....	128.5		3
	Construct athletic field.....	86.5		1
	Construct golf driving range.....	67.0		1
	Construct recreation work shop.....	137.1		1
Rhein Main AB, Germany.....	Alter rod-gun club.....	42.0	218.6	1
	Alter officers club.....	48.8		1
	Repair officers mess.....	127.8		1

PT. I.—PROJECTS OVER \$25,000 BUT LESS THAN \$300,000 STARTED OR PLACED UNDER CONTRACT
DURING THIS PERIOD—Continued

PROJECT LISTING—NONAPPROPRIATED FUNDED CONSTRUCTION, DEPARTMENT OF THE AIR FORCE—Continued

[Fund source code: 1—Recreation or welfare funds; 2—Club/mess funds; 3—Commissary store excess surcharge funds; 4—Exchange funds; 5—Motion picture service funds; 6—Private funds]

Installation (a)	Project title (b)	Cost (thous- sands) (c)	Total cost (thous- sands) (d)	Fund source (e)
Spangdahlem AB, Germany.....	Construct child-care center.....	\$34.6	\$34.6	1
Torrejon AB, Spain.....	Construct extension to service station.....	38.4	38.4	4
Wiesbaden AB, Germany.....	Renovate laundrette.....	35.4	35.4	4
Zweibrucken AB, Germany.....	Construct recreation workshop.....	126.5	246.0	1
	Convert to bowling alley.....	119.5		
Total, U.S. Air Forces in Europe.....			1,967.8	
San Vito Dei Norm AS, Italy.....	Air-condition officer club.....	25.3	193.1	2
	Construct NCO club addition.....	167.8		2
Total, U.S. Air Force Secu- rity Service.....			193.1	

PT. II.—NONAPPROPRIATED FUNDED CONSTRUCTION PROJECTS OVER \$300,000 STARTED OR PLACED
UNDER CONTRACT DURING THIS PERIOD

[Fund source code: 1—Recreation or welfare funds; 2—Club/mess funds; 3—Commissary store excess surcharge funds; 4—Exchange funds; 5—Motion picture service funds; 6—Private funds]

Installation (a)	Project title (b)	Cost (\$000) (c)	Total cost (\$000) (d)	Fund source (e)
JAN. 1, 1972, TO JUNE 30, 1972				
Eielson AFB, Alaska.....	Construct 20-lane bowling alley.....	\$975.0	\$1,317.6	1
	Construct child-care center.....	342.6		1
Elmendorf AFB, Alaska.....	do.....	400.0	400.0	1
Total, Alaskan Air Command.....			1,717.6	
Robins AFB, Ga.....	Replacement base theater.....	372.8	372.8	5
Total, Air Force Logistics Command.....			372.8	
Eglin AFB, Fla.....	Construct main store with warehouse, snack bar, and services.....	1,437.3	1,437.3	4
Total, Air Force Systems Command.....			1,437.3	
Chanute AFB, Ill.....	Construct base exchange sales store.....	1,804.0	1,804.0	4
Lowry AFB, Colo.....	Construct credit union ¹	347.0	1,613.1	6
	Construct base exchange sales complex.....	1,266.1		4
Reese AFB, Tex.....	Construct 500-seat theater.....	320.8	320.8	5
Sheppard AFB, Tex.....	Alter airman open mess ¹	311.8	637.5	2
	Construct child-care center ¹	325.7		1
Total, Air Training Com- mand.....			4,375.4	
Scott AFB, Ill.....	Alter store commissary.....	361.2	1,001.7	3
	Convert recreation work shop.....	308.4		1
	Convert youth center.....	332.1		1
Total, Military Airlift Com- mand.....			1,001.7	
Clark AB, Philippines.....	Construct exchange food preparation facility.....	372.8	372.8	4
Total, Pacific Air Forces.....			372.8	
Andersen AFB, Guam.....	Addition to exchange sales store.....	744.0	744.0	4
Blytheville AFB, Ark.....	Construct airmen swimming pool.....	352.3	352.3	1
March AFB, Calif.....	Base theater replacement.....	445.8	2,424.8	5
	Construct exchange sales store.....	1,979.0		4

PT. II.—NONAPPROPRIATED FUNDED CONSTRUCTION PROJECTS OVER \$300,000 STARTED OR PLACED UNDER CONTRACT DURING THIS PERIOD

[Fund source code: 1—Recreation or welfare funds; 2—Club/mess funds; 3—Commissary store excess surcharge funds; 4—Exchange funds; 5—Motion picture service funds; 6—Private funds]

Installation (a)	Project title (b)	Cost (thou- sands) (c)	Total cost (thou- sands) (d)	Fund source (e)
Offutt AFB, Nebr.....	Construct base theater.....	\$452.8	\$452.8	5
Total, Strategic Air Com- mand.....			3,973.9	
Bergstrom AFB, Tex.....	Construct exchange sales store.....	1,502.0	1,988.3	4
	Construct theater building.....	486.3		5
George AFB, Calif.....	Construct new exchange sales store.....	671.5	671.5	4
Homestead AFB, Fla.....	Construct bowling alley.....	318.7	318.7	1
Nellis AFB, Nev.....	Construct exchange cafeteria.....	398.0	398.0	4
Total, Tactical Air Com- mand.....			3,376.5	
Rhein Main AB, Germany.....	Construct bowling alley.....	308.9	308.9	1
Total, U.S. Air Forces in Europe.....			308.9	

PT. I.—PROJECTS OVER \$25,000 BUT LESS THAN \$300,000 STARTED OR PLACED UNDER CONTRACT DURING THIS PERIOD

Installation (a)	Project title (b)	Cost (thou- sands) (c)	Total cost (thou- sands) (d)	Fund source (e)
Elmendorf AFB, Alaska.....	Relocate exchange headquarters.....	\$189.0	\$189.0	4
Total, Alaskan Air Com- mand.....			189.0	
Roanoke Rapids AFS, N.C.....	Swimming pool.....	40.0	40.0	1
Tyndall, AFB, Fla.....	Renovate car-care center.....	30.8	30.8	4
Total, Air Defense Com- mand.....			70.8	
Hill AFB, Utah.....	Hobby shop.....	197.0	197.0	1
McClellan AFB, Calif.....	Multipurpose court.....	33.0	33.0	1
San Antonio AFS, Tex.....	Renovate warehouse.....	47.9	47.9	4
Tinker AFB, Okla.....	Alter base cafeteria.....	155.0	155.0	6
Total, Air Force Logistics Command.....			432.9	
Kirtland AFB, N. Mex.....	Recreational workshop.....	192.4	392.4	1
	Alter commissary.....	200.0		3
Total, Air Force Systems Command.....			392.4	
Craig AFB, Ala.....	Add to and alter golf clubhouse.....	51.5	51.5	1
Sheppard AFB, Tex.....	Renovate snackbar.....	28.2	28.2	4
Webb, AFB, Tex.....	Credit union.....	45.2	172.6	6
	Add to and alter commissary.....	127.4		3
Total, Air Training Com- mand.....			252.3	
Gunter AFB, Ala.....	Commissary sales store.....	298.0	298.0	3
Total, Air University.....			298.0	
Andrews AFB, Md.....	Renovate service station.....	25.4	322.4	4
	Indoor tennis court.....	297.0		1
Bolling AFB, District of Columbia.....	Alter NCO club kitchen.....	49.9	112.5	2
	Renovate main store.....	62.6		4
Total, Headquarters Com- mand, USAF.....			434.9	
Altus AFB, Okla.....	Renovate officers' open mess.....	121.7	121.7	2
McChord AFB, Wash.....	Alter base theatre.....	29.0	138.7	5
	9 hole golf course.....	109.7		1

PT. I—PROJECTS OVER \$25,000 BUT LESS THAN \$300,000 STARTED OR PLACED UNDER CONTRACT DURING THIS PERIOD

[Fund source code: 1—Recreation or welfare funds; 2—Club/mess funds; 3—Commissary store excess surcharge funds; 4—Exchange funds; 5—Motion picture service funds; 6—Private funds]

Installation (a)	Project title (b)	Cost (thousands) (c)	Total cost (thousands) (d)	Fund source (e)
Norton AFB, Calif.	Branch bank	\$53.0	\$512.0	6
	Add to and alter commissary	208.2		3
	Service station	250.8		4
Travis AFB, Calif.	Terminal retail branch stockroom	27.3	27.3	4
Total, Military Airlift Command			799.7	
Ching Chuan Kang AB, Taiwan	Air-condition recreation workshop	49.0	49.0	1
Clark AB, Philippines	Renovate beauty shop	32.8	968.2	4
	Base transient personnel facility	97.0		1
	Alter commissary store	120.0		3
	Air-condition service club	120.0		1
	Swim pool and bathhouse	237.4		1
	Exchange bakery	264.0		4
Hickam AFB, Hawaii	Bowling center addition	97.0		1
	Golf cart storage facility	28.0	235.0	1
	Latrine facility	32.0		1
	Golf course sprinkler system	175.0		1
Kadena AB, Ryukyu	Alter softball athletic field	55.0	86.0	1
	Airmen club kitchen addition	31.0		2
Kunsan AB, Korea	Activate food preparation facility	29.5	76.5	4
	Recreational workshop	47.0		1
Kwang-Ju AB, Korea	Education center	50.0	50.0	1
Osan AFB, Korea	Alter NCO open mess	36.0	312.6	2
	Alter officers' club kitchen	67.0		2
	Base hobby center	104.6		1
	Recreational workshop	105.0		1
U-Tapao AB, Thailand	Officers' club	37.0	71.0	2
	Air-condition base library	34.0		1
Wheeler AFB, Hawaii	Gymnasium handball courts	33.0	109.0	1
	Exchange service station	76.0		4
Total, Pacific Air Forces			1,957.3	
Ellington AFB, Tex.	Renovate main store	156.0	156.0	4
Total, Air Force Reserve			156.0	
Andersen AFB, Guam	Renovate cafeteria	71.4	71.4	4
Fairchild AFB, Wash.	Renovate 4 seasons store	140.7	140.7	4
Grissom AFB, Ind.	Add to and alter commissary	299.9	299.9	3
Kincheloe AFB, Mich.	Golf clubhouse	74.0	74.0	1
Lockbourne AFB, Ohio	Credit union	36.9	87.8	6
	Repair officers' swim pool	50.9		1
Offutt AFB, Nebr.	Retail branch and gasoline station	230.1	230.1	4
Pease AFB, N. H.	Branch bank	172.0	172.0	6
Loring AFB, Maine	Add to and alter commissary	296.0	296.0	3
Total, Strategic Air Command			1,371.9	
Bergstrom AFB, Tex.	Alter officers open mess	94.0	94.0	2
Cannon AFB, N. Mex.	do	46.3	46.3	2
Eglin No. 9 AFB, Fla.	Bowling alley addition	117.5	376.2	1
	Golf facility	182.7		1
	Credit union	76.0		6
Holloman AFB, N. Mex.	Alter officers open mess	46.3	219.2	2
	Credit union	172.9		6
Homestead AFB, Fla.	9-hole golf course	225.0	225.0	1
Little Rock AFB, Ark.	Add to and alter bowling alley	201.2	201.2	1
Luke AFB, Ariz.	NCO open-mess addition	77.5	77.5	2
MacDill AFB, Fla.	Credit union addition	113.0	113.0	6
Mountain Home AFB, Idaho	Alter exchange outlet	66.3	286.3	4
	Recreational workshop	220.0		1
Pope AFB, N.C.	Activate branch exchange	30.0	30.0	4
Seymour Johnson AFB, N.C.	do	26.3	228.8	4
	Renovate service station	202.5		4
Total, Tactical Air Command			1,897.5	
Adana Incirlik, Turkey	Renovate main store	38.0	38.0	4
Bentwaters RAF, United Kingdom	Child-care center	60.0	60.0	1
Ramstein AB, Germany	Add to and alter commissary	121.0	121.0	3
San Vito AS, Italy	Main store extension	254.3	254.3	4
Torrejón AB, Spain	Renovate cafeteria	31.9	31.9	4

PT. I.—PROJECTS OVER \$25,000 BUT LESS THAN \$300,000 STARTED OR PLACED UNDER CONTRACT DURING THIS PERIOD

[Fund source code: 1—Recreation or welfare funds; 2—Club/mess funds; 3—Commissary store excess surcharge funds; 4—Exchange funds; 5—Motion picture service funds; 6—Private funds]

Installation (a)	Project title (b)	Cost (thou- sands) (c)	Total cost (thou- sands) (d)	Fund source (e)
Upper Heyford RAF, United Kingdom	Activate launderette.....	\$32.8	\$32.8	4
Woodbridge RAF, United Kingdom	Youth center.....	95.0	95.0	1
Total, U.S. Air Forces in Europe.....			633.0	
Goodfellow AFB, Tex.	Credit union.....	137.0	137.0	6
Iraklion ASN, Greece	Bowling alley.....	78.3	78.3	1
San Vito AS, Italy	Golf course addition.....	191.7	426.7	1
	Exchange facility.....	235.0		4
Total, U.S. Air Force Security Service.....			642.0	

PT. II.—PROJECTS OVER \$300,000 STARTED OR PLACED UNDER CONTRACT DURING THIS PERIOD

[Fund source code: 1—Recreation or welfare funds; 2—Club/mess funds; 3—Commissary store excess surcharge funds; 4—Exchange funds; 5—Motion picture service funds; 6—Private funds]

Installation (a)	Project title (b)	Cost (thou- sands) (c)	Total cost (thou- sands) (d)	Fund source (e)
FOR THE PERIOD JULY 1, 1972, TO DEC 31, 1972				
Clark AB, Philippines	Relocate and renovate food preparation facility.....	\$300.1	\$654.1	4
	Recreational workshop.....	354.0		1
Hickam AFB, Hawaii	Terminal branch exchange (project reported at \$287.3 in pt. I of July 1972 report. Contract award was postponed and awarded at revised cost).	371.0	371.0	4
Osan AB, Korea	Main exchange.....	485.0	485.0	4
Total, Pacific Air Forces.....			1,510.1	
Andersen AFB, Guam	Extension to main store.....	624.7	624.7	4
March AFB, Calif.	Main exchange.....	1,438.8	1,438.8	4
Minot AFB, N. Dak.	Swim pool and bathhouse.....	334.0	334.0	1
Total, Strategic Air Command.....			2,397.5	
Wright-Patterson AFB, Ohio	Alter NCO open mess, building 1226.....	738.0	738.0	2
Total, Air Force Logistics Command.....			738.0	
Randolph AFB, Tex.	Credit union.....	677.2	677.2	6
Williams AFB, Ariz.	Commissary store.....	1,711.0	1,711.0	3
Total, Air Training Command.....			2,388.2	
Andrews AFB, Md.	Credit union.....	985.9	985.9	6
Total, Headquarters Command, USAF.....			985.9	
Norton AFB, Calif.	Consolidated exchange.....	1,469.4	1,469.4	4
Scott AFB, Ill.	Youth center.....	310.0	310.0	1
Total, Military Airlift Command.....			1,779.4	
Bergstrom, AFB, Tex.	Base theater replacement.....	499.3	2,046.3	5
	Consolidated exchange.....	1,547.0		4
Pope AFB, N.C.	Recreational bowling alley.....	338.0	338.0	1
Total, Tactical Air Command.....			2,384.3	

PT. III.—PROPOSED NONAPPROPRIATED FUNDED CONSTRUCTION PROJECTS OVER \$300,000

[Fund source code: 1—Recreation or welfare funds; 2—Club/mess funds; 3—Commissary store excess surcharge funds; 4—Exchange funds; 5—Motion picture service funds; 6—Private funds]

Installation (a)	Project title (b)	Cost (thousands) (c)	Total cost (thousands) (d)	Fund source (e)
AFTER DEC. 31, 1972				
Eielson AFB, Alaska	Exchange service station—Construct a 4,560 ft. ² service station and auto parts store.	\$428.1	\$428.1	4
Total, Alaskan Air Command.			428.1	
Chanute AFB, Ill.	Swimming pool—Convert pool into all-weather facility by constructing an enclosure.	338.0	338.0	1
+ Keesler AFB, Miss.	Bowling center—Construct a new 12-lane bowling center to replace existing, inadequate facility.	320.5	320.5	1
Lackland AFB, Tex.	Bowling center—Provide a new 32-lane bowling center.	854.0	854.0	1
Sheppard AFB, Tex.	Recreation library—Construct a 15,840 ft. ² library with all required support facilities.	515.0	515.0	1
Total, Air Training Command.			2,027.5	
Maxwell AFB, Ala.	Bowling center—Construct a new 16-lane bowling center.	370.0	370.0	1
Total, Air University.			370.0	
Andrews AFB, Md.	Branch bank—Construct a 4,650-ft. ² banking facility.	370.6	370.6	6
Bolling AFB, Washington, D.C.	Bowling alley—16-lane addition to the existing 16 lanes.	392.0	392.0	1
Total, Headquarters command.			762.6	
Charleston AFB, S.C.	NCO open mess—Add to and alter the NCO open mess.	413.8	413.8	2
Dover AFB, Del.	Youth center—Construct a 9,240-ft. ² youth center facility.	320.9	320.9	1
Norton AFB, Calif.	Youth center—Construct a 9,240-ft. ² facility.	370.0	370.1	1
Travis AFB, Calif.	Youth center—Construct a 14,440-ft. ² youth center.	471.6	471.6	1
Total, Military Airlift Command.			1,576.3	
Hickam AFB, Hawaii	Credit union—Construct a 6,020 ft. ² credit union.	426.0	1,483.0	6
	Branch bank—Replace existing bank with a new 7,500-ft. ² facility.	400.0		6
	Theater—Construct a 500 seat, 9,427-ft. ² replacement theater.	657.0		5
Total, Pacific Air Forces.			1,483.0	
Grand Forks AFB, N. Dak.	Consolidated swimming pool—Construct a 3,702-ft. ² covered pool with a 2,592-ft. ² bath house.	340.1	340.1	1
Malmstrom AFB, Mont.	Consolidated swimming pool—Construct a 3,702-ft. ² covered pool with a 2,592-ft. ² bathhouse.	340.0	340.0	1
Offutt AFB, Nebr.	Child-care center—Construct a 10,500 ft. ² facility to provide temporary care for dependent youth of assigned military personnel.	325.0	325.0	1
Plattsburgh AFB, N.Y.	Bowling center—Construct a preengineered steel building to provide a 12-lane bowling center.	360.0	360.0	1
Total, Strategic Air Command.			1,365.1	
Homestead AFB, Fla.	Swimming pool—Construct a 10,509 ft. ² airmen pool with a 1,995 ft. ² bathhouse.	545.0	545.0	1
Nellis AFB, Nev.	Swimming pool—Construct a 9,229 ft. ² airmen pool with a 1,993 ft. ² bathhouse.	728.0	728.0	1

PT. III.—PROPOSED NONAPPROPRIATED FUNDED CONSTRUCTION PROJECTS OVER \$300,000

[Fund source code: 1—Recreation or welfare funds; 2—Club/mess funds; 3—Commissary store excess surcharge funds; 4—Exchange funds; 5—Motion picture service funds; 6—Private funds]

Installation (a)	Project title (b)	Cost (thou- sands) (c)	Total cost (thou- sands) (d)	Fund source (e)
Shaw AFB, S.C.	Community center—Expand and add to exchange facilities to include additional retail store space and new service outlets.	\$960.0	\$960.0	4
Total, Tactical Air Com- mand.			2,233.0	
U.S. Air Force Academy.....	Golf course—Provide an 18-hole addition to the existing 18-hole course.	650.0	650.0	1
Total, U.S. Air Force Academy.			650.0	1

¹ This project was estimated to cost less than \$300,000 but based on bids received, the project exceeded this ceiling and has been placed under contract (DODI 7700.18, dated, Mar. 9, 1972).

MINOR CONSTRUCTION PROJECTS

Mr. SIKES. (d) A listing of all minor construction projects awarded in the past year or currently pending approval by the Air Force. [The information follows:]

Minor Construction Projects
Awarded or Approved in FY 1973

FY 1972 Approved Projects
Awarded in FY 1973

<u>Base</u>	<u>Project</u>	<u>Award</u>
<u>ALASKA AIR COMMAND</u>		
Shemya	Aircraft Navigational Aid	\$ 58,000
<u>AEROSPACE DEFENSE COMMAND</u>		
Keflavik	Add to Aircraft Engine Shop	115,000
	Add to Ready Crew Facility	242,000
	Aircraft Arresting Barrier	268,770
<u>AIR FORCE LOGISTICS COMMAND</u>		
Robins	Improve Depot Warehouse	149,362
<u>AIR FORCE SYSTEMS COMMAND</u>		
New Hampshire	Vehicle Maintenance Shop	229,700
Tracking Sta.	Warehouse	68,600
Los Angeles	Noncommissioned Officer Open Mess	97,400
<u>AIR TRAINING COMMAND</u>		
Williams	Aircraft Maintenance Training Facility	300,000
	Aircraft Avionics Maintenance Facility	293,600
Randolph	Training Facility	197,177
Lackland	Interim Hospital Outpatient Clinic	90,798
<u>AIR UNIVERSITY</u>		
Gunter	Training Facility	98,200
<u>MILITARY AIRLIFT COMMAND</u>		
Norton	Refueling Vehicle Parking	143,809
Altus	Aircrew Training Facility	176,100
<u>STRATEGIC AIR COMMAND</u>		
Mildenhall	Power Check Pad	132,000
Shemya	Aircraft Fueling System	263,802
Kincheloe	Add to Gym	233,400
Vandenberg	Replace Water Well	115,000
Davis-Monthan	Precision Measurement Equipment Shop	276,700
<u>TACTICAL AIR COMMAND</u>		
England	Aircraft Arresting System	90,000
	Munitions Maintenance Shop	124,263
	Add to Munitions Administration Office	49,682
MacDill	Sewage Treatment Plant	60,000
	Arm/Disarm Facility	95,226
Langley	Data Processing Plant	291,950
<u>PACIFIC AIR FORCES</u>		
Kunsan	Aircraft Runup Facility	97,960
Udorn	Elevated Water Storage	145,200

<u>Base</u>	<u>Project</u>	<u>Award</u>
Taegu	Combat Operations Center	97,300
Osan	Aircraft Runup Facility	121,200

U.S. AIR FORCES EUROPE

Bentwaters	Improve Avionics Maintenance Shop	95,600
Woodbridge	Add to Squadron Operations	48,150
Ramstein	Interim Air Freight Terminal	300,000
Hahn	Improve Data Processing Plant	78,100
Wiesbaden	Convert to Drug Prevention/ Detection Lab	222,700
Athens	Personnel Support Facility	235,200
Rhein Main	Interim Dependent Elementary School	160,000
Sembach	Electronic Equipment Maintenance Shops	99,999
Torrejon	Add to Avionics Shop	153,700
Bitburg	Water Wells	136,945
TOTAL		\$ 6,252,593

Projects Approved in FY 1973Projects Awarded in FY 1973Projects Pending Award in FY 1974

<u>Base</u>	<u>Project</u>	<u>Award</u>	<u>Pending</u>
TOTAL	<u>ALASKAN AIR COMMAND</u>	<u>\$12,008,086</u>	<u>\$7,858,850</u>
Elmendorf	Alter Maint Hangar		\$ 95,800
	Combat Operations Center		142,600
Eielson	Measurement Laboratory		219,500
Galena	Relocate Dormitory	\$ 161,700	
Shemya	Antenna Support		145,400

AEROSPACE DEFENSE COMMAND

Benton	Modify Radar Tower	126,520	
Dauphin Is.	Radar Support Facility	82,155	
Ellington	Aircraft Maintenance Shelter	255,000	
El Paso	Radar Support Facility (FAA)	45,000	
Lake Charles	Radar Support Facility (FAA)	191,960	
Laredo	Radar Support Facility	66,000	
Mica Peak	Alter Dining Hall	57,350	
New Orleans	Alert Facility	294,000	
Odessa	Radar Support Facility (FAA)	57,000	
Phoenix	Radar Support Facility (FAA)	118,000	
Silver City	Radar Support Facility (FAA)	110,000	
	Radar Tower (FAA)	252,000	
Slidell	Radar Support Facility (FAA)	50,200	
Tyndall	Weapons Control	295,000	
	Alter Dormitory	209,000	
	Taxiway	275,300	
	Alert Shelter	213,400	
Davis-Monthan	Alert Hangar		190,400

U.S. AIR FORCE ACADEMY

Academy	Fuel Oil Storage	250,866	
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AIR FORCE LOGISTICS COMMAND

Hill	Compressed Air Plant	73,300	
	Fuel Oil Storage		285,600
	Liquid Fuel Pipeline		199,600
Robins	Depot Operations		75,600

<u>Base</u>	<u>Project</u>	<u>Award</u>	<u>Pending</u>
Robins	Fuel Oil Storage		215,000
Tinker	Alter Communications Center	69,800	
	Fuel Oil Storage		276,700
Wright-Pat	Alter Utility System		136,400
<u>AIR FORCE SYSTEMS COMMAND</u>			
Edwards	Improve Security Facilities	78,600	
	Flight Line Substation		181,800
Eglin	Alter Electrical System	65,700	
	Alter Maintenance Hangar	247,390	
Vandenberg	Range Operations Center	199,400	
Westover	Construct Vaults	149,800	
Wright-Pat	Alter Research Facility	252,000	
Palehua	Optical Telescope		196,100
Patrick	Backup Power System		223,000
Holloman	Weapons Guidance Testing		95,000
<u>AIR FORCE COMMUNICATIONS SERVICE</u>			
Keesler	Alter Communication Facilities	75,500	
<u>AIR UNIVERSITY</u>			
Maxwell	Alter Communication Center	167,800	
<u>AIR TRAINING COMMAND</u>			
Keesler	Coronary Care Unit	91,600	
Lackland	Dog Training Facility		200,000
Lowry	Correction Facility		109,600
	Judge Advocate Facility		96,400
Mather	High Altitude Training	60,100	
Randolph	Computer Air Conditioning	61,200	
Bergstrom	Aircraft Shop		94,900
<u>HEADQUARTERS COMMAND</u>			
Andrews	Communications Center	87,200	
	Alter Heating Plants		196,600
	Medical Evac Center	290,300	
	Bldg 3465		98,800
<u>MILITARY AIRLIFT COMMAND</u>			
Altus	AGE Shop		278,900
	Communications Shop		278,800
	Aircraft Shop		149,400
Scott	Command & Control Facility	201,100	
	Intensive Care Unit		89,800
McClellan	Electronic Overhaul Facility	151,225	
McChord	Pave Runway Shoulders	247,860	
<u>STRATEGIC AIR COMMAND</u>			
Andersen	Ground Equipment Parking	63,000	
	Hardstand Lighting	299,000	
	Troop Camp	299,800	
	Aircraft Engine Shop	276,600	
	Warehouse	295,200	
	Auto Maint Shop	99,900	
Ellsworth	Warehouse	165,800	
Kincheloe	Base Personnel Office	225,700	
Offutt	Global Weather Center	256,200	

<u>Base</u>	<u>Project</u>	<u>Award</u>	<u>Pending</u>
Vandenberg	Special Training Facilities	197,200	
Plattsburgh	Flight Simulator	206,900	
Davis-Monthan	High Alt Trng	87,200	
<u>TACTICAL AIR COMMAND</u>			
Bergstrom	Electronic Equipment Shop		284,300
	Auto Maintenance Shop		217,400
Cannon	Relocate Warehouses	80,200	
England	Munitions Storage Facilities	241,500	
	Aircraft Maintenance Shop	134,100	
Homestead	Improve Road	66,130	
Langley	Shortfield Runway	298,700	
	Alert Crew Facility	95,000	
	Transportation Terminal	117,040	
Little Rock	Shortfield Runway	273,900	
Luke	Water Well	82,900	
	Flight Simulator Training		284,400
Mt Home	Flight Simulator Facility	201,000	
<u>U.S. AIR FORCE SOUTHERN COMMAND</u>			
Howard	Airman Dormitory	231,300	
<u>U.S. AIR FORCES EUROPE</u>			
Hahn	Security Facilities		92,500
	Steam Lines		125,400
Incirlik	Aircraft Fueling System	300,000	
Ramstein	Relocate School	85,000	
Torrejon	Maint Facility		79,900
	AGE Shop		68,100
	Maint Dock		259,300
Zaragoza	Water Supply	99,990	
	Power Check Pad		69,200
Aviano	Data Processing Plant		109,500
Woodbridge	Helicopter Parking		109,800
Alconbury	Data Processing Plant		156,350
Upper Heyford	Medical Facility		96,800
	Aircraft Arrest Barrier		87,800
Mildenhall	Hydrant Fueling System		98,500
Spangdahlem	Relocate School		194,000
Bitburg	Warehouse		110,400
<u>PACIFIC AIR FORCES</u>			
Clark	Water Wells	298,000	
	Test Stand		85,800
	Liquid Fuel Pipeline		87,000
	Noise Suppressor		158,100
Kadena	Air Freight Terminal	170,800	
	Special Fuels		271,200
Kunsan	Airmen Dormitory	230,100	
	Officer Quarters	144,000	
	Wing Headquarters	65,200	
Osan	Security Police Operations	97,200	
	Airmen Dormitories	295,500	
	Officer Quarters	99,400	
Kadena	Noise Suppressor		143,200
Kokha	Ground Defense Facility	76,000	
Hickam	Alter Laboratory		117,000
	Civilian Personnel Office		281,200
	Computer Facility	72,300	

CONSTRUCTION FROM OTHER APPROPRIATIONS

Mr. SIKES. (e) A listing of all facilities constructed with research and development, working fund, or procurement money—other than at Government-owned, contractor-operated plants.

[The information follows:]

FACILITIES CONSTRUCTION WITH OTHER THAN MILITARY CONSTRUCTION FUNDS

Two facilities will be constructed at Kirtland AFB, N. Mex., using research and development funds. They are: (1) A horizontally polarized dipole electromagnetic pulse simulator—\$703,000 estimated cost—and (2) a threat-level electromagnetic pulse simulator—\$3,680,000 estimated cost. These facilities will be capable of simulating the electromagnetic propagation effects of nuclear weapon detonations. Large aircraft systems, such as the advanced airborne command post, airborne warning and control system, and the B-1, will undergo survivability/vulnerability testing in these two outdoor test facilities. The Air Force notified appropriate congressional committees and provided descriptive data on DD forms 1391. These are the only facilities to be constructed from the fund sources cited.

CONSTRUCTION IN VIETNAM

Mr. SIKES. (f) A listing of any construction in Vietnam performed in the past year or pending approval.

General REILLY. We will supply those.

[The information follows:]

CONSTRUCTION IN VIETNAM

There has been no construction supporting U.S. Air Force units in Vietnam for the past year. A listing of construction projects supporting the Vietnamization program follows:

VIETNAMIZATION PROJECTS

	Cost	Status
Project:		
Dependent shelters.....	\$1,200,000	Approved, funds reserved.
Dependent community facilities.....	1,000,000	Do.
Enhance plus: ¹		
Bien Hoa Air Base.....	1,946,000	Scheduled completion November 1973.
Pleiku Air Base.....	111,000	Do.
Tan Son Nhut Air Base.....	272,000	Do.
Da Nang Air Base.....	18,000	Do.

¹ The Enhance plus program provides operational facilities for the Vietnamese Air Force.

Mr. SIKES. Thank you very much, Mr. Obey.

Mr. Crockett, I think we can let you go. Thank you very much for your help.

Mr. CROCKETT. Thank you, sir. It is a pleasure to be here.

PROGRAM SUMMARY

Mr. SIKES. Insert in the record pages III, IV, XI, and XIII.

[The pages follow:]

PROGRAM AND PERFORMANCE STATEMENT

The basis for the appropriation request for \$311.9 million is set forth in the following tabulation:

	<i>Millions</i>
New authorization	\$278.9
Open and permanent authorization	33.0
Advance planning	18.0
Minor construction	15.0
Total obligational authority	311.9

In addition to the total unobligational authority requested for fiscal year 1974, the appropriation program for fiscal year 1974 includes \$2 million for reimbursements for a total program of \$313.9 million.

CATEGORY DETAILS OF THE FISCAL YEAR 1974 PROGRAM

Funding clearance is requested in fiscal year 1974 for projects totaling \$311,900,000. Individual line items fall into construction categories as follows:

[Dollar amounts in millions]

	Amount	Percentage of total program
Category of facilities:		
Operational	\$52.6	16.9
Training	7.8	2.5
Maintenance and production	36.9	11.8
Research and development	10.0	3.2
Supply	11.7	3.8
Hospital and medical	36.7	11.7
Administrative	31.2	10.0
Bachelor housing	39.7	12.7
Community	28.4	9.1
Utilities	12.1	3.9
Pollution	9.8	3.1
Real estate	2.0	0.7
Planning	15.0	4.8
Minor construction	18.0	5.8
Total obligational authority requested	311.9	100.0

PROGRAM 320 SUMMARY BY COMMAND

INSIDE THE UNITED STATES

Command

	<i>Appropriation request (thousands)</i>
Aerospace Defense Command.....	\$8, 794
Air Force Communications Service.....	3, 963
Air Force Logistics Command.....	60, 934
Air Force Systems Command.....	9, 062
Air Training Command.....	56, 282
Air University.....	5, 462
Alaskan Air Command.....	8, 658
Headquarters Command.....	18, 435
Military Airlift Command.....	12, 416
Pacific Air Forces.....	7, 331
Strategic Air Command.....	25, 738
Tactical Air Command.....	17, 703
U.S. Air Force Academy.....	645
Various (pollution abatement).....	9, 070
Air installation compatible use zones.....	2, 000
Various (section 302).....	1, 000
Total.....	247, 493

PROGRAM 330 SUMMARY BY COMMAND

OUTSIDE THE UNITED STATES

Command

	<i>Appropriation request (thousands)</i>
Aerospace Defense Command.....	\$1, 355
Pacific Air Forces.....	11, 788
U.S. Air Forces, Europe.....	15, 925
Southern Command.....	1, 038
Security Service.....	221
Various (pollution abatement).....	750
World-wide Communications.....	330
Total	31, 407

GENERAL AUTHORIZATION

PLANNING AND DESIGN

Mr. SIKES. Insert page XV in the record.
[The page follows:]

1. DATE	2. DEPARTMENT AF	3. INSTALLATION FY 1974. MILITARY CONSTRUCTION PROGRAM PLANNING AND DESIGN									
4. COMMAND OR MANAGEMENT BUREAU N/A		8. INSTALLATION CONTROL NUMBER N/A	6. STATE/COUNTRY VARIOUS								
7. STATUS N/A		9. YEAR OF INITIAL OCCUPANCY N/A	9. COUNTY (U.S.) N/A	10. NEAREST CITY N/A							
11. MISSION OR MAJOR FUNCTIONS SUPPORT FACILITIES			12. PERSONNEL STRENGTH								
			PERMANENT			STUDENTS		SUPPORTED		TOTAL (9)	
			OFFICER (1)	ENLISTED (2)	CIVILIAN (3)	OFFICER (4)	ENLISTED (5)	OFFICER (6)	ENLISTED (7)		CIVILIAN (8)
			a. AS OF 31 December _____								
			b. PLANNED (End FY _____)								
			13. INVENTORY								
			LAND		ACRES (1)	LAND COST (\$000) (2)		IMPROVEMENT (\$000) (3)		TOTAL (\$000) (4)	
			a. OWNED								
			b. LEASES AND EASEMENTS								
			c. INVENTORY TOTAL (Except land rent) AS OF 30 JUNE 19 _____								
d. AUTHORIZATION NOT YET IN INVENTORY											
e. AUTHORIZATION REQUESTED IN THIS PROGRAM											
f. ESTIMATED AUTHORIZATION - NEXT 4 YEARS											
g. GRAND TOTAL (c + d + e + f)											
14. SUMMARY OF INSTALLATION PROJECTS											
PROJECT DESIGNATION				AUTHORIZATION PROGRAM				FUNDING PROGRAM			
CATEGORY CODE NO. a	PROJECT TITLE b			TENANT COMMAND c	UNIT OF MEASURE d	SCOPE e	ESTIMATED COST (\$000) f	SCOPE g	ESTIMATED COST (\$000) h		
010-111	Planning and Design				LS		31 USC 723	LS	18,000		
	TOTAL								18,000		

Mr. SIKES. What is the unobligated balance in the Air Force's planning account as of the last available reporting date?

Mr. LEE. The unobligated balance on April 30 was \$8.3 million.

Mr. SIKES. What obligations in planning funds do you now anticipate for the remainder of fiscal year 1973?

Mr. LEE. Of the \$8.3 million, approximately \$6 million will be obligated prior to the 30th of June.

Mr. SIKES. What is the current estimate for planning obligations during fiscal year 1974?

Mr. LEE. About \$20 million.

Mr. SIKES. Will the medical facilities modernization program have a major impact on your rate of obligations in the planning account over the next few years?

Mr. LEE. No; it will not.

NEW GENERATION HOSPITAL

Mr. SIKES. What is the design status of the new generation hospital?

General REILLY. The studies have just been completed for developing physical requirements and criteria for the hospital. We expect to initiate design early this fall.

Mr. SIKES. How much has the Air Force spent on planning for this hospital, and how much more will you spend?

General REILLY. It is something less than a half a million dollars to date, sir. It will probably take another \$6 million to complete the design effort.

Mr. SIKES. Tell us for the record what you mean by a new generation hospital and what new techniques it will use.

[The information follows:]

NEW GENERATION HOSPITAL

The new generation of military hospitals program was initiated by the Secretary of Defense in 1968 and assigned to the Air Force, as the executive agent, in December 1971 for implementation. It encompasses the bringing together of Industry and Department of Defense professionals in medicine, health care administration, architecture and engineering, data automation, and other disciplines to develop an innovative test-bed facility at Travis AFB, Calif., that will employ the powers of automation and mechanization to improve the operating efficiency of the DOD health care delivery system in an environment favorable to improving the quality of patient care.

The NGMH facility will be designed, constructed, equipped, and staffed to provide total health care to authorized beneficiaries, and to provide guidance for future health care delivery systems of the nation in four major areas. These broad areas are:

- (1) Complete community health care service.
- (2) Clinical specialty referral and consultant center.
- (3) University level teaching and research center.
- (4) Prototype test bed for future systems.

The goals established by the Department of Defense were to improve the effectiveness of health care delivery, improve the efficiency of health care operation, reduce or at least stabilize the long-term costs of operating the system, and maintain or improve the quality of health care.

By employing newly developed advanced planning techniques based on extensive systems analysis, and focusing on providing the facility at Travis Air Force Base in California, the program objectives can be achieved. The facility being planned will achieve operating economies through the use of life-cycle costing techniques as advocated by GAO and others. It will also house a totally integrated data automation system dedicated to patient service.

The local authorized population will be provided complete medical and dental service in both outpatient and inpatient status. Extensive consultative capability will insure the highest quality of care and will reduce referral of local patients to other facilities to a minimum.

The presence of nationally certified specialists supported by the latest equipment and technology will provide a referral service for authorized patients of physicians at other facilities of the Department of Defense. Utilization of new sophisticated technology will provide the center consultants with the capability to advise and assist physicians at distant facilities in direct patient care, this being accomplished via a proposed live two-way audiovisual interaction of the consultant and the patient and his attending physician. Patient referral and remote consultation extends available expert health care to more patients.

Nationally recognized clinical specialty teaching programs will stimulate continued high quality of care, and significantly contribute an input in specialty manpower within the military in an all-volunteer force.

Designed and equipped as a testbed for new concepts of delivering health care, the project should provide guidance for future military and civilian systems. The implementation of automation and new communication systems plus new concepts in the utilization of personnel will provide an environment for change in the traditional delivery of health care. Designed in a modular fashion, the benefits derived could be extracted for use in any future civilian or military health care system. Key to this concept is the ability to rapidly expand or contract as advances or changes occur in the health professions.

HIGH REYNOLDS NUMBER TUNNEL

Mr. SIKES. Will there be sufficient funds to proceed with the design of the HIRT facility in a timely manner?

General REILLY. There will be sufficient funds to initiate the design. We presume if the project is added to the 1975 program, the OSD will add the necessary planning money as well. But there are funds available to initiate design.

Mr. SIKES. For the record, tell us what the HIRT facility is.
[The information follows:]

HIRT is the acronym for the high Reynolds number tunnel. HIRT is a transonic wind tunnel which will provide aerodynamic flows simulating the flight conditions of advanced, large, high-performance aeronautical systems. The facility will augment the extensive wind tunnel complex at the Arnold Engineering Development Center and provide a national capability for testing at Reynolds numbers that aerospace vehicles actually experience. Reynolds number is a mathematical relationship that considers in addition to airspeed, the size of the airplane, the density and viscosity of the air at the flight altitude. With proper mach number and Reynolds number, the data obtained in the wind tunnel using a model will accurately predict actual flight performance. This is very important in the transonic speed regime and cannot be evaluated in present wind tunnels.

MINOR CONSTRUCTION

Mr. SIKES. Insert in the record page XVIII.
[The page follows:]

1. DATE		2. DEPARTMENT AF		3. INSTALLATION FY 1974 MILITARY CONSTRUCTION PROGRAM MINOR CONSTRUCTION								
4. COMMAND OR MANAGEMENT BUREAU N/A		5. INSTALLATION CONTROL NUMBER N/A		6. STATE/COUNTRY VARIOUS								
7. STATUS N/A		8. YEAR OF INITIAL OCCUPANCY N/A		9. COUNTY (U.S.) N/A		10. NEAREST CITY N/A						
11. MISSION OR MAJOR FUNCTIONS SUPPORT FACILITIES				12. PERSONNEL STRENGTH			TOTAL					
				PERMANENT			STUDENTS		SUPPORTED			
				OFFICER (1)	ENLISTED (2)	CIVILIAN (3)	OFFICER (4)	ENLISTED (5)	OFFICER (6)	ENLISTED (7)	CIVILIAN (8)	(9)
				a. AS OF 31 December _____								
				b. PLANNED (8th FY)								
				13. INVENTORY								
				LAND		ACRES (1)	LAND COST (\$000) (2)		IMPROVEMENT (\$000) (3)		TOTAL (\$000) (4)	
a. OWNED												
b. LEASES AND EASEMENTS												
c. INVENTORY TOTAL (Except land rent) AS OF 30 JUNE 19 _____												
d. AUTHORIZATION NOT YET IN INVENTORY												
e. AUTHORIZATION REQUESTED IN THIS PROGRAM												
f. ESTIMATED AUTHORIZATION - NEXT 4 YEARS												
g. GRAND TOTAL (c + d + e + f)												
14. SUMMARY OF INSTALLATION PROJECTS												
PROJECT DESIGNATION				TENANT COMMAND		UNIT OF MEASURE		AUTHORIZATION PROGRAM		FUNDING PROGRAM		
CATEGORY CODE NO. a	PROJECT TITLE b			c	d	e	f	g	h			
010-211	Minor Construction				LS		10 USC 2674	LS	15,000			
	TOTAL								15,000			

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Mr. SIKES. What utilization has the Air Force made of the authority to build from minor construction projects which are quickly amortized?

General REILLY. I think to date we have received approval either from the Secretary of Air Force or Secretary of Defense for about \$1.2 million for this type of project.

ACCESS ROADS

Mr. SIKES. What is the status of the Air Force's access roads account?

Mr. LEE. The present unobligated balance is about \$7 million and all of those funds are committed against access roads at Wright-Patterson, Robins Air Force Base, and—I will supply the others for the record.

[The information follows:]

UNOBLIGATED BALANCE FOR ACCESS ROADS

The unobligated balance for defense access roads is committed by the Federal Highway Administration to the following projects:

Scott AFB, Ill.....	\$754, 960
Robins AFB, Ga.....	1, 392, 288
Wright-Patterson AFB, Ohio.....	1, 500, 000
Grand Forks AFB, N. Dak.....	1, 950, 000
Kelly AFB, Tex.....	1, 000, 000
Completion of others.....	494, 959
Total	7, 092, 207

GENERAL QUESTIONS

PRICES OF FISCAL YEAR 1974 PROJECTS

Mr. SIKES. What amount of cost escalation have you taken into account in pricing out the projects in the Air Force's fiscal year 1974 request?

General REILLY. They are showing about an 8-percent increase over the costs of January 1973.

Mr. SIKES. To what date are you projecting these costs?

General REILLY. We are speaking of the spring of 1974.

Mr. SIKES. Do you feel these cost projections are realistic?

General REILLY. Yes, sir; we do.

Mr. SIKES. Do you think you can live with them?

General REILLY. Yes, sir.

Mr. SIKES. What has been your bid experience in recent fiscal years in comparing programed amount versus actual cost?

General REILLY. Mr. Chairman, our projects based on bids have been running between 90 and 100 percent of the programed amount. As I mentioned earlier, the most recent experience for the 1973 program has been about 96 or 97 percent of the programed amount.

Mr. SIKES. Are you getting full programed scope within the dollars allowed, or have you found it necessary to reduce the scope of some of the buildings?

General REILLY. It has been necessary to reduce scope in just a very few instances, Mr. Chairman.

Mr. SIKES. Tell us how you will apply the area cost factor to projects in fiscal 1974.

General REILLY. Mr. Chairman, based upon pricing guidance developed by the Office of the Secretary of Defense, we determine the appropriate costs to a cost index of 1, which is comparable to the Washington, D.C., area, and adjust it upward or downward simply by multiplying by the area factor to take care of the geographical cost increase or decrease.

Mr. SIKES. Is it reasonable to use the area cost factor when you are employing prefabricated or preengineered buildings?

Colonel RUTLAND. Mr. Chairman, yes, sir; it is reasonable to use it. However, we apply a factor of 85 percent to the unit cost for a conventional-style facility. We do find on overseas construction, using preengineered facilities, that the construction costs of getting the structure there essentially offsets that 15 percent.

Mr. SIKES. What allowance for contingencies have you included in the estimates for each project?

Colonel RUTLAND. We use 5 percent on contingencies, 6 percent on supervision inspection and overhead.

BASE-LOADING PROJECTIONS

Mr. SIKES. Do the justification sheets before us, which will be inserted in the record, reflect the long-range base loadings which will result from the recent base-realignment announcements?

General REILLY. Yes, sir; they do.

Mr. SIKES. One of the major actions which will affect base employment is the establishment of technology repair centers at the various bases of the Air Force Logistics Command. How were your base-loading figures for these bases computed?

Colonel MORROW. The establishment of our technology repair centers affects only the maintenance portion of the depots, which represent about some 30 percent or less of the total people.

We have in effect in the maintenance area, which will be somewhat around 5 percent in the next year, reducing on down to negligible percentage of figures shown on the base impact.

Mr. SIKES. Have you reevaluated all bachelor housing projects requested in the fiscal year 1974 program for the effects of base realignments on military populations?

General REILLY. Yes, sir, we have.

Mr. SIKES. Are there general questions on my right?

Mr. LONG. What did you come up with when you made that reevaluation? Did you make any modifications to your plans?

General REILLY. It had some bearing. We just made sure our requirements were tuned to the adjusted strength of our bases. We did this during the planning process and before the program was put together.

Mr. LONG. Could you give us some detail for the record on how this modified your plans?

General REILLY. Yes.

[The information follows:]

BASE REALIGNMENT CONSIDERATIONS

OSD generally limits new construction of bachelor spaces to 90 percent of our projected requirements. These requirements are established by applying the results of our bachelor survey data to projected manpower authorizations. All

requirements shown in individual DD form 1391's reflect consideration of the recently announced base realignments with one exception. Dover Air Force Base, Del. requirements change from 1,808 spaces to 1,967. This will change their adequate housing level to 83 percent vice 90 percent after completion of the fiscal year 1974 requested project. The Air Force elected not to revise the fiscal year 1974 project request pending further evaluation of off-base community assets. We will retain sufficient substandard assets to cover our requirements pending this reevaluation. An adjustment to building disposal plans was made and disposal of 19 structures as stated in the DD form 1391 remains firm.

Mr. LONG. I think we are all afraid you might be building some housing on bases which you might abandon some years from now. So we want to make sure you are not.

REQUIREMENT FOR FOUR-BEDROOM HOUSES

You point out you are building a lot of four-bedroom houses. I believe the population is taking another turn now and people are having fewer children. How far into the future are your plans projected? Have you made demographic studies with the help of real demographers in making these plans on what your two-bedroom and three-bedroom and four-bedroom needs will be?

Mr. JOHNSTON. Our projection is 5 years in the future and is predicated upon the population trend of 1979.

Mr. LONG. Only 5 years?

Mr. JOHNSTON. Yes, sir.

Mr. LONG. Of course the houses are going to last a lot longer than that?

Mr. JOHNSTON. Yes, sir.

Mr. LONG. Who do you have advising you on the demographic structure?

Mr. JOHNSTON. We go to FHA. FHA concurs in our bedroom compositions of all of our projects predicated upon their surveys of the particular localities.

Mr. LONG. You know what I am talking about, don't you?

Mr. JOHNSTON. Yes.

Mr. LONG. Does FHA look into that aspect of it?

Mr. JOHNSTON. I assume they do.

Mr. LONG. You hope they do.

Mr. JOHNSTON. Yes.

Mr. LONG. But you don't know for sure?

Mr. JOHNSTON. No, sir.

Mr. LONG. I would ask, for the record, if you can give us some information about what they do, or what you do, or what you ought to do to make sure that we aren't planning a lot of four-bedroom houses for the future when people may not be having that many children. I don't know if it is true, but I gather the population pattern has been taking some very drastic turns lately.

Mr. JOHNSTON. Yes. Under the present day conditions our requirements run about 45 percent for two-bedroom units. However, in the past years we have built more toward two or three bedroom units than for four-bedroom units.

Mr. LONG. I don't doubt your immediate demand would be for four bedrooms, but I am in doubt as to whether that pattern will bear up. I think you ought to look at the somewhat more distant future if you assume these houses are going to last longer than 5 years. Do you?

Mr. JOHNSTON. We assume a lot longer than 5 years. However, with an all-volunteer force it might get more prolific than in the past.

[The information follows:]

Mr. JOHNSTON. We have been informally advised that HUD and FHA are not making long-term guesses on future bedroom requirements. Surveys conducted by HUD concern themselves with census statistics and family sizes in particular localities extended for normal 5-year periods. A thorough review of Air Force families sizes indicate little or no change in future years. Our program this year which contains 1766 four-bedroom units is the smallest Air Force program since fiscal year 1970. Of our total inventory of some 150,000 units only 13 percent are four or more bedroom units. Even though we reflect a sizable requirement for two-bedroom units we feel that units of this type are more readily available in the local community, at prices our personnel can afford, than larger four-bedroom units. HUD concurs in this determination and recently has nonconcurrent in the construction of two-bedroom units on some of our bases. The inclusion of these larger units in our yearly program also stems from the recommendation of the committee advising the service not to build two-bedroom units.

Mr. LONG. Another question is what impact the volunteer force has on the type of housing you are planning compared with another type of force.

Mr. JOHNSTON. Right.

Mr. LONG. Whether it is a volunteer force or not, does that have much to do with your officer housing program?

Mr. JOHNSTON. Our officer housing program stays pretty steady.

Mr. LONG. Regardless whether it is all-volunteer or not?

Mr. JOHNSTON. Yes.

Mr. LONG. So far as enlisted personnel are concerned the picture may change?

Mr. JOHNSTON. Yes, sir.

Mr. LONG. Maybe you ought to say something about that for the record, too.

Mr. JOHNSTON. All right.

[The information follows:]

IMPACT OF VOLUNTEER FORCE ON HOUSING

Mr. JOHNSTON. Prior to implementation of an all-volunteer force, we found many young men enlisted in the Air Force to avoid being drafted. Many of these personnel would serve only a 4-year enlistment, be discharged and then return to civilian life. Under these conditions a part of the enlisted population was considered unstable or temporary. Under the all-volunteer force we feel that many more first termers will marry, raise families and remain in the service for 20 to 30 years. Our past experience indicates that long-term service families are the ones having three and four children which will produce the requirement for the four-bedroom units already constructed or to be constructed on Air Force bases.

INSIDE THE UNITED STATES

Mr. SIKES. Let us begin the line items. Insert in the record pages I through III of the justification book for projects inside the United States.

[The pages follow:]

DEPARTMENT OF THE AIR FORCE, MILITARY CONSTRUCTION PROGRAM— FISCAL YEAR 1974

ENVIRONMENTAL STATEMENT—EXECUTIVE ORDER 11514

All projects in the Air Force fiscal year 1974 military construction program submittal have been reviewed for potential ecological and environmental impact in accordance with section 102(2)(c) of the National Environmental Policy Act

of 1969 (Public Law 91-190). No individual projects were found to require environmental statements except the following:

Command: ATC, Lowry AFB, Colo., Air Force Accounting and Finance Center----- \$20,350,000

EVALUATION OF FLOOD HAZARDS

All projects in the program have been evaluated in compliance with Executive Order No. 11296 and have been sited to avoid uneconomic, hazardous, or unnecessary use of flood plains and to minimize the risk of flood losses.

MILITARY CONSTRUCTION PROGRAM—FISCAL YEAR 1974

SUMMARY BY COMMAND INSIDE THE UNITED STATES

Command:	<i>Proposed program (thousands of dollars)</i>
Aerospace Defense Command-----	\$8,794
Air Force Communications Service-----	3,963
Air Force Logistics Command-----	60,934
Air Force Systems Command-----	9,062
Air Training Command-----	56,282
Air University-----	5,462
Alaskan Air Command-----	8,658
Headquarters Command-----	18,435
Military Airlift Command-----	12,416
Pacific Air Forces-----	7,331
Strategic Air Command-----	25,738
Tactical Air Command-----	17,703
U.S. Air Force Academy-----	645
Various (pollution abatement)-----	9,070
Air installation compatible use zones-----	2,000
Total inside the United States-----	246,493

AEROSPACE DEFENSE COMMAND

Mr. SIKES. Insert in the record page 1.
[The page follows:]

DEPARTMENT OF THE AIR FORCE, MILITARY CONSTRUCTION PROGRAM—FISCAL YEAR 1974

AEROSPACE DEFENSE COMMAND

Installation:	<i>Proposed program (thousands of dollars)</i>
Peterson Field, Colo.-----	\$7,843
Tyndall Air Force Base, Fla.-----	951
Total -----	8,794

AEROSPACE DEFENSE COMMAND (ZONE OF INTERIOR)

The primary mission of the Aerospace Defense Command (ADC) is to discharge Air Force responsibilities for the defense of the United States against aerospace attack. This program requests \$8,794,000 for eight projects in support of ADC host responsibilities at two Air Force locations. Additionally, section 302 of the program includes \$1 million for radar support facilities at various worldwide installations. The total ADC construction program is \$9,794,000.

PETERSON FIELD, COLO.

Mr. SIKES. On Peterson Field, insert in the record page 2.
[The page follows:]

1. DATE		2. DEPARTMENT AF		3. INSTALLATION PETERSON FIELD							
4. COMMAND OR MANAGEMENT BUREAU AEROSPACE DEFENSE COMMAND		5. INSTALLATION CONTROL NUMBER TDKA		6. STATE/COUNTRY COLORADO							
7. STATUS ACTIVE		8. YEAR OF INITIAL OCCUPANCY 1942/1951		9. COUNTY (U.S.) EL PASO	10. NEAREST CITY 6 MILES EAST OF COLORADO SPRINGS, COLORADO						
11. MISSION OR MAJOR FUNCTIONS SUPPORT OPERATIONS FOR: AEROSPACE DEFENSE COMMAND HEADQUARTERS NORTH AMERICAN AIR DEFENSE COMMAND HEADQUARTERS		12. PERSONNEL STRENGTH (Include NORAD and ENT AFB)									
		PERMANENT			STUDENTS		SUPPORTED			TOTAL	
		OFFICER (1)	ENLISTED (2)	CIVILIAN (3)	OFFICER (4)	ENLISTED (5)	OFFICER (6)	ENLISTED (7)	CIVILIAN (8)	(9)	
		a. AS OF 31 December 72	1,774	4,390	1,886	30	0	25	25	0	8,130
		b. PLANNED (End FY 76)	1,794	4,478	1,894	30	0	25	25	0	8,246
13. INVENTORY											
LAND		ACRES (1)		LAND COST (\$000) (2)		IMPROVEMENT (\$000) (3)		TOTAL (\$000) (4)			
a. OWNED		0		0		21,419		21,419			
b. LEASES AND EASEMENTS		981		(1) 0		-		-			
c. INVENTORY TOTAL (Excludes land rent) AS OF 30 JUNE 19 72								21,419			
d. AUTHORIZATION NOT YET IN INVENTORY (Excludes Family Housing \$5,722,000)								5,423			
e. AUTHORIZATION REQUESTED IN THIS PROGRAM								7,843			
f. ESTIMATED AUTHORIZATION - NEXT 4 YEARS								20,000			
g. GRAND TOTAL (c + d + e + f)								54,685			
14. SUMMARY OF INSTALLATION PROJECTS											
PROJECT DESIGNATION											
15. CATEGORY CODE NO. a	16. PROJECT TITLE b			17. TENANT COMMAND c	18. UNIT OF MEASURE d	19. AUTHORIZATION PROGRAM e		20. FUNDING PROGRAM f			
	Priority					SCOPE g	ESTIMATED COST (\$000) h	SCOPE i	ESTIMATED COST (\$000) j		
219-94A	Base Facilities Maintenance Complex I				SF	69,080	1,840	69,080	1,840		
722-211	Airmen Dormitories I				MN	180	989	180	989		
740-266	Commissary I				SF	73,500	2,270	73,500	2,270		
740-617	NCO Open Mess I				SF	27,800	1,379	27,800	1,379		
740-633	Post Office I				SF	7,020	338	7,020	338		
800-000	Utilities I				LS	LS	1,027	LS	1,027		
	TOTAL						7,843		7,843		

PETERSON FIELD

The first installation to be considered in the Aerospace Defense Command (ADC) program is Peterson Field, headquarters of ADC and the North American Air Defense Command, located 6 miles east of Colorado Springs, Colo. The military construction program contains a request for \$7,843,000 consisting of six projects as follows:

The first item, a base facilities maintenance complex of 69,080 ft² is required to replace widely dispersed substandard structures that provide severely limited space.

The second item provides living quarters for 180 female enlisted personnel. Peterson Field has no dormitories to adequately house WAF airmen presently billeted at Ent AFB.

The third item is for a commissary of 73,500 ft². Commissary activities are located in old, substandard facilities that are functionally inadequate and provide cumbersome, limited arrangements for customer service.

The fourth item requested is for an NCO open mess of 27,800 ft². Substandard structures presently utilized, designed for a 10-year service life, have been in use for 22 years. The already overtaxed Peterson Field facilities will be totally inadequate upon consolidation of Ent AFB activities at Peterson Field.

The fifth item is for a post office of 7,020 ft². Postal services are housed in antiquated, substandard facilities approximately one-third the base requirement for present and projected mail traffic.

The last item is for utilities in the amount of \$1,027,000 to support the above-mentioned projects.

ADC—PETERSON AFB, COLO.—DESIGN INFORMATION (DESIGN COST ESTIMATED)

Project	Design cost	Percent complete July 31, 1973
Base facilities maintenance complex.....	\$87,800	20
Airmen dormitories.....	63,000	40
Commissary.....	105,000	85
NCO open mess.....	80,000	40
Post Office.....	19,000	85
Utilities.....	55,000	80

Enlisted Barracks Summary, Peterson Field, Colo.

	¹ Men/women
Total requirement.....	1,555
Existing substandard.....	² 191
Existing adequate.....	³ 888
Funded, not in inventory.....	0
Adequate assets.....	888
Deficiency.....	667
Fiscal year 1974 program.....	180
Barracks spaces occupied (average) March 31, 1973.....	1,041

¹ 90 ft² per man—permanent party E2-4.

² 135 ft² per man—permanent party E5-6.

³ Includes 186 personnel in private housing.

Mr. SIKES. The request is for \$7,843,000 for a base facilities maintenance complex, dormitories, commissary, and an NCO open mess, post office, and utilities.

Discuss the schedule for the move out of Ent Air Force Base to Peterson Field.

MOVE OUT OF ENT AIR FORCE BASE

General REILLY. Our present plan is that by the end of fiscal year 1976, contingent upon the approval of our 1974 and 1975 programs, we would hope to be able to remove Air Force activities from Ent Air Force Base.

If I may, we prepared a couple of charts to give you the status of the Ent to Peterson move.

This is a picture of Ent Air Force Base. The area bounded by the heavy black line is owned in fee by the Air Force, 26.6 acres. You see the two areas that are leased from the city, the area to the north, a little over 12 acres, and 2 acres to the southwest.

Those facilities which have been shaded in yellow represent areas from which, with completion of the approved 1973 program, activities will have been relocated from that area.

You see in the overlay the additional areas that will be vacated upon completion of the 1974 items at Peterson Field—dormitory, base engineer facilities, post office, commissary, and NCO open mess.

The total yellow under the overlay, that is through the 1973 program, represents about 167,000 square feet of structures to be vacated. An additional 105,000 square feet can be vacated as a result of the 1974 program, or through 1974 about 270,000 square feet.

We now see with the additional overlay upon completion of the 1974 we will be able to release that entire 12 acre tract.

Mr. SIKES. On the north side?

General REILLY. Yes, sir. Back to the city. As I said, with the completion of the 1975 program we can vacate the other area.

Mr. SIKES. At the end of the 1975 program you will have vacated everything?

General REILLY. Yes, sir, the Air Force activities will be out of there.

This is a picture of Peterson Field, the runway and apron complex shaded in gray. You see again in yellow the areas that have been involved in new construction and various projects approved through the 1973 program. With the overlay, shown in red, the additional items that are being requested in this program. The large area in yellow, of course, is family housing.

You can see we have reached the point to where we have done quite a lot of construction at Peterson and are well on our way in completing this phased move we have been working on for so many years.

COMMISSARY

Mr. SIKES. Is the commissary proposed at Peterson sized to meet the projected workload?

General REILLY. Yes, sir, it is.

Mr. SIKES. What other commissaries are there in the Colorado Springs area?

General REILLY. We have other commissaries at Fort Carson, operated by the Army and there is a commissary also at the Air Force Academy.

Mr. SIKES. What is the distance from Peterson Field in each instance?

General REILLY. Fort Carson is 15 miles. The Air Force Academy is 20 miles.

Mr. SIKES. Is there any interchange of personnel using the commissaries?

General REILLY. Yes, sir, I think there is.

In Colorado Springs, using the Peterson Commissary, we have people from all the Services. The Air Force Academy and Fort Carson commissaries are more or less restricted to their respective personnel.

Mr. SIKES. Now, if you move the commissary away from Colorado Springs where the retired population lives, do you expect sales from this population to decrease?

General REILLY. I am sure it would be a substantial reduction if it were moved any great distance from the Colorado Springs area.

Colonel Mansperger, do you have any feel of the retired contribution to the commissary sales?

Colonel MANSPERGER. There is considerable sales to the population there. Since there is a saving in the neighborhood of 35 percent, I think they would go the extra few miles to Peterson Air Force Base. Not only that, our experience has been that when we build a new commissary, the sales go up from about 30 to 50 percent because of the better accessibility to it from the parking lot and decreased waiting lines. So I do not expect the sales or service to the people to go down, because we do move the commissary out of the Ent area over to Peterson Air Force Base.

Mr. SIKES. The Army is reducing its personnel associated with Safeguard to the Colorado Springs area. Has the Ent commissary supported this population heretofore?

General REILLY. Yes, sir, it has.

Because the Army people in Colorado Springs and those that live in Colorado Springs I am sure would stop there.

FUTURE CONSTRUCTION

Mr. SIKES. Provide for the record the contemplated fiscal year 1975 and fiscal year 1976 programs at Peterson Field.

[The information follows:]

FUTURE CONSTRUCTION PLANS FOR PETERSON FIELD

Fiscal year 1975 and fiscal year 1976 military construction facilities being considered for Peterson Field are as follows:

Fiscal year and item	Scope	Amount (thousands)
1975:		
Photo lab.....	8,435 SF	\$525
Clothing sales.....	6,400 SF	258
Education center.....	17,500 SF	641
Officer open mess.....	36,000 SF	1,504
VOO.....	66 MN	1,340
Utilities.....	LS	1,000
Total fiscal year 1975.....		5,268
1976:		
Service club.....	27,800 SF	1,117
Utilities.....	LS	500
Field training.....	4,320 SF	150
Squadron operations.....	33,000 SF	957
Apron.....	20,000 SY	400
Base warehouse.....	100,000 SF	1,000
Total fiscal year 1976.....		4,124
Grand total.....		9,392

BASE FACILITIES MAINTENANCE COMPLEX

Mr. SIKES. What is the current civil engineer maintenance arrangement for the Ent-Peterson complex?

General REILLY. At the present time they are split between the two areas. We still have certain functions that you saw at Ent Air Force Base. They have an advanced activity at Peterson. It is split in a very uneconomical operation at the present time.

Mr. SIKES. What efforts has the Air Force made to consolidate real property maintenance with the Army and the Navy in the area?

General REILLY. A number of things have been done.

We have joint Army-Air Force contracts for water and electric utility services with the city of Colorado Springs. There is also an interservice support agreement whereby Ent Air Force Base has been providing engineering services and facility maintenance support for the Naval Training Center in Colorado Springs; also a joint use of mobile construction equipment and engineering shop equipment.

In addition, certain common materials for real property maintenance, such as ready-mix concrete, aggregates, lumber, and so forth, are being procured for all of the services on a joint contract.

A local interdepartmental real property maintenance consolidation committee, is constantly looking at other areas in which real property maintenance activities can be consolidated.

Mr. SIKES. Is there room for additional consolidation of functions in the area?

General REILLY. Yes, sir. I am sure there are other things we can do. However, I do not think that we could expect to have a single consolidated real property maintenance activity for all of it.

Mr. SIKES. Would greater success in consolidating these functions reduce the requirement for the base consolidated maintenance facility at Peterson Field?

General REILLY. Not below that which we have programed. We feel this would be the minimum required to properly maintain and operate our facility and plant at Peterson and the Cheyenne Mountain complex.

AIRMEN DORMITORIES

Mr. SIKES. You have 888 adequate airmen dormitory spaces here, including 186 in the community. Would it be possible to increase the reliance on community support to the extent necessary to eliminate the projected deficit of 667 spaces?

General REILLY. What about community support, Colonel Shook?

Colonel SHOOK. We in fact probably will end up relying more upon community support assets at Ent-Peterson.

You will note the particular project we requested this year is for WAF personnel. This is a one-time project to move them out of the Ent complex, sir, and we will have to reevaluate our community assets prior to requesting future construction for bachelors at Peterson.

Mr. NICHOLAS. Could you provide for the record, as has been done in past years, a summary of the bachelor quarters situation at each

base for which there is bachelor quarters requested or for which there is requested an upgrading of bachelor personnel facilities?

General REILLY. Yes, sir.

NCO OPEN MESS

Mr. SIKES. The NCO open mess is projected to cost \$44.15 per square foot. Colorado Springs has an area cost factor of 1.0. Does the bidding experience for NCO open messes in the past indicate that you need such a high unit cost?

Colonel RUTLAND. Our 1974 NCO open messes range from \$34.50 to \$44.15 per square foot based upon the area cost factor and other peculiarities at the site involved.

Looking at our record of the fiscal year 1971 MCP through 1973 MCP, our construction cost has been 98 percent of the programed amount. So we feel very confident of this figure, sir.

TYNDALL AIR FORCE BASE, FLA.

Mr. SIKES. All right. Turn to Tyndall Air Force Base and insert page 9 in the record.

[Page 9 follows:]

1. DATE	2. DEPARTMENT AF	3. INSTALLATION TYNDALL AIR FORCE BASE
4. COMMAND OR MANAGEMENT BUREAU AEROSPACE DEFENSE COMMAND		5. STATE/COUNTRY FLORIDA
6. INSTALLATION CONTROL NUMBER XLWU		7. STATUS ACTIVE
8. YEAR OF INITIAL OCCUPANCY 1941		9. COUNTY (U.S.) BAY
		10. NEAREST CITY 7 MILES SOUTHEAST OF PANAMA CITY, FLORIDA
11. MISSION OR MAJOR FUNCTIONS		
COMBAT CREW TRAINING SQUADRON		
AEROSPACE DEFENSE WEAPONS CENTER		
AIRCRAFT CONTROL AND WARNING RADAR		
AIR FORCE CIVIL ENGINEER CENTER		
12. PERSONNEL STRENGTH		
PERMANENT		
STUDENTS		
SUPPORTED		
TOTAL		
a. AS OF 31 December 72		
b. PLANNED (END FY 76)		
13. INVENTORY		
LAND		
ACRES		
LAND COST (\$000)		
IMPROVEMENT (\$000)		
TOTAL (\$000)		
a. OWNED		
b. LEASES AND EASEMENTS		
c. INVENTORY TOTAL (Except land cost) AS OF 30 JUNE 72		
d. AUTHORIZATION NOT YET IN INVENTORY		
e. AUTHORIZATION REQUESTED IN THIS PROGRAM		
f. ESTIMATED AUTHORIZATION - NEXT 4 YEARS		
g. GRAND TOTAL (c + d + e + f)		
14. SUMMARY OF INSTALLATION PROJECTS		
PROJECT DESIGNATION		
CATEGORY CODE NO.		
PROJECT TITLE		
Priority		
TENANT COMMAND		
UNIT OF MEASURE		
AUTHORIZATION PROGRAM		
ESTIMATED COST (\$000)		
FUNDING PROGRAM		
SCOPE		
SCOPE		
ESTIMATED COST (\$000)		
ESTIMATED COST (\$000)		
TOTAL		

TYNDALL AIR FORCE BASE

Tyndall Air Force Base, the second base to be considered in the Aerospace Defense Command program, is located 7 miles southeast of Panama City, Fla. Primary mission activities include Combat Crew Training, an Aerospace Defense Weapons Center, Aircraft Control and Warning Radar, and the Air Force Civil Engineering Center.

The requested program of \$951,000 provides the following two items:

The first item is a weapons and release systems shop of 5,520 square feet. This function presently occupies a building that cannot be economically adapted to fully satisfy the requirements of an up-to-date weapons release systems shop. The following contribute to the unsuitability of the present facility: Necessary equipment cannot be installed; doors are too small to admit items for maintenance; and inadequate ventilation.

The second project is a theater consisting of 10,900 square feet. An existing, 29-year old structure presently houses the theater function. Acoustical treatment, sound track delivery, and seating are inadequate, detracting from the enjoyment expected by patrons. Other deficiencies include insufficient parking, poor environmental control, and a miniconcession area. To obtain similar entertainment off base requires an approximately 30-mile round trip.

ADC—TYNDALL AFB, FLA.—DESIGN INFORMATION (DESIGN COST ESTIMATED)

Project	Design cost	Percent complete July 31, 1973
Weapons release systems shop.....	\$9, 700	40
Theater.....	28, 500	65

Mr. SIKES. This is an extremely small program, General, for such an important facility. Would you like to venture an explanation for that which will satisfy me?

General REILLY. Well, sir, I guess it is maybe because the base is in such good shape.

Mr. SIKES. I am not satisfied.

With what weapon system is the weapons release shop associated?

General REILLY. It has to do with the weapons training of the F-106 and F-101 Air Defense aircraft.

Mr. SIKES. Will this complete the requirements?

General REILLY. Yes, sir, it will.

Mr. SIKES. What do you presently have for a base theater?

General REILLY. They are using one of the old typical World War II wooden theaters, much smaller than is required and very inadequate.

AIR FORCE COMMUNICATIONS SERVICE

Mr. SIKES. Turn to the Air Force Communications Service; take up Richards-Gebaur Air Force Base.

Insert in the record page 13.

[Page 13 follows:]

1. DATE		2. DEPARTMENT AF		3. INSTALLATION RICHARDS-GEBEUR AIR FORCE BASE								
4. COMMAND OR MANAGEMENT BUREAU AIR FORCE COMMUNICATIONS SERVICE			5. INSTALLATION CONTROL NUMBER -UEBL		6. STATE/COUNTRY MISSOURI							
7. STATUS ACTIVE		8. YEAR OF INITIAL OCCUPANCY 1944		9. COUNTY (U.S.) JACKSON	10. NEAREST CITY 16 MILES SOUTH OF KANSAS CITY, MISSOURI							
11. MISSION OR MAJOR FUNCTIONS TACTICAL AIRLIFT WING (RESERVE) AIR FORCE COMMUNICATIONS SERVICE HEADQUARTERS AIR NAVIGATION FACILITIES CHECKING SQUADRON ELECTRONICS ENGINEERING GROUP			12. PERSONNEL STRENGTH			13. INVENTORY						
			PERMANENT			STUDENTS		SUPPORTED			TOTAL	
			OFFICER (1)	ENLISTED (2)	CIVILIAN (3)	OFFICER (4)	ENLISTED (5)	OFFICER (6)	ENLISTED (7)	CIVILIAN (8)	(9)	
			a. AS OF 31 December '72	589	2,102	1,784	-	-	38	52	0	4,565
			b. PLANNED (END FY '76)	615	2,057	1,783	-	-	38	52	0	4,545
			14. SUMMARY OF INSTALLATION PROJECTS			LAND		ACRES (1)		LAND COST (\$000) (2)		IMPROVEMENT (\$000) (3)		TOTAL ($000) (4)
a. OWNED			2,500		334		53,433		53,767			
b. LEASES AND EASEMENTS			630		122		0		122			
c. INVENTORY TOTAL (Except land rent) AS OF 30 JUNE 1972									53,889			
d. AUTHORIZATION NOT YET IN INVENTORY									890			
e. AUTHORIZATION REQUESTED IN THIS PROGRAM									3,963			
f. ESTIMATED AUTHORIZATION - NEXT 4 YEARS									5,000			
g. GRAND TOTAL (c + d + e + f)									63,742			
14. SUMMARY OF INSTALLATION PROJECTS			TENANT COMMAND		UNIT OF MEASURE		AUTHORIZATION PROGRAM		FUNDING PROGRAM			
CATEGORY CODE NO. a	PROJECT TITLE b		Priority	c	d	SCOPE e	ESTIMATED COST (\$000) f	SCOPE g	ESTIMATED COST (\$000) h			
217-742	Addition to Communications and Electronics Shop		15		SF	6,680	205	6,680	205			
510-001	Add to and Alter Composite Medical Facility		5		SF	64,000	3,758	64,000	3,758			
TOTAL							3,963		3,963			

AIR FORCE COMMUNICATIONS SERVICE

The mission of the Air Force Communications Service (AFCS) is to engineer, program for or provide, install, operate, maintain, and manage communications electronics for the Air Force and for other agencies as directed by the Chief of Staff, USAF.

This program request includes \$3,963,000 in support of AFCS host responsibilities plus \$330,000 in worldwide communications for technical control facilities at various worldwide locations. Total construction requested in this program for AFCS is \$4,293,000.

RICHARDS GEBEUR AIR FORCE BASE

Richards Gebaur AFB, Air Force Communications Service (AFCS) Headquarters, is located 16 miles south of Kansas City, Mo. In addition to Communications Service Headquarters, Richards Gebaur supports a Reserve Tactical Airlift Wing, an Air Navigation Facilities Checking Squadron (AFCS), and an Electronics Engineering Group (AFCS). The military construction program requests \$3,963,000 for two projects as follow:

The first project is a 6,680 square foot addition to a communications and electronics shop. Present housing is improperly configured to support, effective, efficient accomplishment of required tasks. Increased workload, nearly tripled, results in unacceptable delay or deferment of planned evaluation and testing.

The second project, Add to and Alter Composite Medical Facility, has a scope of 64,000 square feet. Outpatient loads have increased more than 100 percent since occupation of the present composite medical facility. Medical needs of the military community exceed the capability of the existing building resulting in overcrowding and delays in medical service.

AFCS—RICHARDS-GEBEUR AFB, MO.—DESIGN INFORMATION (DESIGN COST ESTIMATED)

Project	Design cost	Percent complete July 31, 1973
Add to communications/electronics shop	\$11,000	100
Add to and alter composite medical facility.....	233,000	45

Mr. SIKES. The request is for \$3,963,000 for addition to the communications electronic shop, and addition and alteration of the medical facility.

BASE OPERATING AND REAL PROPERTY COSTS

Provide for the record a breakout of the overhead costs for both operations and maintenance and military personnel of this base. Do not include costs directly associated with the various missions stationed at this base.

Also show the real property operation and maintenance costs, including family housing, and the estimated replacement cost of the facilities here.

[The information follows:]

RICHARDS-GEBAUR BASE COSTS

Following are the base operating support costs for Richards-Gebaur AFB. The costs shown are not direct mission support costs but are indirect support for the prime missions.

	<i>Fiscal year 1973 (thousands)</i>
Base operating support:	
Operating and maintenance-----	\$7, 893
Military personnel-----	7, 270
Total base operating support excluding mission costs-----	<u>15, 163</u>
Real property maintenance:	
Operation and maintenance (including family housing)-----	5, 295
Military personnel-----	1, 552
Total -----	<u>6, 847</u>

The estimated replacement cost of facilities is \$104.3 million.

Mr. SIKES. Is this one of the firm Air Force bases?

General REILLY. Yes, sir.

Mr. SIKES. Could you have consolidated these functions elsewhere to effect savings in overhead and maintenance?

General REILLY. No, sir, I do not think we could have.

Mr. SIKES. Why not?

General REILLY. Sir, the communications and electronics activity relates directly to the mission of Air Force Communications Service, which is headquartered in Richards-Gebaur.

This work in support of the Defense Communications Agency, is best accomplished there where they have the necessary expertise.

COMPOSITE MEDICAL FACILITY

Mr. SIKES. What is the type of hospital that you now have?

Colonel BAIRD. We have a Korean vintage hospital, sir, which was adequate when built for the population at that time, but we need a hospital of about 99,000 to 100,000 square feet to support the population that is at Richards-Gebaur at this time.

The project basically is to provide medical care to the population at Richards-Gebaur and it is the prime center of hospitalization for the Navy personnel stationed at the Marine Corps Finance Center in Kansas City.

COMMUNICATIONS AND ELECTRONICS SHOP

Mr. SIKES. Provide for the record the workload, past and projected, for the communications and electronics shop here, and tell us what type of work is performed here.

[The information follows:]

WORKLOAD FOR COMMUNICATIONS AND ELECTRONICS SHOP AT RICHARDS-GEBAUR

1. WORKLOAD

Major projects worked on

Fiscal year :

	<i>Millions</i>
1971 (22 projects)-----	\$2.4
1972 (21 projects)-----	2.2
1973 (22 projects)-----	2.7
1974 (20 projects)-----	3.0
1975 (22 projects)-----	3.2
1976 (25 projects)-----	3.4
1977 (25 projects)-----	3.6
1978 (25 projects)-----	3.6

2. TYPE OF WORK PERFORMED

(a) Operational testing of digital communications techniques is being conducted to provide experience and data on new types of radio, multiplex, and cryptographic equipment. This data will be used by the people who will operate and maintain the new equipment when it is placed in the field. The primary purpose is to assure that proper communications equipment is made available to Air Force units.

(b) A cable plant test facility is installed in the building. In an adjacent field, several thousand feet of different types of telephone cables are buried or installed. Various types of signals are routed through these cables to develop improved test procedures for base cable plant people to use in their quality control work. Similarly, strange phenomena experienced in the field can be simulated here to try to find standard methods to fix any trouble areas.

(c) Prototype installations of air traffic control radios and meteorological equipment are to be used for development of maintenance quality control procedures to enhance service in the field.

(d) Various commercial equipments are tested in this facility as part of the Defense Communications System standardization programs. This includes data communications equipment, signal translators and multiplexers, and automated test equipment. To support this testing, a prototype technical control is used to simulate field use of the equipment under test.

HOSPITAL WORKLOAD

Mr. SIKES. You are requesting an addition to and alteration of the composite medical facility. Provide past and projected workload data for this hospital for the record.

[The information follows:]

PAST AND PROJECTED WORKLOAD FOR MEDICAL FACILITY AT RICHARDS-GEBAUR AFB

Calendar year	Total	Active duty military	Dependents of active duty military	Retired	Dependents of retired deceased
Outpatient visits per year:¹					
1968	86,064	16,876	54,546	4,686	9,956
1969	85,759	14,659	56,703	5,447	8,950
1970	78,039	13,645	48,067	5,716	10,611
1971	90,365	15,898	57,218	5,262	11,987
1972	86,716	16,836	50,633	5,133	14,114
1973	85,000	16,800	46,625	5,650	15,925
1974	85,000	16,875	46,600	5,750	15,775
1975	85,000	16,775	46,500	5,850	15,875
1976	92,000	17,000	52,450	6,300	16,250
1977	93,500	17,200	53,200	6,600	16,500
Average daily beds occupied:²					
1968	26.8	6.7	12.8	2.6	4.7
1969	24.7	7.4	11.0	2.0	4.3
1970	20.4	6.7	8.3	1.6	3.8
1971	19.4	5.6	9.3	1.7	2.8
1972	17.9	5.5	6.2	2.5	3.7
1973	16.0	5.5	5.4	2.7	2.4
1974	16.0	5.5	5.5	2.7	2.3
1975	16.0	5.5	5.5	2.7	2.3
1976	16.0	5.5	5.5	2.7	2.3
1977	16.0	5.5	5.5	2.7	2.3

¹ The programed workload for facilities planning is 81,029 outpatient visits per year, end position 1977. Retired workload is limited to 5 percent of programed workload.

² The programed workload for facilities planning is 17 average daily beds occupied, end position 1977. Retired workload is limited to 5 percent of programed workload.

Mr. SIKES. It would appear, that except for retired personnel, the outpatient workload is not substantially increasing.

Why is there requirement for additional space for outpatients?

Colonel BAIRD. Mr. Chairman, we have found that the outpatient workload does demand greater square footage. In particular, we have to enlarge the inadequately sized laboratory pharmacy and X-ray departments at Richards-Gebaur.

For example, the pediatric clinic consists of one room, four pediatricians examine four children, separated only by curtains. We hope to correct many health care delivery problems in this hospital.

Mr. NICHOLAS. Well, if this is the situation now, has it been the same since 1968, when you had approximately the same workload at this base?

Colonel BAIRD. That is correct.

Mr. NICHOLAS. Do you anticipate its getting worse or better?

Colonel BAIRD. We anticipate it is going to be approximately what it is now, which is professionally an inadequate situation.

Mr. NICHOLAS. Do you anticipate that the closure of Forbes Air-base will increase or decrease your workload here?

IMPACT OF FORBES AFB CLOSURE ON RICHARDS-GEBAUR MEDICAL FACILITY

General REILLY. We do not anticipate any change in the workload at USAF Hospital, Richards-Gebaur, as the result of the closure of Forbes Air Force Base.

HOSPITALS IN CIVILIAN COMMUNITY

Mr. NICHOLAS. What hospitals are there in the civilian community which offer full medical care?

Provide details for the record.

[The information follows:]

HOSPITALS WITHIN 50-MILE RADIUS OF RICHARDS-GEBAUR AFB

Atchison Hospital, Atchison, Kans.
 A.T. & S.F. Memorial Hospital, Topeka, Kans.
 Baptist Memorial Hospital, Kansas City, Mo.
 Bethany Medical Center, Kansas City, Kans.
 Cameron Community Hospital, Cameron, Mo.
 Cass County Memorial Hospital, Harrisonville, Mo.
 Center for Health Sciences, Kansas City College of Osteopathic Medicine, Kansas City, Mo.
 Cushing Memorial Hospital, Leavenworth, Kans.
 Downtown Hospital Foundation, Kansas City, Mo.
 Douglas Hospital, Kansas City, Kans.
 Excelsior Springs Hospital, Excelsior Springs, Mo.
 Gardner Community Medical Center, Gardner, Kans.
 General Osteopathic Hospital of St. Joseph, St. Joseph, Mo.
 Independence Sanitarium and Hospital, Independence, Mo.
 Jackson County Public Hospital, Kansas City, Mo.
 Johnson County Memorial Hospital, Warrensburg, Mo.
 Kansas City General Hospital and Medical Center, Kansas City, Mo.
 Lakeside Hospital, Kansas City, Mo.
 Martin Luther King, Jr., Memorial Hospital, Kansas City, Mo.
 McCleary Memorial Hospital, Excelsior Springs, Mo.
 Medical Center of Independence, Independence, Mo.
 Menorah Medical Center, Kansas City, Mo.
 Methodist Hospital and Medical Center, St. Joseph, Mo.
 Northeast Osteopathic Hospital, Kansas City, Mo.
 Olathe Community Hospital, Olathe, Kans.
 Providence-St. Margaret Health Center, Kansas City, Kans.
 Research Hospital and Medical Center, Kansas City, Mo.
 Shawnee Mission Hospital, Shawnee Mission, Kans.
 St. Francis Hospital, Topeka, Kans.
 St. John Hospital, Leavenworth, Kans.
 St. Joseph Hospital, St. Joseph, Mo.
 St. Joseph Hospital of Kansas City, Kansas City, Mo.
 St. Luke's Hospital, Kansas City, Mo.
 St. Mary's Hospital, Kansas City, Mo.
 Stormont-Vail Hospital, Topeka, Kans.
 Trinity Lutheran Hospital, Kansas City, Mo.
 University of Kansas Medical Center, Kansas City, Kans.
 Vineyard Park Doctor's Hospital, Kansas City, Mo.

AIR FORCE LOGISTICS COMMAND

Mr. SIKES. Take up the Air Force Logistics Command; insert page 16 in the record.

[Page 16 follows:]

AIR FORCE LOGISTICS COMMAND

The mission of the Air Force Logistics Command is to provide an adequate and efficient system of procurement, production, surveillance, maintenance, and supply for the U.S. Air Force and train specialized units for accomplishment of logistics functions in overseas areas and theaters. This program contains a request for \$60,934,000 which provides facilities at six locations where Air Force Logistics Command is the host command, of this amount \$39,800,000 is for items to support the Air Force Logistics Command and \$21,134,000 to support the Air Force Systems Command at Hill AFB, Utah and Wright-Patterson Air Force Base, Ohio.

Air Force Logistics Command

<i>Installation</i>	<i>Proposed program</i>
Hill Air Force Base, Utah-----	\$11,968,000
Kelly Air Force Base, Tex-----	6,101,000
McClellan Air Force Base, Calif-----	3,171,000
Robins Air Force Base, Ga-----	4,868,000
Tinker Air Force Base, Okla-----	15,275,000
Wright-Patterson Air Force Base, Ohio-----	19,551,000
Total -----	60,934,000

DEPOT PLANT MODERNIZATION PROGRAM

MR. SIKES. You are requesting \$31.4 million for construction in connection with the depot modernization program in fiscal year 1974, is that correct?

General REILLY. Yes, sir.

EQUIPMENT PROCUREMENT

MR. SIKES. What is the cost of the equipment which will be procured for these projects?

General REILLY. \$26.9 million.

MR. SIKES. I would like to have some details for the record, showing the total amount of equipment procurement for the DPMP, which is contained in the Air Force's fiscal 1974 budget.

[The information follows:]

The details of the fiscal year 1974 DPMP equipment program are tabulated below:

	<i>Millions</i>
Maintenance and repair shop equipment-----	\$13.0
Mechanized materials handling system-----	11.0
Common aerospace ground equipment-----	2.9
Total-----	26.9

SAVINGS

MR. SIKES. Last year the committee's investigations staff had serious reservations about the services' economic analyses. Has the Air Force computed the cost benefits for these projects in what you consider a fully proper manner?

Colonel MORROW. Yes, sir.

MR. CHAIRMAN, as we said a little earlier, we have incorporated some changes into our economic analysis as a consequence of the investigations staff's recommendations. We have complete confidence in the

savings that we are now claiming, in addition to the savings that we are unable to quantify that we are no longer claiming.

Mr. SIKES. All right. What are the total discounted savings which you anticipate from the fiscal year 1974 projects over their economic life?

General REILLY. Mr. Chairman, the one-time savings are \$27 million, annual savings of \$6 million, and the total over the economic life are roughly \$80 million. That is for the 16 projects at the 5 locations.

Mr. NICHOLAS. Those are the discounted savings?

Colonel MORROW. Yes, sir, they are.

Mr. NICHOLAS. So they would compare to the sum of \$31 million plus \$26.9 million plus whatever other investment costs there may be?

Colonel MORROW. Sir, the \$80 million applies only to the \$31.4 million military construction investment.

General REILLY. Yes.

Mr. PATTEN. Has the Air Force recomputed the deficit in its total depot plant modernization program, and also the savings which it expects to realize?

Colonel MORROW. Yes, sir, we have. We have recomputed on an annual basis both the savings that we expect, as well as our requirements.

Our savings, as we indicated a moment ago, total out to \$1.2 billion and our requirements have been scrubbed down to the very essential minimum, as indicated in the 1974 program.

TECHNOLOGY REPAIR CENTERS

Mr. PATTEN. The Air Force has adopted a new concept of technology repair centers at its air materiel areas.

Would you discuss the reasons why the Air Force developed this program?

Colonel MORROW. Yes, sir.

Our technology repair center concept is essentially the realignment of maintenance workloads in a homogeneous fashion. We consolidate those workloads which have similarity or commonality of skills, equipment, and facilities. We do this in what we call the exchangeable areas, which represent about 15 million hours of our annual workload.

We are distributing these into hard-core technology repair centers in our five air materiel areas.

Mr. PATTEN. What will be the one-time cost of establishing these TRC's?

Colonel MORROW. Approximately \$26 million.

Mr. PATTEN. The TRC program as currently devised would utilize all five AMA's. It would also allocate more workload to those which are underutilized, is this correct?

Colonel MORROW. Yes, sir.

COMPUTERIZED WORKLOAD AND FACILITIES SYSTEM

Mr. PATTEN. The Air Force has developed a computer system to allocate its workload and derive facilities deficits for various alternative workload assignments.

Could you describe how this system works?

Colonel MORROW. Yes, sir.

In our automated system for depot maintenance workload programming, all factors of requirements for maintenance are introduced into the computerized system, as well as all other factors concerned with facilities, equipment availability, cost factors, all are introduced into computerized systems.

We exercise this system to determine the least costly alternative prior to assigning workloads as well as prior to requesting military construction projects.

Mr. PATTEN. I hope your computer is better than the one we got for the House. It just stopped with a second to go. It stayed there at .01.

The Chair asked, is there anybody else who wants to vote, after a good 10 or 15 seconds had gone by, and the vote was 152 for the amendment and 162 against. When the computer hit the final, it was 164 for, 162 against.

Now I was watching who came on the floor and I think, knowing the total number voting previously, that the computer in that last jump broke a record. I do not think the vote was 164-162, I think the yeas got at least 10 less.

Honestly, no one could have voted. I was watching. It was ahead by 10. So that computers are computers, right?

Colonel MORROW. Yes, sir.

We find we have to scrub down quite a bit, do a lot of manual work in first introducing a new program.

Mr. PATTEN. Has this system been fully developed and tested?

Colonel MORROW. Yes, sir, it has. We have been on line, as we mentioned to the committee last year, and our first products were turned out in April of 1972. We used this system in the analysis that led to our Technology Repair Center concept and we used this system in developing this year's military construction program for our modernization program.

Mr. PATTEN. Then you did use it in deriving your military construction requirements for this year?

Colonel MORROW. Yes, sir, we did and we do.

STUDIES OF WORKLOADS AND FACILITIES REQUIREMENTS

Mr. PATTEN. Did the study on the establishment of TRC's utilize this computer program to perform its analysis of alternate workload assignments?

Colonel MORROW. Yes, sir, it did.

Mr. PATTEN. Why was not this program used more extensively by the study group?

Mr. NICHOLAS. The investigative report indicates that the Air Force mechanized depot maintenance program system was not used by the ad hoc study group which did the TRC study. Instead, data were requested from the command by this group and were prepared manually, which would seem to be quite a step down from using the computer capacity you have.

Colonel MORROW. It would have been, Mr. Nicholas.

Actually, we did use the first products and the early portions of the studies and later products of the computerized program in June and

July of last year. So I believe there is a misconception there. The computerized program, the products of it, were used and a copy of that was furnished to the investigation staff.

Mr. NICHOLAS. The advantage of the computerized program is that you can use various alternatives rather than coming out with one workload projection?

Colonel MORROW. Yes, sir, that is correct.

Mr. NICHOLAS. Was this used in studying the various allocations of the TRC's between AMA's? Was it used in determining whether the TRC's and the AMA workload would operate more efficiently at four or five depots?

Was it used in all of these considerations into which the TRC study presumably looked?

Colonel MORROW. It was used in all considerations for the TRC study. There was a follow-on study called the Posture 1976 study. That study was to determine whether there are any other feasible alternatives which have not been put into our computer. One of the questions addressed there was the economics associated with five versus four AMA's.

Mr. NICHOLAS. So in the original TRC study which did, you say, utilize some of this computer output, you did not specifically look into the question of alternatives of whether you needed four AMA's or five AMA's or this type of thing?

Colonel MORROW. No, sir. The basis for the original TRC was one of mission essentiality.

We took a rather detailed look at our requirements to respond to a military contingency, a peace to war transition. Based on that, we were required to have the five depot structure. So we based the TRC concept on five depots, then developed the workload alignment using a computerized system.

After this was completed in October of last year, the Commander of the Logistics Command directed that an additional study be conducted on the basis of economics. It was to this that the Posture 76 study group addressed itself. Purely on the basis of economics, the group developed Posture 76 study on a manual basis using computerized products.

Mr. NICHOLAS. How did they use them?

Colonel MORROW. They took the printouts, we were able to summarize in different ways, so to speak. We did introduce the factors, all factors I mentioned a moment ago of workload requirements, the factors of facility utilization, the factors of costs, and used these printouts and summarized analyses produced in our computerized system—we call it our .15 system in response to a DODI 4151.15—and the study group used these products.

Now the actual cost comparisons were done in a manual mode. They were done on a crash basis between September and December of last year. During that time these comparisons were made by rather a large task group.

Mr. NICHOLAS. Could you provide, if the information is available, for the record—you say you did use computer printouts to examine the way your workloads would be allocated between the various AMA's and you presumably fed the results of the TRC concept study into this—but could you provide the specific printouts that you got, what alternatives were considered in each of these printouts?

Presumably you had 5, 10, 12 printouts on workloads which would be feasible under five AMA's or four AMA's in your base structure.

Colonel MORROW. Yes, sir.

I would like to add, these were provided to the investigations staff. Evidently there was another question still before them. I believe they are addressing the task group posture 76 which made a manual comparison based on economics using computerized printouts.

Here they took the factors that the computer program produced, they matched these up manually, and exercised program alternatives.

Mr. NICHOLAS. When you say they took the factors, did you have a complete computer run based on one of these alternatives and come up with the suggested workload, the required military construction required, and the amount of capacity at each of the AMA's that this would represent as a result of this particular workload allocation, and the dollars and workload assigned to each?

Did you use fully the results of your computer technique to that degree? Or did you just take some factors—everybody has cost factors that they use in planning—

Colonel MORROW. We used the products by which we developed the TRC and then manually compared them so the answer to your first question is no. Posture 76 did not reintroduce new computations and inputs into a computer program and produce additional alternative results. That portion of the study was manual.

The Posture 76 study, which was an economic comparison of five versus four AMA's, used the TRC workload distribution that had been optimized with the computer program; so the answer to your question, sir, is posture 76 did not use the computer program to exercise alternatives. It only used the computer output as an input into the manual study.

Mr. NICHOLAS. Was there not sufficient time to do this, or it was not felt it was worthwhile to do it?

Colonel MORROW. Yes, sir; we did study the alternatives. There was sufficient time. It was a rather crash program between September and December, a rather large task group was put on it.

We do believe that the results were beneficial. We revalidated, reaffirmed and confirmed in our own minds that the need for the five depots was there. On the basis of economics the manual analysis showed that if we were going to go to four AMA's on purely a cost basis, the amortization crossover would occur about the 10th or 11th year, whereas, going to the TRC, with the five depots, that we are presently projecting, we would amortize all of our costs within the second year.

Mr. PATTEN. In other words, I take it the Air Force had already made up its mind as to the necessity to retain five AMA's before the TRC study completed its work?

Colonel MORROW. Within the TRC, based on military contingency requirements, yes, sir; it was necessary. So on that basis we developed the Technology Repair Center concept, distributing the workloads, as you see, in the TRC. After that the posture 76 addressed the alternative on an economic basis of closing down a depot, to see which course was economically the best. In the interest of economy, particularly a short-term economy, say within 10 years, it was more advantageous to maintain five depots.

Mr. NICHOLAS. How can you be sure?

Could we have that manual study for the record?

Colonel MORROW. Yes, sir; we will provide that for the record.
[The information follows:]

TRC Study

The study requested is contained in three books of over 860 pages, parts of which are classified. Only a limited number of copies were printed. A full copy will be made available to the committee staff.

Mr. NICHOLAS. How can you be sure that you would not operate more efficiently with four AMA's and thus conserve scarce resources which could be applied to your force levels?

Colonel MORROW. On the basis of military responsiveness, the reason for the need for five geographic areas is because we count on several things to give us the ability to respond on a short-term basis.

Any of the war contingencies under the war mobilization plan require a surge very rapidly over a short period of time, 2 to 3 months, the fourth month being the peak workload. In order to respond to that, we have to use additional overtime of the personnel that we have on board, go to the geographical labor market and hire off the street as well as transfer people from those workloads which are not surging to those workloads which are.

Now primarily in the area of geographical labor markets, and here we find our greatest shortcoming, we have to tap the resources of all five depots in order to get enough out of that labor market to respond and meet a contingency.

ASSIGNMENT OF WORKLOADS TO TECHNOLOGICAL REPAIR CENTERS

Mr. PATTEN. What is the status of the assignment of actual workloads according to the TRC concept?

Colonel MORROW. The workloads have been defined in the kinds, the amounts and where they are going to go. The plan is existing in the field at the present time. It has been distributed to all the air materiel areas.

We are presently developing our program plans to effect the physical movement of the maintenance workload as well as the equipment associated with it. These plans will be completed by the end of July.

Mr. NICHOLAS. The investigative staff's report, which will be put in the record, I gather, at a later point, indicates that the definition of what is actually in each of these Technical Repair Centers—as opposed to just general guidelines of "This will be aircraft landing gear overhaul" and "This will be airborne radar electronics," the definition according to Federal stock numbers, the guts, the details of what the actual items are which will be included in each TRC, and the workload which will be associated with each of these, has not really been worked out yet.

Is that the case?

Colonel MORROW. No, sir.

To answer that question, that has been worked out. It was occurring during the time the investigative staff were on board. Details were distributed last month. That was the definition by Federal stock number of each of the bits and pieces of repair, system items that would go back to the AMA's for depot level maintenance. These have

been distributed and they are now being used by the separate AMA's in development of their program plans.

Possibly what the investigative staff was alluding to was the full definitization by serial number, by Federal stock number, of all the parts that would be flowing into the depots.

The need for this is so that the commands that are generating the repair, the operating commands, would know where to send the equipment for repair. This has yet to be done. But that has nothing to do with where we are going to move the maintenance workloads.

Mr. NICHOLAS. It has been decided which Federal stock number items will be repaired at which depots under which TRC's?

Colonel MORROW. Yes, sir.

Mr. NICHOLAS. But you have not put this information out to the users?

Colonel MORROW. To the operating command, no, sir. That will occur later. We start the actual moves in January of next year. We are some 6 months away from it. We are now completing the program planning in order to do that.

Now the essential element of the program planning is to insure that we will not suffer any lack of responsiveness to the operating forces during the times of the moves. That is what we are planning right now. Of course, we will not allow any degradation. We will take care of any loss of productivity with increased overtime and we have included this as a cost of our TRC.

Mr. NICHOLAS. Do you know specifically what workload is associated with each of these areas?

The way I understand the Air Force accounting system at depots, you really cannot trace man-hours back to the end items which you repair. You do it on a shop basis or some similar type of thing. You have engineering factors. But as far as being able to tell how much is actually spent at an Air Force AMA, for the repair of a particular type of landing gear, I think you cannot really say what the man-hours have been.

Colonel MORROW. Yes, sir, we can; but you are partially correct in that our accounting system at the depots does not use that method to account for work accomplished.

We have two accounting systems, one in the automated workload programing system. In compliance with the DODI 4151.15, all of the services are now on line relating the component parts for repair back to the weapon system itself.

Mr. NICHOLAS. You have this information in your data bank?

Colonel MORROW. Yes, sir; we do. This is a new development. We just got this out. It was used, as I mentioned, last year during our posture study and it is the basis for our TRC.

Mr. PATTEN. This is kind of repetitious, but what is the status of the assignment of the actual workload according to the TRC concept?

Colonel MORROW. Sir, the decisions have been made to move the workload; they will start in January of this coming year, they will be phased over a 2-year period of time.

We are now finishing up all the additional program plans for each of the discrete moves associated with the particular group of reparables. There are some 48 of those individual plans being developed.

Mr. PATTEN. And when do you expect the components which make up the various TRC's to be firmly established?

Colonel MORROW. Sir, they are, now. As of midpoint last month, they were completely established.

PERSONNEL TRANSFERS BETWEEN AIR MATERIEL AREAS

Mr. PATTEN. Have the numbers of personnel to be transferred between air materiel areas as a result of establishing TRC's been fixed?

Colonel MORROW. Yes, sir, they have.

Mr. PATTEN. How were these tentative numbers arrived at?

Colonel MORROW. Two factors impacted on the increase or decrease of personnel.

Workload moves themselves, in which personnel would be offered functional transfers. In addition to that, we expect some 1,100 personnel savings throughout the logistics command as a consequence of reducing overhead.

As we move into our TRC concept, we will reduce the number of divisions that we have, 26 down to 22. In the process of doing this we will reduce the overhead and indirect labor associated with those product divisions, which will effect 1,100 personnel savings. So the total personnel to be lost and gained at each of the different depots is based on those two things: those people who will be offered functional transfer moves as their workload moves, plus the people, the manpower spaces, given up as a consequence of the savings we anticipate.

Mr. PATTEN. What further steps will be required before details of functions and personnel to be transferred between AMA's can be worked out?

Colonel MORROW. There are a number of details, sir, associated with civilian personnel moves. Those are in the process of being worked out now. They will not affect in any measure what goes where and in what quantities, but they will affect the people themselves. So these details are presently being worked out, sir.

Mr. PATTEN. When will this be complete?

Colonel MORROW. The plans, themselves will be completed end of July. The draft of the plans will be completed in July of this year, and are scheduled to be approved within 1 month.

CONSTRUCTION PROGRAM ADJUSTMENTS DUE TO ESTABLISHMENT OF TECHNOLOGICAL REPAIR CENTERS

Mr. PATTEN. Have you revalidated all of the depot projects requested in fiscal year 1974 to insure that the TRC concept will not reduce or eliminate the requirement for them?

Colonel MORROW. Yes, sir, we have.

Mr. PATTEN. What projects were deleted or reduced in your fiscal year 1974 and out-year programs?

Colonel MORROW. Sir, we had a total of 16 projects reduced or eliminated in our total program. Three of those are in fiscal 1974. The balance were in the following years, 1975 and 1976, totaling about \$18 million in construction projects which is avoided as a consequence of our moving into the TRC concept.

We can provide the particulars for the record of those 16 projects. [The information follows:]

TRC PROJECTS DELETED OR REDUCED
TRC AFFECTED PROJECTS

Fiscal year	Project	Action	Saving
OCAMA (Tinker AFB):			
1975	Add to/Alter Eng Test and Storage	Reduce	\$318,000
1975	Add to/Alter Avionics Shop	Delete	906,000
1976	Turbine Shop	do	410,000
1976	Industrial Labs Facility	Reduce	2,000,000
OOAMA (Hill AFB):			
1974	Instrument Shop	Delete	776,000
1975	Maint Hangar	Reduce	622,000
1976	Material Control Lab	Delete	248,000
1976	Production Support	do	505,000
SAAMA (Kelly AFB):			
1975	A/C Gen Purp Shop	do	1,864,000
1974	Aerospace Ground Equipment Shop	do	208,000
1976	A/C Maint Org Shop	do	1,496,000
SMAMA (McClellan AFB):			
1974	A/C Weapons Calib Shelter	do	2,592,000
1974	Arm and Avionics Shop	do	1,224,000
1975	Ground Equipment Veh Parking	do	268,000
1975	Alter Org A/C Maint Shop	do	434,000
1976	Consolidated Depot A/C Maint	do	4,136,000
WRAMA (Robins AFB): No projects affected			
Total reductions			18,007,000
		16 projects	

BREAKDOWN OF AIR MATERIAL AREA WORKLOADS

Mr. PATTEN. Provide for the record the man-year workload experienced at each AMA for the past 5 years, broken down by major areas of work such as aircraft, TRC's, engines, et cetera.

[The information follows:]

AMA WORKLOADS

[Man-hours]

	Fiscal year—				
	1969	1970	1971	1972	1973
Summary:					
Aircraft.....	15,257,967	15,607,886	18,109,950	18,057,501	13,862,000
Missiles.....	197,875	227,627	254,034	305,362	331,027
Engines.....	7,910,763	8,481,532	6,925,055	7,882,918	7,486,842
Other major end items.....	1,795,571	1,781,299	2,225,703	735,322	1,041,922
Exchangeables.....	20,113,325	20,154,106	18,125,914	20,180,700	20,842,161
Area-base-manufacture.....	6,333,982	6,029,921	5,071,673	4,346,427	4,552,309
Total.....	51,609,483	52,282,371	50,712,329	51,508,230	48,116,264
OCAMA:					
Aircraft.....	2,582,898	2,971,258	4,278,573	3,704,853	2,544,571
Engines.....	5,330,849	5,712,188	4,695,010	4,925,764	4,639,787
Exchangeables.....	4,236,887	3,956,080	3,492,006	3,657,586	4,169,649
Area-base-manufacture.....	1,004,133	977,735	761,559	594,284	509,317
Total.....	13,424,767	13,617,261	13,227,148	12,882,487	11,863,324
OOAMA:					
Aircraft.....	3,689,876	3,645,279	4,326,147	4,154,468	2,909,514
Missiles.....	193,829	227,118	240,690	302,543	331,027
Other major end items.....	68,726	67,219	49,091	42,754	63,614
Exchangeables.....	3,307,406	3,392,130	3,185,129	3,354,718	4,113,292
Area-base-manufacture.....	1,096,728	1,047,181	770,917	967,936	1,053,255
Total.....	8,356,565	8,378,927	8,571,974	8,822,419	8,470,702
SAAMA:					
Aircraft.....	2,651,115	2,574,634	3,190,354	3,297,650	2,836,059
Engines.....	2,555,866	2,769,472	2,235,072	2,959,458	2,847,055
Exchangeables.....	5,625,630	5,360,746	5,050,926	4,602,937	4,027,319
Area base manufacture.....	1,313,966	1,333,141	1,055,158	885,262	892,794
Total.....	12,146,577	12,037,993	11,531,510	11,745,307	10,603,227
SMAMA:					
Aircraft.....	3,954,786	4,171,114	4,293,244	3,667,243	3,035,122
Other major end items.....			421,714	692,568	978,308
Exchangeables.....	3,072,181	3,379,010	2,477,489	2,614,899	2,511,018
Area-base-manufacture.....	1,707,257	1,602,077	1,446,815	1,290,849	1,263,105
Total.....	8,734,224	9,152,201	8,639,262	8,265,559	7,787,553
AGMC:					
Other major end items.....	1,724,507	1,714,080	1,754,898		
Exchangeables.....			7,552	1,821,893	1,737,888
Area-base-manufacture.....	28,611	23,197	20,481	27,679	37,356
Total.....	1,753,118	1,737,277	1,782,931	1,849,572	1,775,244
WRAMA:					
Aircraft.....	2,109,292	2,245,601	2,021,632	3,233,287	2,536,737
Exchangeables.....	3,875,622	4,066,521	3,921,129	4,129,182	4,282,995
Area-base-manufacture.....	1,209,318	1,046,590	1,016,743	580,417	796,482
Total.....	7,194,232	7,358,712	6,959,504	7,942,886	7,616,214

Mr. PATTEN. In past years you have provided various workload projections to the committee. For fiscal year 1972 through 1974, compare your projections to current estimates.

Colonel MORROW. Yes, sir.

We will provide the details for the record. However, summarily, we anticipate that the workload will decrease somewhat from what we provided the committee last year. We now have a total depot maintenance workload of approximately 85 million product actual hours and anticipate that this will decrease to about 76 million by fiscal 1977. This is a slight drop from what we projected last year.

[The information follows:]

AMA WORKLOAD COMPARISONS
[Workload projects versus current estimates]

Fiscal year:	Appropriation 1971 projection	Appropriation 1972 projection	Actual	Current estimate
1972.....	50, 475	51, 500	51, 508	(?)
1973.....	50, 035	47, 567	1 32, 241	47, 823
1974.....	50, 035	47, 567	(?)	48, 930

¹ Through February 28, 1973.

² Not available.

HILL AIR FORCE BASE, UTAH

Mr. PATTEN. Turn to Hill Air Force Base, Utah, and insert page 17 in the record.

[Page 17 follows:]

1. DATE		2. DEPARTMENT AF		3. INSTALLATION HILL AIR FORCE BASE								
4. COMMAND OR MANAGEMENT BUREAU AIR FORCE LOGISTICS COMMAND		5. INSTALLATION CONTROL NUMBER KRSM		6. STATE/COUNTRY UTAH								
7. STATUS ACTIVE		8. YEAR OF INITIAL OCCUPANCY 1940		9. COUNTY (U.S.) DAVIS								
10. NEAREST CITY SEVEN MILES SOUTH OF OGDEN, UTAH												
11. MISSION OR MAJOR FUNCTIONS HELICOPTER AIRCREW TRAINING WING (MILITARY AIRLIFT COMMAND) TACTICAL FIGHTER GROUP (RESERVE) OGDEN AIR MATERIEL AREA DEPOT		12. PERSONNEL STRENGTH		PERMANENT		STUDENTS		SUPPORTED		TOTAL (9)		
		OFFICER (1)	ENLISTED (2)	CIVILIAN (3)	OFFICER (4)	ENLISTED (5)	OFFICER (6)	ENLISTED (7)	CIVILIAN (8)			
		a. AS OF 31 December 72		690	2,677	16,002	57	108	60	53	-	19,647
		b. PLANNED (END FY 76)		691	2,627	15,269	57	108	60	53	-	18,865
		13. INVENTORY		LAND		ACRES (1)	LAND COST (\$000) (2)	IMPROVEMENT (\$000) (3)		TOTAL (\$000) (4)		
		a. OWNED				7,761	512	151,030		151,542		
		b. LEASES AND EASEMENTS				30	4	403		407		
		c. INVENTORY TOTAL (Except land rent) AS OF 30 JUNE 19 72								151,949		
		d. AUTHORIZATION NOT YET IN INVENTORY Excludes Family Housing \$7,465,000								6,148		
		e. AUTHORIZATION REQUESTED IN THIS PROGRAM								11,968		
f. ESTIMATED AUTHORIZATION - NEXT 4 YEARS								30,000				
g. GRAND TOTAL (c + d + e + f)								200,065				
14. SUMMARY OF INSTALLATION PROJECTS												
CATEGORY CODE NO.		PROJECT DESIGNATION PROJECT TITLE			TENANT COMMAND	UNIT OF MEASURE	AUTHORIZATION PROGRAM		FUNDING PROGRAM			
a		b			c	d	SCOPE	ESTIMATED COST (\$000) (1)	SCOPE	ESTIMATED COST (\$000) (2)		
		Priority					e	f	g	h		
113-321		Addition to Terminal Access Apron 8				SY	33,050	717	33,050	717		
211-254		Depot Aircraft Landing Gear Overhaul Facility I				SF	280,213	6,858	280,213	6,858		
400-000		Ballistic Missile Processing Support Facility 1			AFSC	SF	87,600	3,000	87,600	3,000		
811-14A		Advanced Logistics System Utility Support I				LS	LS	625	LS	625		
821-116		Addition to Depot Central Heating Plant 3				LS	LS	768	LS	768		
		TOTAL						11,968		11,968		

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HILL AIR FORCE BASE

The first location, Hill Air Force Base, is 7 miles south of Ogden, Utah and is headquarters for the Ogden Air Materiel area. In addition the base supports a helicopter combat crew training unit for Military Airlift Command, a reserve tactical fighter group mission, and an Air Force Systems Command test squadron. The total program being requested is \$11,968,000 consisting of five items including one item of \$3,000,000 for Air Force Systems Command as follows:

The first project provides for the construction of an addition to the existing aircraft operational apron serving the air freight terminal. The existing apron does not provide sufficient space to accommodate the large, modern cargo aircraft.

The second project provides for the construction of a 280,213-square-foot depot landing gear overhaul facility. Presently, overhaul is being accomplished in scattered and temporary facilities.

The third project will construct Minuteman ballistic missile processing support facilities totaling 87,600 square feet for Air Force Systems Command. Existing facilities are saturated and storage of additional units cannot be accomplished without new facilities.

The fourth project will provide alternate electric power supply, air conditioning, and associated utilities to support operation of advanced logistics system computer equipment.

The last project provides an addition to an existing depot central heating plant. Due to limited supply of natural gas, primary heat loads must be assumed by a large central plant which can use oil as a substitute fuel, and which can be altered to increase steam generating capacity.

AFLC-HILL AIR FORCE BASE, UTAH—DESIGN INFORMATION (DESIGN COST ESTIMATED)

Project	Design cost	Percent
		complete July 31, 1973
Addition to terminal access apron.....	\$34,300	85
Depot aircraft landing gear overhaul facility.....	320,000	50
Ballistic missile processing support facilities.....	98,300	60
Advanced logistics system utility support.....	30,500	25
Addition to depot central heating plant.....	36,100	90

TERMINAL ACCESS APRON

Mr. PATTEN. You are requesting a terminal access apron at a cost of \$717,000. The Military Airlift Command's construction program in support of the C-5A had included major airfreight terminals at each of the air materiel areas. This plan was abandoned in favor of building major airfreight terminal complexes at Travis and Dover Air Force Bases in the United States and at certain receiving installations overseas.

Now there seem to be numerous projects appearing under the sponsorship of AFLC to expand the airfreight capability of various air materiel areas. Have you merely shifted the programming of these facilities from MAC to AFLC, or can a legitimate argument be made that these additional facilities are needed by AFLC to support its own internal workload?

Colonel MANSFINGER. No, there has been no change in our plan.

I think you may recall that in the late sixties when we were first starting our air terminal program, we considered building airfreight terminals at the major MAC bases and also building inland at the AMA's in support of the MAC activities. But these airfreight terminals at the depots that we have in the program and are considering are not in support of the worldwide Air Materiel Command complex. They are in support of the Logistics Command complex.

Mr. PATTEN. Supply for the record the aircraft movement at each of your AMA's.

General REILLY. Yes, sir.
[The information follows:]

The following monthly average of aircraft movement is provided as requested.

REPORT ON AMA AIRCRAFT MOVEMENT

	Hill	Kelly	Tinker	McClellan	Robins	Wright- Patterson AFB
L-100-30.....	90.0	60.0	60.0	90.0	60.0	120.0
L-188.....	60.0	60.0	90.0			120.0
DC-9.....	150.0	30.0	120.0	60.0	180.0	30.0
C-5.....	1.0	31.0	6.3	.1	1.7	1.0
C-124.....	.3	5.3		1.5	.5	.3
C-141.....	17.0	104.3	78.0	.8	16.3	5.0
C-130.....	5.7	16.7	2.5	.8	13.1	5.3
DC-8.....		13.7	5.3			
Boeing 707.....		2.7	2.3			
	324.0	323.7	364.4	153.2	271.6	281.6

The L-100-30 is a commercial version of the C-130 and the L-188 is the Lockheed Electra.

Mr. PATTEN. Can you show us on a map where the proposed apron is located and tell us which large cargo aircraft cause traffic problems?

Colonel MANSPERGER. Here is our airfreight terminal. As you may recall from previous years, here is the logistical materials processing facility which you approved in fiscal year 1972, which will be connected directly to the airfreight terminal with a tunnel and a conveyor system. This is a mechanized system, a modern airfreight terminal.

Also, this processing facility connects directly to what will be the small item warehouse in this adjoining facility here.

This ramp here is being used now by the helicopters and the training activity assigned to that Hill Air Force Base.

The helicopter or training activity also uses this taxiway. Today, the majority of the traffic that comes into the airfreight terminal is scheduled log-air, using the C-130's we were talking about, the civilian version of them, and Lockheed Electras.

When they come into the terminal, the helicopter training activity along this taxiway has to be disrupted. When the larger aircraft, the C-141's and C-5's of MAC, come in, the 141 can barely get into the area, the C-5 cannot. So the C-5's normally park out on the eastern taxiway and are loaded there. When they are using these two taxiways, the adjacent weapons loading area for the test activities, using F-4 aircraft, cannot be used. So it sterilizes both this taxiway and the weapons loading area.

This project will provide expansion of the apron here and taxiway across here, so we can bring all aircraft to the air freight terminal area without disrupting training activities; we can turn the C-5 around here and turn the C-141's around at these locations.

Mr. SIKES. Do you use any C-5's there?

Colonel MANSPERGER. We run a limited number, not too many, but when they do come we have the parking problem; then we must truck the material all the way out to or from the mechanized freight terminal. We lose the benefit of the mechanization.

Mr. SIKES. Mechanization then permits you to load the C-5A as well as the C-141?

Colonel MANSPERGER. Not quite directly, but generally, yes.

Mr. SIKES. This shows a very limited number of C-5 aircraft?

Colonel MANSPERGER. Yes, sir.

The majority of the traffic is the Log-Air, and this helps answer that question about the MAC versus the Logistics Command activities.

Mr. SIKES. Very well.

Mr. PATTEN. We will insert in the record the summary page of the economic evaluation of this project. This shows a savings investment ratio of 1.21.

[The information follows:]

1. DATE 15 DEC 1972	2. FISCAL YEAR 1974	3. DEPARTMENT AP	4. INSTALLATION HILL AIR FORCE BASE
5. PROJECT NUMBER 04-74-STA		6. PROJECT TITLE 113-321 ADDITION TO AIRCRAFT OPERATIONAL APRON	

ECONOMIC EVALUATION - DOD INVESTMENTS

- DESCRIPTION OF PROJECT: Addition to the Air Freight Terminal apron and taxiway to permit processing of modern cargo aircraft.
- PROJECT BENEFITS ABSTRACT: Additional apron space required to taxi, park, and load/unload larger jet-powered LOGAIR and military cargo aircraft within required safety criteria and prescribed ground time generating an annual savings exceeding \$90,000.

SUMMARY OF PROJECT COSTS - FORMAT A

SUMMARY OF PROJECT BENEFITS - FORMAT B

1 INVESTMENT	
a. Primary Construction Cost	\$ 615,000
b. Supporting Facility Cost	102,000
c. Initial Outfitting Equipment	-0-
d. Design Cost	50,190
e. Other Cost	-0-
f. Total Cost	\$ 767,190
2 VALUE OF EXISTING FACILITIES	\$ -0-
3 NET INVESTMENT	\$ 767,190
4 PRESENT VALUE (P.V.) OF INVESTMENTS	
a. P.V. of Primary Construction Cost	\$ 509,835
b. P.V. of Supporting Facility Cost	84,558
c. P.V. of Initial Outfitting Equipment	-0-
d. Design Cost	50,190
e. P.V. of Other Cost	-0-
f. Total P.V. of Investments	\$ 644,583
5 PRESENT VALUE OF EXISTING FACILITY	\$ -0-
6 P.V. OF NET INVESTMENT	\$ 644,583
7 SAVINGS/INVESTMENT RATIO	1.21

1. PERSONNEL	PRESENT	PROPOSED	ANNUAL SAVINGS
a. Civilian	\$ 5,500	\$ 2,034	\$ 3,466
b. Military	N/A		
c. Other	N/A		
2. OPERATING			
a. Materials	\$	\$	\$ -0-
b. Utilities	-0-	110	110
c. Maintenance & Repairs	-0-	1,161	1,161
d. Other	144,362	51,822	92,540
3. OVERHEAD	No Change		
4. TOTAL ANNUAL SAVINGS			\$ 94,735
4a. PRESENT VALUE OF ANNUAL SAVINGS			\$902,256
5. ONE-TIME SAVINGS			-0-
5a. PRESENT VALUE OF ONE-TIME SAVINGS			-0-
6. TOTAL P.V. OF BENEFITS (BOD)			\$902,256
7. TOTAL P.V. OF BENEFITS (BASE YEAR)			\$782,256
8. ECONOMIC LIFE	25 YR DISCOUNT FACTOR 10%	TABLE A 0.097	
		TABLE B 9.524	
9. BENEFICIAL OCCUPANCY DATE (BOD)	OCT 1974		

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Mr. PATTEN. Which of the items in this request are part of the depot plant modernization program?

General REILLY. Mr. Chairman, three of the five items.

The apron project we were just talking about, the depot aircraft landing gear overhaul facility, and the addition to the central heating plant.

DEPOT AIRCRAFT LANDING GEAR OVERHAUL FACILITY

Mr. PATTEN. You are requesting a depot aircraft landing gear overhaul facility at a cost of \$6,858,000. The economic evaluation for this project, part of which we will insert in the record at this point, refers to this project as the depot aircraft and engine accessories overhaul shop. Has the scope or the type of the work to be done in this facility changed as a result of the TRC plan? Provide that for the record.

[The information follows:]

1. DATE 15 Dec 72	2. FISCAL YEAR 1974	MILITARY CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT AF	4. INSTALLATION HILL AIR FORCE BASE
6. PROJECT NUMBER 202-74-107		5. PROJECT TITLE 211-254 DEPOT AIRCRAFT AND ENGINE ACCESSORIES OVERHAUL SHOP		

ECONOMIC EVALUATION - DOD INVESTMENTS

- DESCRIPTION OF PROJECT: This project provides a 280,213 square foot shop for combining five landing gear support shops into a single depot-level overhaul complex. Building number 264, 261, 258, and 211 comprising 65,676 square feet will be razed and two Thor Shelters will be removed.
- PROJECT BENEFITS ABSTRACT: The new facility will eliminate intershop manual handling of material and combine operations, supervision and quality control with a reduction in repair flow time and support requirements, resulting in a one-time savings of over \$2,990,000 and an annual savings of over \$1,266,000.

SUMMARY OF PROJECT COSTS - FORMAT A

1. INVESTMENT	
a. Primary Construction Cost (SIOM @ 6% incl)	\$ 6,263,000
b. Supporting Facility Cost (SIOM @ 6% incl)	698,000
c. Initial Outfitting Equipment, Costs not included in M&M Item	\$ 2,980,000
d. Design Cost (7% of a, b, c above)	\$ 695,870
e. Other Costs	-0-
f. Total Costs	\$10,636,870
2. VALUE OF EXISTING FACILITIES	\$ 622,824
3. NET INVESTMENT	\$10,014,046
4. PRESENT VALUE (PV) OF INVESTMENT	
a. PV of Primary Construction Cost (Discount Factor .879)	\$ 5,192,030
b. PV of Supporting Facility Cost (Discount Factor .829)	\$ 578,642
c. PV of Initial Outfitting Equipment (Discount Factor 1.393)	\$ 4,151,140
d. Design Cost	\$ 695,870
e. PV of other Costs	-0-
f. Total PV of Investments	\$10,617,632

SUMMARY OF PROJECT BENEFITS - FORMAT B

1. PERSONNEL	PRESENT	PROPOSED	ANNUAL SAVINGS
a. Civilian	\$7,478,511	\$6,304,051	\$ 1,174,460
b. Military N/A			
c. Other N/A			
2. OPERATING			
a. Materials	\$ 309,517	\$ 237,090	\$ 72,427
b. Utilities	\$ 31,088	\$ 53,482	\$ (22,394)
c. Maint & Rpr	\$ 70,360	\$ 49,037	\$ 21,323
d. Other	\$ 26,987	\$ 4,167	\$ 22,820
3. OVERHEAD			
4. TOTAL ANNUAL SAVINGS	\$7,916,463	\$6,649,827	\$ 1,266,636
4a. PRESENT VALUE OF ANNUAL SAVINGS			\$12,063,441
5. ONE-TIME SAVINGS			\$ 2,992,501
5a. PRESENT VALUE OF ONE-TIME SAVINGS			\$ 2,394,542
6. TOTAL PRESENT VALUE OF BENEFITS (BCD)			\$14,457,983
7. TOTAL PRESENT VALUE OF BENEFITS (BASE YEAR)			\$11,550,491

1. DATE 15 Dec 72	2. FISCAL YEAR 1974	MILITARY CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT AF	4. INSTALLATION HILL AIR FORCE BASE
5. PROJECT NUMBER 202-7.-107		6. PROJECT TITLE 211-254 DEPOT AIRCRAFT AND ENGINE ACCESSORIES OVERHAUL SHOP		

SUMMARY OF PROJECT COSTS - FORMAT A (continued)

SUMMARY OF PROJECT BENEFITS - FORMAT B (continued)

5. PRESENT VALUE OF EXISTING FACILITY	\$ 622,824
6. PRESENT VALUE OF NET INVEST	\$ 9,994,858
7. SAVINGS/INVESTMENT RATIO (Format B, Line 7 divided by Line 6, Format A)	1.16
8. YEARS TO AMORTIZE $\frac{\$10,014,046 - \$2,992,551}{\$1,266,636}$	5.54 yr

8. ECONOMIC LIFE <u>25</u> YEARS. Discount Factor <u>10%</u>	Table A <u>0.097</u>
	Table B <u>9.524</u>
9. BENEFICIAL OCCUPANCY DATE (BOD) FY-76	

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Colonel MORROW. No, sir; it has not.

The name applied to it earlier was misappropriate.

Ogden Hill Air Force Base has been our central point for landing gear repair in the past.

Under the TRC concept, with a minor exception it will be the sole point for all landing gear repair. So all of it will be effected in this building.

Mr. NICHOLAS. Will there be a vastly increased workload in this building as a result of the establishment of the landing gear technology repair center here?

Were there other functions which you had been planning to perform in this building which will now not be performed there?

Colonel MORROW. There will be a substantial increase in landing gear overhaul with a corresponding decrease in other workloads at Ogden. Ogden will remain substantially the same. There is a small gain in overall workload there.

Mr. NICHOLAS. How about the scope of this facility, the way it is designed, the original justification for the facility?

Was this justified at this scope solely for landing gear repair?

Colonel MORROW. No, sir, not solely, but that is the predominant repairable that will have depot-level maintenance performed on it.

Mr. NICHOLAS. Could you provide for the record a comparison of what the types of workloads in this facility would have been before you established the TRC for landing gear repair at Hill and what is planned now?

Colonel MORROW. We will provide that for the record.

[The information follows:]

WORKLOAD COMPARISON AT HILL AFB LANDING GEAR REPAIR FACILITY

Types of workloads before TRC :

<i>Aircraft</i>	<i>Components</i>
RF/F-4-----	Wheels, brakes, strut components, tail hooks.
B52-----	Wheels, brakes, strut components.
F-111-----	Do.
F-101-----	Do.
F-105-----	Do.
F-104-----	Do.
C-121-----	Do.
C-7-----	Do.
C-135-----	Do.
KC-135-----	Do.
KC-97-----	Do.
T-39-----	Do.
C-141-----	Wheels, brakes.
C-124-----	Wheels.
B-57-----	Do.
F-4-----	Boundary layer duct.
RF-4-----	Camera cases.
Minuteman missile-----	Shock struts and gyro cases.
Missile trailer-----	Actuator piston.

Types of workloads after TRC :

Exactly the same type of workload will be performed after TRC as before TRC except more landing gear type work will be accomplished. The added types are as follows :

<i>Aircraft</i>	<i>Components</i>	<i>Hours</i>
C-141-----	Strut components.	
C-5A-----	Wheels, brakes, limited strut components.	
A-7-----	Wheels, brakes, strut components.	
Workload before TRC-----		534, 000
Added workload-----		331, 000
Workload with TRC-----		865, 000

Mr. NICHOLAS. Have you redone the economic analysis based on the TRC workload?

Colonel MORROW. Yes; they have all been reaccomplished based on the TRC workloading. I might add, Mr. Nicholas, that basically what we are doing at Ogden as well as all the other depots is increasing the density of our workloading, a point not addressed to the committee before. In compliance with a very recent OSD interpretation of our capacity expression, our utilization automatically dropped some 25 percent. So, partly what we are doing in this building is increasing the amount of work which will go into them.

There will be that additional workload in this building.

Mr. PATTEN. What savings do you show as a result of consolidating landing gear repair at Hill?

Colonel MORROW. Sir, we show annual recurring benefits of \$1.266 million.

Mr. NICHOLAS. Will this assignment worsen your situation with regard to landing gear repair space at Hill?

Colonel MORROW. No, sir; it will not. By consolidating all our landing gear repair at Ogden, we will actually be able to better accommodate the higher density workloading prescribed by OSD. In other words, we will be able to put more of the same kind of work in a reduced amount of space.

Mr. NICHOLAS. What facilities are you currently using for this repair?

Colonel MORROW. Fifteen separate facilities, sir, scattered around the base at the present time. Some of these are temporary facilities; some of them are old THOR missile shelters. We are also using outside space.

Mr. NICHOLAS. The economic evaluation supplied the committee staff shows a savings-investment ratio of 1.16. Could you get along with the present facilities?

Colonel MORROW. We could get along with them, sir, but it would not be in the interest of good economy. It would not be an efficient operation, as we would like. Some of the buildings would require repair because they are old. A number of them will be demolished. We will demolish some 11 buildings and 4 of the THOR shelters as a consequence of the new construction we are requesting. This project is also required to enable us to comply with pollution control and occupational safety and health standards.

Mr. NICHOLAS. What future use will you make of the existing space?

Colonel MORROW. Most of it will be demolished, sir; 162,000 feet of the existing space will be demolished. That includes 47,000-some-odd square feet of outside space being used. We will no longer have it on the records.

Mr. NICHOLAS. Do you feel that the 1.1 savings-investment ratio is conservative?

Colonel MORROW. Yes, sir, we do feel it is conservative.

Mr. NICHOLAS. When you analyze it, it looks low.

Colonel MORROW. Yes, sir; it is very conservative.

We have incorporated all the conservative factors that the investigative staff asked us to. We believe there are savings we will not be able to quantify at this time in almost all of our projects.

Mr. NICHOLAS. In comparison with other projects, this seems to have a fairly low ratio. Would it be particularly true of this project that there are savings which you do not feel you can account for?

Colonel MORROW. I believe it very well would be, sir.

Mr. NICHOLAS. Will you provide details on that for the record.

Colonel MORROW. Yes, sir.

[The information follows:]

NONQUANTIFIABLE SAVINGS ACCRUING FROM HILL AFB GEAR REPAIR PROJECT

Examples of nonquantified benefits:

(1) 48,450 ft.² of structurally sound space now used as a machine shop which will go into the proposed facility will become available to centralize and properly house sheet metal activities. Since the sheet metal shops are overcrowded and scattered throughout the maintenance complex, this is a worthwhile project in itself; yet, no benefits were claimed in the sheet metal area.

(2) A 29,500 ft.² structurally sound facility will become available to provide a very adequate general training lab, a base life support shop, and an aerospace ground equipment shop. These activities are currently scattered through nine substandard facilities which will be disposed of upon completion of the project. The proper housing of these activities will provide significant benefits which were not calculated or claimed.

(3) Foundry, cleaning, and welding activities will be accomplished in accordance with the Occupational Safety and Health Act of 1970 and pollution standards.

(4) The risk from fire and personal injuries will be substantially reduced.

(5) The use of modern mechanized handling systems will considerably reduce damage compared to the present forklift, truck and manual methods. In the absence of historical data, this was not quantified.

(6) Material in process is now temporarily stored outside exposed to weather deterioration. The cost of removing snow and possible corrosion was not calculated.

(7) The working environment will be considerably improved through exhaust systems, fume scrubbers, pollution control equipment, lighting, and related work area consolidations. This will likely produce less absenteeism, better supervision, improved attitudes, reduced rehired and retraining costs, and better communication between support shops. As a result, the quality of work performed will increase with an attendant increase in reliability of weapons systems and mean time between failures. These benefits, although unqualified, present tremendous potential savings to the Government.

BALLISTIC MISSILE PROCESSING SUPPORT FACILITIES

Mr. PATTEN. You are requesting ballistic missile processing support facilities in the amount of \$3 million. What is the requirement for this project?

Colonel MANSPERGER. There are three primary things that require storage of missiles at Hill Air Force Base or in the area, in addition

to the existing requirement for the normal specialized repair activity at the depot.

One of these requirements is force modernization. That is replacing Minuteman I with Minuteman II, and Minuteman II with Minuteman III. Force modernization also entails EMP hardening, command data buffering, and dust retrofit.

In these modernization projects the missile comes out of the forward silo, comes to the depot for any work that may be required at that point, and then must be stored until silo upgrading is complete. Minuteman is very critical in the storage in that it has a temperature limitation of 80 degrees plus or minus 20; humidity must remain below 50 percent, and assignment must be assured.

An additional requirement is to allow continued Minuteman production at an economical pace. At the point that we stop Minuteman production, we will still have further requirements for missiles for test and training purposes. These missiles must be stored until they are needed.

The third factor is the older missiles that will come out of the inventory. They still have value for research activities within the Department of Defense and private institutions and must therefore be stored until they can be used.

Mr. PATTEN. Would the colleges want one for research? You said private.

Colonel MANSPERGER. If you want to send a payload into space, one that the Minuteman booster can put into space, provided it is a legitimate scientific effort, the Air Force will put it into space in one of our surplus-to-our-strategic force deterrent missiles for the cost of the launch.

Mr. PATTEN. Will the addition to the central heating plant meet all present or anticipated pollution requirements and complete the requirements at this base?

General REILLY. Yes, sir, it will.

Mr. PATTEN. We will insert the summary of the economic analysis of this project in the record.

[The information follows:]

ECONOMIC ANALYSIS OF HILL BALLISTIC MISSILE SUPPORT FACILITY

A formal economic analysis was not considered necessary for this project since there is no suitable alternative. Keeping the production line open to provide additional missiles on an as-needed basis would be so costly that it cannot be considered and the modernization programs must go on if the increased missile capabilities are to be achieved.

ADVANCED LOGISTICS SYSTEM UTILITY SUPPORT

Mr. PATTEN. Let us turn to the advanced logistics system utility support project.

You are requesting \$625,000 for the utility support for the advanced logistics system at Hill. What is the cost of the total program to provide this utility support at all AFLC bases?

General REILLY. \$3,277,000 for the six projects.

Mr. PATTEN. What type of utilities are you providing and why are they necessary at all of these places?

General REILLY. Each of these projects will provide backup air-conditioning and electric power for the large computer installations which are going in. This is to provide insurance against power outages and against breakdown of the existing air-conditioning equipment.

Mr. PATTEN. Off the record.

[Discussion off the record.]

Mr. PATTEN. Do you have the basic utilities to support these computers already?

General REILLY. Yes, sir.

Mr. PATTEN. Is this merely a standby system in case the primary system fails?

General REILLY. That is the principal intent of the system.

Mr. PATTEN. What could happen if there were a power outage?

General REILLY. If there is a power outage that exceeds the time that the uninterruptible supply can handle, it means that the computer ceases to function as it should. In the advanced logistics system which all of these computers support, we are eliminating some 92 computers in logistics command and consolidating into seven computers.

So it is very important that these computers be available 7 days a week, 24 hours a day.

Mr. PATTEN. Does the whole system depend upon one base; if you had an outage at one base, would it degrade the whole system?

General REILLY. Yes; it would.

We have the computers at each of the five air materiel areas and at the headquarters at Wright-Patterson. All computers operate as a unit. Any one computer out of commission degrades the entire system.

Mr. PATTEN. What is the status of the procurement of the equipment which will be installed?

General REILLY. The first computer has been installed at Wright-Patterson. The other six computers will be installed beginning in September through the first of next year.

Mr. PATTEN. Will you provide details for the record?

General REILLY. Yes, sir.

[The information follows:]

STATUS OF PROCUREMENT OF ALS EQUIPMENT

Site:	Date to be ordered	Date to be installed
Kelly AFB, Tex.....	On order.....	Sept. 1, 1973
Kelly AFB, Tex. (NOLS).....	do.....	Do.
Tinker AFB, Okla.....	do.....	Oct. 1, 1973
Robins AFB, Ga.....	do.....	Nov. 1, 1973
Hill AFB, Utah.....	July 1, 1973.....	Dec. 1, 1973
McClellan AFB, Calif.....	Aug. 1, 1973.....	Jan. 1, 1974

ALS hardware will be acquired on a lease with option for purchase basis. A special purchase conversion incentive price will be available to the Government during the period July 1, 1973 through March 15, 1975, provided that firm purchase orders are received by the Control Data Corp. (CDC) by April 15, 1975. This special purchase conversion incentive price is based upon the net rental paid to CDC by the Government, and can amount to a substantial credit for the lease payments, depending upon installation date and the date the Government exercises its option to purchase.

Mr. SIKES. Thank you, gentlemen. We will resume at 10 o'clock tomorrow morning.

WEDNESDAY, MAY 30, 1973.

KELLY AIR FORCE BASE, TEX.

Mr. SIKES. The committee will come to order.

We will continue our discussion of line items. We will take first Kelly Air Force Base, Tex. The request is for \$6,101,000. Place page 23 in the record.

[The page follows:]

1. DATE		2. DEPARTMENT AF		3. INSTALLATION KELLY AIR FORCE BASE												
4. COMMAND OR MANAGEMENT BUREAU AIR FORCE LOGISTICS COMMAND				5. INSTALLATION CONTROL NUMBER MBPB		6. STATE/COUNTRY TEXAS										
7. STATUS ACTIVE			8. YEAR OF INITIAL OCCUPANCY 1917		9. COUNTY (U.S.) BEXAR		10. NEAREST CITY SIX MILES SOUTHWEST OF SAN ANTONIO TEXAS									
11. MISSION OR MAJOR FUNCTIONS TACTICAL AIRLIFT WING (RESERVE) TACTICAL FIGHTER SQUADRON (AIR NATIONAL GUARD) SAN ANTONIO AIR MATERIEL AREA DEPOT USAF SECURITY SERVICE HEADQUARTERS AIR FORCE ENVIRONMENTAL LABORATORY				12.												
				PERSONNEL STRENGTH			PERMANENT			STUDENTS			SUPPORTED			TOTAL
				OFFICER (1)	ENLISTED (2)	CIVILIAN (3)	OFFICER (4)	ENLISTED (5)	OFFICER (6)	ENLISTED (7)	CIVILIAN (8)					
				* AS OF 31 December 72	781	3,576	22,146	-	-	75	44	-	-	-	26,622	
				* PLANNED (END FY 76)	776	3,547	20,548	-	-	75	44	-	-	-	24,990	
13. INVENTORY																
LAND		ACRES (1)		LAND COST (\$000) (2)		IMPROVEMENT (\$000) (3)		TOTAL (\$000) (4)								
a. OWNED		4,103		2,807		165,774		168,581								
b. LEASES AND EASEMENTS		639		(1)		26		56								
c. INVENTORY TOTAL (Except land rent) AS OF 30 JUNE 19 72								168,663								
d. AUTHORIZATION NOT YET IN INVENTORY								4,444								
e. AUTHORIZATION REQUESTED IN THIS PROGRAM								6,101								
f. ESTIMATED AUTHORIZATION - NEXT 4 YEARS								40,000								
g. GRAND TOTAL (c + d + e + f)								219,208								
14. SUMMARY OF INSTALLATION PROJECTS																
CATEGORY CODE NO. a	PROJECT DESIGNATION PROJECT TITLE Priority			TENANT COMMAND c	UNIT OF MEASURE d	AUTHORIZATION PROGRAM SCOPE e		ESTIMATED COST (\$000) f		FUNDING PROGRAM SCOPE g		ESTIMATED COST (\$000) h				
211-254	Depot Aircraft Engine Fuel System Controls Overhaul and Test Facility I				SF	86,475		3,166		86,475		3,166				
218-868	Precision Measurement Equipment Facility I				SF	39,900		1,824		39,900		1,824				
441-257	Hazardous Materials Storage Facility 4				SF	25,500		482		25,500		482				
811-14A	Advanced Logistics System Utility Support I				LS	LS		629		LS		629				
	TOTAL							6,101				6,101				

KELLY AIR FORCE BASE

The second base is Kelly Air Force Base, located 6 miles southwest of San Antonio, Tex. The base supports the San Antonio Air Materiel Area Headquarters, Air Force Environmental Laboratory, headquarters of the USAF Security Service, a Reserve tactical airlift wing, and an Air National Guard tactical fighter group. The total program being requested contains \$6,101,000 for four projects.

The first project provides an addition to, and air conditioning of, the aircraft engine fuel system control overhaul and test facility. Existing facilities are too small to handle the heavy workload and do not have environmental control to assure quality controlled production.

The second project will construct a 39,900 square foot new depot precision measurement equipment facility. Existing facilities make effective use of space difficult and, in some cases, impossible.

The third project provides for construction of a new 25,500 square foot facility in which to store hazardous materials. Present facilities are a substandard building and an open area approximately 1.5 miles away.

The last project will provide alternate electric power supply, air conditioning, and associated utilities to support operation of advanced logistics system computer equipment.

AFLC—KELLY AFB, TEX.—DESIGN INFORMATION (DESIGN COST ESTIMATED)

Project	Design cost	Percent complete July 31, 1973
Depot aircraft engine fuel system controls overhaul and test facility.....	\$190,000	50
Precision measurement equipment facility.....	114,000	95
Hazardous materials storage facility.....	36,000	95
Advanced logistics system utility support.....	30,700	25

Mr. SIKES. The request is for a depot aircraft engine fuel system control, et cetera, a precision measurement equipment facility, a hazardous materials storage facility, and for advanced logistics system utility support.

DEPOT PLANT MODERNIZATION PROJECTS

Which of these projects are part of the depot plant modernization program?

General REILLY. Mr. Chairman, the first three projects, the engine fuel system controls overhaul and test facility, precision measurement equipment facility, and hazardous materials storage are part of our depot modernization program.

Mr. SIKES. Are they justifiable on economic grounds?

General REILLY. Mr. Chairman, economics play a major role in their justification. However, they are needed in addition to just the economic requirement.

Mr. SIKES. Why?

General REILLY. Well, the existing facilities we have, Mr. Chairman, are unsatisfactory from many viewpoints.

Mr. SIKES. You mean they are out of date?

General REILLY. Yes, sir; out of date. They don't have the proper environmental controls and activities are scattered and fragmented about the base. Our depot modernization program actually provides for a great deal of consolidation of activities. It also provides for replacement or upgrading of functionally outmoded facilities and, with this, of course, comes large economic savings. We are showing sizable savings with each of these projects.

Mr. SIKES. Provide details on savings for the record.

[The information follows:]

ECONOMICS OF KELLY DPMP PROJECTS

Tangible savings to be obtained from these three projects are described below:
 Project : Depot A/C Engineering Fuel System Control.
 Present value of net investment : \$6,771,471.

<i>Annual savings</i>	
Personnel: 28 personnel-----	\$365, 384
Operating:	
Materials—reduction in reject rate, damage, etc-----	1, 269, 067
Utilities—(increase)-----	(2, 629)
Maintenance and repair-----	5, 401
	<hr/>
Total annual savings-----	1, 637, 223

One-time savings

Cost avoidance associated with the automated as opposed to continuing with manual test stands----- \$1, 280, 600

Present value of benefits : \$13,082,396.
 Savings/investment ratio : 1.93.

Project : PME Laboratory.
 Present value of net investment : \$989,774.

<i>Annual savings</i>	
Personnel:	
Productivity increase of 9 percent (17 personnel)-----	\$208, 609
Operating:	
Materials and supplies-----	17, 950
Utilities (increase)-----	(18, 713)
Maintenance and repair (increase)-----	(1, 596)
	<hr/>
Total annual savings-----	206, 250

One-time savings

Avoidance of major refurbishing----- \$1, 396, 000

Present value of benefits : \$1,783,432.
 Savings/investment ratio : 1.80.

Project : Hazardous material storage facility.
 Present value of net investment : \$462,632.

<i>Annual savings</i>	
Personnel: Savings in the inefficiencies associated with scattered facilities (2 personnel)-----	\$24, 242
Operating:	
Materials and supplies—material damage/spillage, vehicle operation-----	15, 417
Maintenance and repair-----	5, 046
	<hr/>
Total annual savings-----	44, 705

One-time savings

Refurbishing of building, and vehicle replacement avoided----- \$257, 376

Present value of benefits : \$497,438.
 Savings/investment ratio : 1.08.

In addition to the above tangible savings, the depot modernization program will provide many intangible benefits. For example, it will provide a logistics plant capable of rapid and effective response to deterrent forces and mobilization, if required. Another example is increased quality and reliability in weapons systems which will increase mission effectiveness and reduce logistical support. In the case of the fuel system facility, the project is needed to keep up with the technology of a new weapon system fuel control to be maintained. Other

factors not accounted for include reduced risk, improved personnel comfort, reduced span of control, and the meeting of pollution, health and safety standards.

ENGINE OVERHAUL

Mr. SIKES. Is the new engine overhaul building in operation?

General REILLY. Mr. Chairman, I think it will be in operation shortly. Colonel Morrow, would you please come forward and sit at the table?

Colonel MORROW. Yes, sir. Mr. Chairman, the depot aircraft engine overhaul facility at Kelly is partially operational. We are presently moving workload into the facility and will be operational in October of this year.

Mr. SIKES. Can you verify your estimates of the efficiency of this building?

Colonel MORROW. Yes, sir; we will. We have in being the process which will verify after the fact the benefits that we expected to receive, including the efficiency. We have every reason to believe that we will meet or exceed our expectations.

As you know, sir, we have already reduced the engine procurement of the T-56, J-79, and TF-39 substantially. We have already programmed 220 less personnel into that facility as a result of anticipated increases in workforce productivity.

Mr. SIKES. That is a very encouraging prediction. I would like to have for the record the present engine workload projections as compared to those you gave us last year.

Colonel MORROW. Yes, sir.

[The information follows:]

ENGINE WORKLOAD, KELLY AFB DEPOT A/C OVERHAUL FACILITY

Last year's projections are compared against this year's projections below:

FISCAL YEAR 1973 ESTIMATE—FISCAL YEAR/NUMBER OF ENGINES

Engine	1972	1973	1974	1975	1976	1977	1978
F-100 PW.....			1	18	119	275	
T-56.....	1,030	724	1,092	1,060	1,099	1,099	
J-79.....	344	282	282	326	285	300	
TF-39.....	96	114	187	118	176	158	
Total.....	1,470	1,120	1,562	1,522	1,679	1,832	

FISCAL YEAR 1974 ESTIMATE—FISCAL YEAR/NUMBER OF ENGINES

Engine	1972	1973	1974	1975	1976	1977	1978
F-100 PW.....			1	17	122	265	181
T-56.....		763	677	706	772	773	830
J-79.....		519	611	678	645	604	604
TF-39.....		110	104	114	118	118	127
Total.....		1,392	1,393	1,515	1,657	1,760	1,742

Mr. SIKES. Will this facility be fully utilized or underutilized in fiscal 1974?

Colonel MORROW. Sir, it will not be underutilized. However, we won't reach the desired goal of 85-percent utilization under the new DOD criteria until fiscal 1977. We will be slightly over 80 percent in

fiscal 1974 and drop slightly and get up to 85 percent by fiscal year 1977.

Mr. SIKES. There has been a reduction in the anticipated workload. Will you meet projections for the out years?

Colonel MORROW. Mr. Chairman, while the total workload at Kelly is projected to drop, primarily in the airframe and exchangeable or accessory area, the engine workload at Kelly is due to have a substantial increase, about 700,000 hours, over the next 4 years.

Mr. SIKES. Will that meet the projections which you provided the committee last year?

Colonel MORROW. Yes, sir, it will. I think it will slightly exceed what we projected last year because in accordance with the new DOD criteria, we will be utilizing the building about 85 percent.

FLYING HOURS

Mr. SIKES. Provide for the record the flying hours upon which your AFLC projected workload is based for fiscal year 1974 and the out years, and show how this compares to flying hours in recent years.

[The information follows:]

FLYING HOUR BASIS FOR AFLC WORKLOAD—FISCAL YEAR 1974 AND OUTYEARS

The flying hours upon which the AFLC projected workload is based for fiscal year 1974 and outyears in comparison to flying hours in recent years is shown below:

Fiscal year:	<i>Flying hours</i> ¹	<i>Millions</i>
1970 -----		6.8
1971 -----		5.9
1972 -----		5.3
1973 (projected) -----		4.8

Fiscal year:	<i>Flying hours programed</i>	<i>Millions</i>
1974 -----		5.7
1975 -----		5.8
1976 -----		5.3
1977 -----		5.4

¹ These do not translate directly to organic depot airframe support requirements due to modifications, changes in overhaul requirements, number supported by contract, etc.

AIRCRAFT ENGINE FUEL SYSTEM FACILITIES

Mr. SIKES. Where will the aircraft engine fuel system facility be located with reference to the engine shop?

Colonel MORROW. Sir, it will be about a thousand yards south of the engine shop on the southeast edge of the industrial complex.

Mr. SIKES. That is better than a half mile. Is that the best location for it?

Colonel MORROW. Sir, it is considering that we are modifying the existing structure that is there. It is adjacent to and in the same industrial area as other shops that will be doing similar type of work.

Mr. SIKES. Let us see it on the map.

Colonel MORROW. Sir, here is the engine overhaul shop right here. Then the new facility is located right in here, sir.

Mr. SIKES. I see.

Colonel MORROW. Which is the southeast.

Mr. SIKES. Could this facility be partly or fully accommodated in the engine shop itself?

Colonel MORROW. No, sir. We will be utilizing the engine shop to its full capacity and in addition, sir, due to the nature of the testing portion of this facility it is constructed for hazardous test purposes and would actually necessitate building a structure inside of another structure if we were to put it in any other building.

Mr. SIKES. What is the status of the procurement of the test stands to support the engine for the F-15?

Colonel MORROW. The first stands are under procurement now with some \$2.6 million of depot plant modernization program funds from fiscal 1973 and an additional \$5.2 million of F-15 funds. The balance will be using fiscal 1974 F-15 funds.

Mr. SIKES. The committee would like to be kept informed of the status of the procurement.

Colonel MORROW. We will do that sir.

[The information follows:]

STATUS OF F-15 TEST STANDS

Procurement using F-15 funds is currently being funded on a partial allotment basis in accordance with OSD direction on F-100-PW engine (F-15 fighter aircraft) procurement. Future information will be provided as information on other F-15 procurement is reported.

Mr. SIKES. What is the estimated construction time of the project?

General REILLY. About 9 months, Mr. Chairman. We would hope to have it complete early in calendar year 1975.

Mr. SIKES. Will that tie in with the equipment delivery dates?

Colonel MORROW. Yes, sir, it will. As you know, the leadtime for most equipment is less than it is for construction.

Mr. SIKES. Is that true of this type of equipment?

Colonel MORROW. In this particular case, yes, it will.

Mr. SIKES. Insert in the record the summary of the economic analysis for this project.

[The information follows:]

1. DATE	2. FISCAL YEAR	3. DEPARTMENT	4. INSTALLATION
15 Jan 1973	1974	AF	KELLY AIR FORCE BASE
5. PROJECT NUMBER		6. PROJECT TITLE	
211-254		ADD TO AND AIR CONDITION AIRCRAFT ENGINE FUEL SYSTEM TEST FACILITY	
ECONOMIC EVALUATION - DOD INVESTMENTS			
<p>1. DESCRIPTION OF PROJECT: This project provides modernization of 54,265 SF of existing aircraft engine fuel accessories overhaul and test facility in direct support of TF-39, T-56, and J-79 engine workloads. The additional construction provides 35,000 SF for an overhaul and test capability for the fuel components in direct support of the F-100 engine production program.</p> <p>2. PROJECT BENEFITS: This modernization of Industrial Shops will increase effectiveness and reduce the material budget, damage to components and the reject rate. This project supports a one-time savings of \$1,221,692 and annual savings of over \$1,617,223.</p>			
<u>SUMMARY OF PROJECT COSTS - FORMAT A</u>		<u>SUMMARY OF PROJECT BENEFITS - FORMAT B</u>	
1. INVESTMENT		1. PERSONNEL	
a. Primary Construction Cost	\$2,351,000	PRESENT	
b. Supporting Facility Cost	323,000	PROPOSED	ANNUAL SAVINGS
c. Initial Outfitting Equipment	2,973,000	\$5,237,120	\$4,871,736
d. Design Cost	187,180		\$ 365,381
e. Other Cost	287,000		
f. Total Costs	\$6,121,180	2. OPERATING	
2. VALUE OF EXISTING FACILITIES	-0-	a. Materials	\$1,684,367
3. NET INVESTMENT	\$6,121,180	b. Utilities	\$ 415,300
		c. Maintenance & Repairs	\$ 44,963
4. PRESENT VALUE (P.V.) OF INVESTMENTS		d. Other	\$ 5,401
a. P.V. of Primary Construction Cost	\$1,948,979	3. OVERHEAD	
b. P.V. of Supporting Facility Cost	267,767	4. TOTAL ANNUAL SAVINGS	\$ 1,637,223
c. P.V. of Initial Outfitting Equipment	4,141,389	4a. PRESENT VALUE OF ANNUAL SAVINGS	\$15,592,911
d. Design Cost	187,180	5. ONE-TIME SAVINGS	1,280,601
e. P.V. of Other Cost	226,156	5a. PRESENT VALUE OF ONE-TIME SAVINGS	\$ 1,009,111
f. Total P.V. of Investments	\$6,771,471	6. TOTAL P.V. OF BENEFITS (BOD)	\$16,602,023
5. PRESENT VALUE OF EXISTING FACILITY	-0-	7. TOTAL P.V. OF BENEFITS (BASE YEAR)	\$13,082,393
6. P.V. OF NET INVESTMENT	6,771,471	8. ECONOMIC LIFE <u>25</u> DISCOUNT FACTOR 10% TABLE A <u>0.097</u> TABLE B <u>9.524</u>	
7. SAVINGS/INVESTMENT RATIO	<u>1.93</u>	9. BENEFICIAL OCCUPANCY DATE (BOD) FY 1976	

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PRECISION MEASUREMENT EQUIPMENT FACILITY

Mr. SIKES. What are you using at this time for a precision measurement equipment facility?

Colonel MORROW. Presently about 95 percent of our precision measurement equipment work, is being accomplished in one building, building 326. This is a building that was built in 1942 to house a different kind of workload. It is a two-story building that is close to the railroad tracks in the southeast portion of Kelly and subject to vibration, also, the building is not equipped for environmental control which is of the utmost importance.

Mr. SIKES. Provide the economic analysis for the record.

[The information follows:]

1. DATE 15 Jan 1973	2. FISCAL YEAR 1974	MILITARY CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT AF	4. INSTALLATION KELLY AIR FORCE BASE	
5. PROJECT NUMBER		6. PROJECT TITLE			
218-868		PRECISION MEASUREMENT EQUIPMENT FACILITY			
ECONOMIC EVALUATION - DOD INVESTMENTS					
1. DESCRIPTION OF PROJECT: 39,900 sq ft facility to replace Bldg 326.					
2. PROJECT BENEFITS ABSTRACT: Increase work force productivity and reduced overhaul and material handling losses will result in one-time savings of \$88,426 and annual savings of \$232,562.					
<u>SUMMARY OF PROJECT COSTS - FORMAT A</u>			<u>SUMMARY OF PROJECT BENEFITS - FORMAT B</u>		
1. INVESTMENT		1. PERSONNEL	PRESENT	PROPOSED	ANNUAL SAVINGS
a. Primary Construction Cost	\$1,532,000	a. Civilian	\$2,109,225	\$1,900,616	\$ 208,109
b. Supporting Facility Cost	292,000	b. Military			
c. Initial Outfitting Equipment	-0-	c. Other			
d. Design Cost	127,680	2. OPERATING			
e. Other Cost	-0-	a. Materials	93,500	75,550	17,150
f. Total Costs	\$1,951,680	b. Utilities	20,465	39,178	(18,113)
2. VALUE OF EXISTING FACILITIES	649,390	c. Maintenance & Repairs	5,847	7,443	(1,996)
3. NET INVESTMENT	1,302,290	d. Other			
4. PRESENT VALUE (P.V.) OF INVESTMENTS		3. OVERHEAD			
a. P.V. of Primary Construction Cost	\$1,270,028	4. TOTAL ANNUAL SAVINGS			206,150
b. P.V. of Supporting Facility Cost	242,068	4a. PRESENT VALUE OF ANNUAL SAVINGS			1,964,25
c. P.V. of Initial Outfitting Equipment	-0-	5. ONE-TIME SAVINGS			92,190
d. Design Cost	127,068	5a. PRESENT VALUE OF ONE-TIME SAVINGS			92,190
e. P.V. of Other Cost	-0-	6. TOTAL P.V. OF BENEFITS (BOD)			2,057,115
f. Total P.V. of Investments	\$1,639,164	7. TOTAL P.V. OF BENEFITS (BASE YEAR)			1,783,132
5. PRESENT VALUE OF EXISTING FACILITY	649,390	8. ECONOMIC LIFE <u>25</u> DISCOUNT FACTOR <u>10%</u>	TABLE A .867		
6. P.V. OF NET INVESTMENT	989,774		TABLE B <u>9.524</u>		
7. SAVINGS/INVESTMENT RATIO	1.80	9. BENEFICIAL OCCUPANCY DATE (BOD) - FY <u>1975</u>			

HAZARDOUS MATERIALS STORAGE

Mr. SIKES. Is the hazardous materials storage facility an urgent project?

Colonel MORROW. Yes, sir, it is. At present the only available facility is a 30-year-old wooden structure. It is unsafe to store the exotic materials, inflammables, and other hazardous chemicals we must store there.

Mr. SIKES. I want to applaud you on your answers. I believe you have studied your lesson.

Colonel MORROW. Thank you.

Mr. SIKES. Are there questions?

Mr. PATTEN. What is the inventory for your hazardous materials storage facility that is worth spending close to a half million dollars? What would you have? Paints and gasoline?

Colonel MORROW. Yes, sir; paints, lubricants and chemicals.

Mr. PATTEN. Would you keep gasoline there?

Colonel MORROW. Not gasoline, no, sir; chemicals, gases of certain kinds, paint products, those things that have a low flaming point, explosion point.

Mr. PATTEN. Would you be able to guess the size of the inventory - of course your building is not going to be very large.

General REILLY. There will be about a million and a half dollars worth of equipment stored in there.

Mr. PATTEN. It runs that high?

General REILLY. Yes, sir; it does.

McCLELLAN AIR FORCE BASE, CALIF.

Mr. SIKES. Take up McClellan. Insert page 28 in the record.

[The page follows:]

1. DATE		2. DEPARTMENT AF		3. INSTALLATION MCCLELLAN AIR FORCE BASE													
4. COMMAND OR MANAGEMENT BUREAU AIR FORCE LOGISTICS COMMAND				5. INSTALLATION CONTROL NUMBER PRJY		6. STATE/COUNTRY CALIFORNIA											
7. STATUS ACTIVE			8. YEAR OF INITIAL OCCUPANCY 1936		9. COUNTY (U.S.) SACRAMENTO		10. NEAREST CITY SEVEN MILES NORTHEAST OF SACRAMENTO, CALIFORNIA										
11. MISSION OR MAJOR FUNCTIONS AIRBORNE EARLY WARNING WING (AEROSPACE DEFENSE COMMAND) WEATHER RECONNAISSANCE WING (MILITARY AIRLIFT COMMAND) TACTICAL AIRLIFT GROUP (RESERVE) SACRAMENTO AIR MATERIEL AREA DEPOT				12. PERSONNEL STRENGTH				TOTAL									
				PERMANENT		STUDENTS		SUPPORTED		(9)							
				OFFICER (1)	ENLISTED (2)	CIVILIAN (3)	OFFICER (4)	ENLISTED (5)	OFFICER (6)		ENLISTED (7)	CIVILIAN (8)					
				a. AS OF 31 December 72		854	4,051	15,043	-	-	76	136	-	20,160			
				b. PLANNED (Mid FY 76)		821	3,913	13,852	-	-	76	136	-	18,798			
				13. INVENTORY				LAND		ACRES (1)		LAND COST (\$000) (2)		IMPROVEMENT (\$000) (3)		TOTAL (\$000) (4)	
				a. OWNED						4,163		2,357		153,572		155,929	
b. LEASED AND EASEMENTS						133		57		1		58					
c. INVENTORY TOTAL (Except land cost) AS OF 30 JUNE 19 72												155,987					
d. AUTHORIZATION NOT YET IN INVENTORY												10,346					
e. AUTHORIZATION REQUESTED IN THIS PROGRAM												3,171					
f. ESTIMATED AUTHORIZATION - NEXT 4 YEARS												35,000					
g. GRAND TOTAL (c + d + e + f)												204,504					
14. SUMMARY OF INSTALLATION PROJECTS																	
15. PROJECT DESIGNATION																	
CATEGORY CODE NO. a		PROJECT TITLE b			Priority	TENANT COMMAND c	UNIT OF MEASURE d	AUTHORIZATION PROGRAM		FUNDING PROGRAM							
								SCOPE e	ESTIMATED COST (\$000) f	SCOPE g	ESTIMATED COST (\$000) h						
134-511		Aircraft Navigation and Landing Facility I				EA		1	92	1	92						
211-15A		Weapons System Components Plating Shop I				SF		65,000	2,480	65,000	2,480						
811-14A		Advanced Logistics System Utility Support I				LS		LS	599	LS	599						
		TOTAL							3,171		3,171						

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McCLELLAN AIR FORCE BASE

The third base in the Air Force Logistics Command program is McClellan Air Force Base, located 7 miles northeast of Sacramento, Calif. The primary mission of this base is to support the Sacramento Air Materiel Area Headquarters. It also supports an Aerospace Defense Command Airborne Early Warning Control Wing; a Military Airlift Command Weather Reconnaissance Wing; and a Reserve Tactical Airlift Group. The total program requested at this location amounts to \$3,171,000 and consists of the following three projects.

The first project will construct a single facility for two radio aids to air navigation. Existing TACAN must be relocated due to high radio frequency interference and there are no existing VOR facilities.

The second project provides for the construction of a new 65,000 SF weapons system components plating and metal processing shop. Existing plating shop is too small and does not have an effective exhaust system to remove toxic fumes.

The last item will provide alternate electric power supply, air-conditioning, and associated utilities to support operation of an advanced logistics system computer equipment.

AFLC—McCLELLAN AFB, CALIF.—DESIGN INFORMATION (DESIGN COST ESTIMATED)

Project	Design cost	Percent complete, July 31, 1973
Aircraft navigation and landing facility.....	\$1,650	100
Weapons system components plating shop.....	138,100	65
Advanced logistics system utility support.....	29,300	25

Mr. SIKES. The request for \$3,171,000.

Are all of the items listed here part of the depot plant modernization program?

General REILLY. No, Mr. Chairman; just the plating shop.

LONG-RANGE DEPOT PROGRAM AT McCLELLAN

Mr. SIKES. What additional items are you planning in the outyears here?

[The information follows:]

OUTYEAR CONSTRUCTION AT McCLELLAN

DPMP facilities planned for McClellan AFB in the outyears are shown below:

	<i>Thousands</i>
Logistical material processing facility.....	\$8,643
Depot aircraft overhaul facility 2d increment.....	5,277
Depot maintenance hanger.....	1,468
Logistical material storage facility.....	3,099
Convert to communication and electrical shop.....	612
Depot reclamation shop.....	398
Depot electrical system overhaul and test shop.....	1,703
Jet fuel storage.....	1,200
Fuel storage.....	770
Total	23,165

Mr. SIKES. Which of the projects will be required because of the establishment of TRC's at McClellan?

Colonel MORROW. None of the projects will be required because of the TRC workload moving into McClellan. If we were not to obtain the projects we have in the current year program we would have to put them into a separate status facility we presently have there.

TECHNICAL REPAIR CENTERS AT M'CLELLAN

Mr. SIKES. What TRC's are you planning to establish here, and why is this the best location for them? Have you conducted an economic analysis of assigning them here versus elsewhere?

Colonel MORROW. In addition to heavy airframes, McClellan will also be the technology repair center for ground communications-electronics-meteorological equipment, electrical components, fluid drive accessories (hydraulics), and flight instruments.

Economics, both long and short term, is an important consideration in all workload assignments. In this particular case McClellan was assigned additional workload of type now performed to more fully utilize existing resources; that is, facilities, equipment, and skills. Economic analyses were not conducted for each individual TRC assignment; rather, economic benefits were determined for the total concept. TRC implementation will amortize in 2 years and save approximately \$13 million per year thereafter.

Mr. SIKES. Do you have the one-time costs and the savings of establishing all of these TRC's at McClellan?

Colonel MORROW. Sir, it is difficult to single out a single depot for cost savings but may I put it in perspective? It will cost us \$26 million, total cost, for implementing TRC's throughout the Logistics Command. We have less than a pro rata share of this for McClellan. There would be about \$5 million for the cost at McClellan.

At the same time, we will avoid the need for \$7.4 million in construction at McClellan as a consequence of moving into the TRC concept.

SURVEYS AND INVESTIGATIONS STAFF REPORT ON M'CLELLAN

Mr. SIKES. The committee's surveys and investigations staff has completed a report on the military construction program at McClellan. This will be inserted in the record at this time.

[The information follows:]

MAY 25, 1973.

Memorandum for the chairman :

Re Depot repair facilities proposed for McClellan Air Force Base, Sacramento, Calif.

By directive dated February 22, 1973, the committee requested that an inquiry be made into the requirement for depot repair facilities proposed for McClellan Air Force Base, Calif.

The review has been completed and the results are included in this report.

Respectfully submitted,

L. R. KIRKPATRICK,
*Director, Surveys and Investigations Staff,
 House Appropriations Committee.*
 C. R. ANDERSON,
*Chief of the Surveys and Investigations Staff,
 House Appropriations Committee.*

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I. DIRECTIVE

By directive dated February 22, 1973, the committee requested that an inquiry be made into the requirement for the depot repair facilities proposed for McClellan Air Force Base, Calif. This review was to include, but not be limited to, a complete analysis of the workload projections for depot repair at McClellan; an analysis of the adequacy of the Air Force techniques for projecting workload, the adequacy or deficiency in depot facilities to meet this workload; and the exhaustiveness of the alternatives considered in allocating depot workload. Also, the review was to include verification of estimates of savings for one or more of the depot facilities proposed for McClellan.

A. INVESTIGATIVE STAFF'S COMMENTS

On April 17, 1973, the Secretary of Defense announced the consolidation, reduction, realignment, and closing of certain military installations. With regard to the Air Force, it was noted that the Air Force Logistics Command (AFLC) would implement a new concept of depot repair of aircraft and, as a result, the missions, types of work, and workloads of its five air materiel areas (AMA's) would be realigned. Under this concept, the repair of aeronautical components and subsystems that require similar skills, facilities, and test equipment would be consolidated into specialized entities within the five AMA's, to be known as technology repair centers (TRC's).

Beginning June 4, 1973, AFLC and AMA officials plan to hold a series of meetings, and visit each of the five AMA's, to develop detailed information as to how the realignment would be implemented. Final review and approval by Headquarters, AFLC, is scheduled for July 31, 1973. To be resolved, among other things, are (1) the number of employees who would accept transfers, (2) the number of employees who would have to be hired and trained, (3) what equipment would be moved between AMA's, (4) how the workloads would be phased out of the losing AMA's, and (5) how the workloads would be phased into the gaining AMA's. Involved in the consolidation is 6.5 million of the total of 15 million direct man-hours of repair performed annually on components and subsystems. Of the 6.5 million man-hours, the Sacramento Air Materiel Area (SM-AMA), located at McClellan Air Force Base (AFB), would gain 885,000 direct man-hours of work and 369 additional authorized manpower spaces. When approved by AFLC, full implementation is programmed for the end of fiscal year 1976 at an estimated cost of over \$26 million (operation and maintenance funds).

In view of the magnitude and estimated cost of the proposed realignment of workloads under the TRC plan, and the lack of specific information as to the total impact on each of the losing/gaining AMA's, the investigative staff is of the opinion, and OSD officials agree, that no meaningful review or evaluation can be made at this time of the military construction projects proposed for McClellan AFB in support of the Directorate of Maintenance. Therefore, it is recommended that the funding of these projects be deferred until the Air Force has (1) developed final plans for the realignment of the workloads of the five AMA's, (2) reassessed and revalidated the need for and the scope of the projects, and (3) afforded the Office of the Secretary of Defense (OSD) an opportunity to again review and approve the projects taking into consideration the proposed implementation of the TRC plan. Also, although the investigative staff did not review in detail the projects proposed for the other four AMA's (Odgen-OOAMA; Oklahoma City-OCAMA; San Antonio-SAAMA; and Warner Robins-WRAMA), it is suggested that those projects included in the Air Force fiscal year 1974 program, which are in support of maintenance, be deferred for the same reasons. In support of this recommendation, Air Force officials acknowledged that, because of the proposed implementation of the TRC plan, changes have been made in the fiscal year 1974 military construction program for the five AMA's, some as late as April 1973. Further, as more details become available regarding the implementation of the plan, it will be necessary to review all the projects proposed for the out-years and some of them may have to be revised or canceled.

There follows a discussion of the AFLC's depot plant modernization program, which was initiated in 1970, its relationship to the AFLC military construction programs for its five AMA's, and its relationship to the proposed establishment of TRC's at each of the AMA's.

II. DEPOT PLANT MODERNIZATION PROGRAM/TECHNOLOGY REPAIR CENTERS

A. DEPOT PLANT MODERNIZATION PROGRAM

In 1969 and 1970 the AFLC hired a management consultant firm, at a cost of \$816,544, to develop a 5-year depot plant modernization program to upgrade the maintenance and distribution facilities, and related equipment, of its five AMA's. The program was based on the latest available information regarding long-range planning, programing, and fiscal guidance and was estimated to cost \$464 million (\$280 million to modernize facilities and \$184 million to modernize equipment). During the fiscal year 1972 hearing before the Subcommittee on Military Construction, Committee on Appropriations, House of Representatives, the commander of the AFLC submitted a statement which explained in detail the policies and rationale of the program.

Based on the objectives of the depot plant modernization program, which is updated annually, the AFLC validated all the military construction projects included in its fiscal year 1972, 1973, and 1974 military construction programs which were submitted to Headquarters, Air Force, in July prior to the fiscal year involved. And, further, these projects had to be proposed and approved by officials of the AMA's months prior to being approved by Headquarters, AFLC. The point being made is that the projects included in the Air Force fiscal year 1974 military construction program submitted to the Committee on Appropriations, House of Representatives, were approved by Headquarters, AFLC, by July 1972 and were validated, at that time, based on AFLC's depot plant modernization program, and the missions, types of work, and projected total workloads of its five AMA's.

All the good words about the depot plant modernization program notwithstanding, the AFLC has proposed a grandiose plan whereby the missions, types of work, and projected workloads of the directorates of maintenance at its five AMA's would be changed drastically by the establishment of TRC's.

B. TECHNOLOGY REPAIR CENTERS

1. Background

The investigative staff made no detailed analysis of the AFLC proposed plan to establish TRC's at its five AMA's except as it affected the AFLC military construction program and, particularly, the projects proposed for McClellan AFB. Set forth below, however, is some pertinent information regarding the formulation of the TRC plan and how it would be implemented and funded. As an aside, Air Force officials take the position that they have the endorsement of the OSD to initiate the plan; however, they consider its implementation to be an operational

matter which does not require the approval of the OSD. OSD officials, on the other hand, are of the opinion that, although the TRC concept appears to be valid, before AFLC begins the implementation, or obligates any funds, there should be a complete reassessment of the requirement, capabilities, and capacities for performing aeronautical overhaul and repair work on a DOD-wide basis. They pointed out that all the military departments have established a mechanized depot maintenance programing system and, although as yet, all the desired information has not been stored in the data banks, the systems have been developed to the point that meaningful information can be extracted to make such a review.

According to Air Force officials, the idea of establishing TRC's, or the grouping of homogeneous workloads at one location, was developed partly as a result of the issuance of DOD Directive 4151.1, dated June 20, 1970, and entitled "Use of Contractor and Government Resources for Maintenance of Materiel." This directive stated that (a) the extent of facility capability and capacity within the military departments for depot support of mission-essential equipment will be kept to the minimum required to insure a ready and controlled source of technical competence and resources necessary to meet military contingencies, and (b) organic depot maintenance, generally, will be planned to accomplish no more than 70 percent of the gross mission-essential depot maintenance workload requirement with a facility capacity loading at a minimum of 85 percent, on a 40-hour week, one-shift basis.

On July 19, 1971, the Assistant Secretary of Defense (Installations and Logistics), after reviewing the DOD aircraft engine requirement, capabilities, and capacities study, advised the Departments that the most significant finding of this study was the existence of excess capacity in DOD for depot maintenance of aircraft engines. He was concerned that a similar condition existed with regard to the total DOD aeronautical depot maintenance workloads and instructed that there be prompt implementation by the Departments of a mechanized depot maintenance programing system which would permit routine reassessment of plans consistent with changes in the force structures.

In order to comply with the OSD instructions, the AFLC began to study methods whereby capacity could be reduced and utilization increased. In the past, the AFLC operated on a "general depot" concept wherein depot overhaul and repair work was assigned by weapon systems or Federal supply class categories and, as a result, each AMA often performed the same kind of work and had similar types of skills and equipment. It was reasoned that air frames, hydraulics, engines, and related support workloads probably could not be consolidated because of the scope and volume of the mission-essential workloads and some disproportionately high facility capital investment costs. Conversely, it appeared that aeronautical components and subsystems workloads, referred to by the Air Force as exchangeables, perhaps could be consolidated/realined because this type of repair work required similar techniques, disciplines, skills, facilities, and test equipment. Preliminary studies disclosed there were about 188 family groups of components and subsystems which fell into 18 basic technologies and, further, work associated with more than one technology often was being performed at more than one AMA.

From May through August 1972, an AFLC task force reviewed all facets of the repair work on components and subsystems and recommended that similar technologies be consolidated into specialized entities within five AMA's, and be named TRC's.

It was expected that such action would produce the following benefits:

Minimum redundancy: Currently, the AFLC has 52 repair points for the 18 technologies, or an average of almost 3 AMA repair points per technology. Under the TRC realignment, the 52 repair points would be reduced to 23.

Reduced management overhead: By reducing the number of multiple repair points engaged in the same technology, the management overhead at the AMA's would be reduced by about 1,100 manpower spaces. This total consists of net reductions of 1,273 at OCAMA and 932 at SAAMA and net increases of 27 at OOAMA, 369 at SMAMA, and 709 at WRAMA.

Reduce excess facilities: With full implementation of the TRC plan, the AFLC would reduce the capacity of its AMA's by about 2 million square feet. This drawdown would involve the elimination of maintenance operations from some 200 separate buildings which would be returned to the base engineer.

Improved plant utilization: By consolidating similar workloads into fewer repair locations and by drawing down the overall output capacity of the AMA's, utilization would increase and thereby the AFLC would come closer to complying with OSD instructions and policies.

Mission and mobilization balance: Implementation of the TRC plan would afford a better balanced workload distribution between the AMA's. Currently the AFLC has a high of 28 percent of its total workload assigned to one AMA and a low of 12 percent assigned to another depot. Under the TRC plan, these percentages would range from 23 to 17 percent.

There following two schedules which show:

(a) Where the total of 15 million direct labor man-hours is currently performed each year on the repair of aeronautical components and subsystems by technologies, and how the AFLC proposes to realine the total workload by technologies under the TRC plan.

(b) Of the total of 15 million direct labor man-hours, a summary of AMA losses/gains involving the 6.5 million man-hours of workload which would be transferred under the TRC plan. As the schedule indicates, the AFLC plans to contract out about .3 million man-hours of this workload. This workload is currently performed at McClellan AFB.

REALIGNMENT OF AFLC DIRECT LABOR MANHOURS BY TECHNOLOGIES, BY AMA, UNDER TRC CONCEPT

Technologies	Current Assignments (000s)					TRC Assignments (000s)					
	OOAMA	OCAMA	SMAMA	SAAMA	WRAMA	OOAMA	OCAMA	SMAMA	SAAMA	WRAMA	AGMC*
1. Airborne Electronics	259	295	144	789	2,190	-	-	-	-	3,677	-
2. Life Support	53	-	15	15	93	-	-	-	-	176	-
3. Propellers	-	-	-	-	151	-	-	-	-	151	-
4. Gyros	145	272	179	-	322	-	-	-	-	714	204
5. Nuclear Components	-	-	-	133	-	-	-	-	133	-	-
6. Electronic AGE	44	-	-	487	-	-	-	-	531	-	-
7. Electro - Mechanical AGE	(8)**	-	(278)**	(9)**	-	-	-	-	(295)**	-	-
8. Airmunitions	256	-	-	-	-	256	-	-	-	-	-
9. Photographics	397	2	-	-	1	400	-	-	-	-	-
10. Training Devices	125	-	1	-	-	126	-	-	-	-	-
11. Weapons	-	-	-	-	327	327	-	-	-	-	-
12. Missile Components	464	47	15	-	231	757	-	-	-	-	-
13. Landing Gear	510	1	4	148	261	924	-	-	-	-	-
14. Instruments											
Navigation Accessories	308	420	139	8	48	923	-	-	-	-	-
Electrical Mechanical	99	1	1	84	3	188	-	-	-	-	-
Pressure/Temperature/Humidity	22	7	1	61	-	91	-	-	-	-	-
Flight Control Accessories	474	138	486	-	12	-	-	1,110	-	-	-
Automatic Flight Control	61	168	132	-	168	-	529	-	-	-	-
Engine	-	211	9	-	-	-	220	-	-	-	-
15. Electrical Components	151	6	194	484	8	-	-	843	-	-	-
16. Ground CEM	-	-	1,374	20	-	-	-	1,394	-	-	-
17. Oxygen	-	156	-	-	-	-	156	-	-	-	-
18. Hydraulics											
Constant Speed Drives	-	170	-	-	-	-	170	-	-	-	-
Pneumatics	-	264	-	-	-	-	264	-	-	-	-
Ram Air Turbine	5	-	-	-	-	5	-	-	-	-	-
Fluid Driven Hydraulics	262	210	198	37	1	-	-	708	-	-	-
Total	<u>3,635</u>	<u>2,368</u>	<u>2,892</u>	<u>2,266</u>	<u>3,816</u>	<u>3,997</u>	<u>1,339</u>	<u>4,055</u>	<u>664</u>	<u>4,718</u>	<u>204</u>

*Newark Air Force Station,
Newark, Ohio

**To be contracted out

TRANSFER OF DIRECT LABOR MAN-HOURS BETWEEN AIR MATERIEL AREAS

[In thousands]

From—	To—								Total
	OOAMA	OCAMA	SMAMA	SAAMA	WRAMA	Newark	Contract		
Ogden (OOAMA).....		61	887	44	457	0	8		1,457
Oklahoma City (OCAMA).....	478		354	0	363	204	0		1,399
Sacramento (SMAMA).....	161	141		0	338	0	278		918
San Antonio (SAAMA).....	301	0	541		804	0	9		1,655
Warner Robins (WRAMA).....	871	168	21	0		0	0		1,060
Total.....	1,811	370	1,803	44	1,962	204	295		6,489

NET CHANGE—DIRECT LABOR MAN-HOURS

	Increase	Decrease
Ogden.....	354,000	
Oklahoma City.....		1,029,000
Sacramento.....	885,000	
San Antonio.....		1,611,000
Warner Robins.....	902,000	
Newark/Contract.....	499,000	

After the proposed establishment of TRC's was approved by the AFLC, officials at headquarters, Air Force, and the OSD, were briefed on the proposed plan in December 1972 and January 1973, respectively. Later, because the implementation of the plan involved the transfer of more than 50 personnel employed at military installations, it became a part of the OSD base closure program which was not announced until April 17, 1973. In addition to the secrecy which surrounded this announcement, AFLC officials acknowledged that the proposed establishment of TRC's had been "tightly held" within the command headquarters and that, as of April 17, 1973, few AMA officials, and no officials of other Air Force commands, knew what was planned or what impact it would have on their operations.

After the AFLC decided to retain its five AMA's, and after the AFLC had approved the recommendations of the AFLC task force that TRC's be established within the five AMA's, it created an ad hoc group to review alternative posturing of its AMA's. This group, using as a starting point the current structure of the AMA's (general depot), considered the following alternatives: (a) restructuring from five to four general depots, (b) restructuring from five general depots to four depots with TRC's, and (c) restructuring from five general depots to five depots with TRC's. It probably did not startle anyone when the group submitted its report which strongly recommended that the AMA's be restructured from five general depots to five depots with TRC's. The investigative staff examined the report submitted by this group, and discussed its findings with OSD officials, and it was agreed that the findings are meaningless because:

(a) The official comment of the AFLC on the report and recommendations of this ad hoc group was: "The Study has not been coordinated or staffed within headquarters, AFLC; headquarters, Air Force, has not been provided access to the study results; and as such, the study must be viewed as only the working papers of the ad hoc group. Further, with the passage of time, a large portion of the findings of this group has been overtaken by events."

(b) The AFLC mechanized depot maintenance programing system was not used by this ad hoc group, instead, data requested from the command by this group was prepared manually.

The recommendations made by this ad hoc group, as was true with the AFLC task force which initiated the TRC concept, were known to few headquarters, AFLC, or AMA personnel, and no officials of other Air Force commands. In fact, when the investigative staff was informed of the findings of this group in April 1973, the briefing was classified "Secret." It has subsequently been declassified.

Since the AFLC and its AMA's are strictly service/support organizations, it is difficult to understand how AFLC officials believed a practical and workable TRC plan could be developed without consulting its customers, that is, the other operating (using) Air Force commands. As it was aptly put by an Air Force official, there has been no serious objection to the recommendations made by the

task force and the ad hoc group because, as of April 1973, responsible officials who might object did not know the details of the proposed implementation of the TRC plan, or precisely what impact it would have on their operations.

2. Proposed implementation

After the announcement by the OSD on April 17, 1973, regarding the consolidation, realignment, and closing of certain military installations, the AFLC began to develop a series of plans as to how the TRC concept would be implemented. The schedule was as follows:

MILESTONES FOR APPROVAL OF PLAN TO IMPLEMENT TECHNOLOGY REPAIR CENTER CONCEPT

	Begin	End
Headquarters, AFLC, distribute TRC guidance.....	Apr. 19.....	Apr. 20.
AMAs establish implementation group.....	Apr. 19.....	Apr. 27.
Gaining AMAs preparation of draft plans.....	Apr. 30.....	June 1.
Joint gaining/losing AMA meetings at losing AMA.....	June 4.....	July 6.
Gaining AMA final plan for consolidation of work.....	July 9.....	July 20.
Joint Headquarters, AFLC/AMA plan review.....	July 23.....	July 27.
Headquarters, AFLC, approval of detailed plans.....	July 31.....	

According to AFLC officials, the following preliminary actions would be required:

- (a) Individual plans prepared for each TRC.
- (b) Task groups established at headquarters, AFLC, and at each of the losing/gaining AMA's.
- (c) Item managers/system managers begin identifying, by Federal stock number all components and subsystems impacted by the TRC plan.
- (d) The item managers/system managers then negotiate with the losing AMA to assure proper assets are placed in the pipeline.
- (e) Update the depot plant modernization program to show the impacts of the proposed changes on military construction projects.
- (f) Prepare schedules for the phased transfer of workloads to begin by January 1, 1974, and completed by the end of fiscal year 1976.

Cost

According to Air Force officials, the implementation of the TRC plan would cost over \$26 million by the end of fiscal year 1976. They plan to pay from the operation and maintenance appropriations such expenses as severance pay, second destination transportation of equipment, and relocation of personnel. The Depot Maintenance Industrial Fund at the gaining AMA's will budget to absorb all other expenses such as training, plus dismantling and installation of equipment. As of April 1973, the estimated cost items were as follows:

<i>Estimated costs for implementation</i>	<i>Millions</i>
Equipment relocation: Dismantle shop equipment, shipping, installation, and repair/calibration/certification.....	\$4.4
Manpower productivity loss: Loss of productivity at the losing AMA's attributed to low morale, production disruptions, lack of assets, decreased materiel support, equipment moves, and facility alterations. Loss of productivity at the gaining AMA's because of facility alteration, equipment installation, production buildup, lack of assets, and learning curve for new personnel.....	9.3
Training: Hiring and training new personnel.....	4.5
Transfer of personnel and severance pay.....	7.8
Total one-time cost.....	26.0

There are other costs which have not been resolved at this time, such as procurement of new equipment, modifications of existing buildings, and disruptions in the pipeline of assets and materials. The latter, according to an OSD official, could be substantial. Also, the investigative staff determined that the estimates do not include costs which may be incurred in connection with Sec. 1013 of the homeowners assistance program (Public Law 89-754). This section, as amended, permits benefits to eligible DOD military and civilian personnel if their property has decreased in value because of an announced base closure or personnel reduc-

tions, and they could not sell their property at the before-announcement fair market value.

Upon completion of the implementation of the TRC plan, AFLC officials believe there would be a reduction of about 1,100 manpower authorizations which would result in a recurring annual savings of \$13.2 million. They acknowledged, however, that all these calculations are based on gross workload figures, and on the assumption that the total workload for the five AMA's will remain constant in the out-years.

During discussions with OSD officials, the following additional comments were made regarding the proposed TRC plan:

(a) The Air Force is promising various benefits from the implementation of the plan, including increased utilization of the remaining maintenance facilities and the reduction of about 1,100 manpower spaces, even though these benefits may not be directly related to the proposed realignment of the workloads. The projected reduction in manpower spaces primarily involves indirect labor personnel, however, realignment of the workloads according to technologies should result in efficiencies and productivity increases with resultant savings in direct labor personnel. They suspect that increased utilization and many of the reductions in manpower spaces might be due to compacting operations into less space—as evidenced by the net reduction of about 1.9 million square feet of space which purportedly would occur by implementation of the TRC plan. As a minimum, the Air Force should take the following actions prior to implementation of the plan:

(1) Determine how much the AMA's can draw down (compress) their capacity (square feet) by realignment of their present workloads into less space/buildings.

(2) Determine how many manpower authorizations would be eliminated as a result of this draw down.

(3) Then take a look at implementation of the TRC plan and compare the estimated number of manpower spaces which would be saved by accomplishing the above to the reductions projected by implementing the TRC plan. If most of the savings turn out to be indirect labor attributable to compacting operations, rather than realignment of the workloads, then the cost of implementing the TRC plan probably would not be justified.

(b) Within the DOD, millions of dollars are being spent to disperse the locations of weapon systems for national defense purposes (e.g., SAC satellite basing program) whereas, under the TRC plan, the repair capabilities for components and subsystems for many of the aeronautical weapon systems would be concentrated at single locations.

(c) Even if the TRC concept is valid, realignment of AFLC workload under this concept does not, in itself, justify retention of the five AMA overhaul and repair complexes with their current capacities. The OSD is attempting to achieve better utilization of all DOD resources for maintenance of materiel, and to reduce the amount of duplication of these resources within the military departments. With regard to maintenance of aircraft weapon systems, this will not be accomplished until all the DOD workloads are programed against the total resources of the DOD, or until the OSD establishes single DOD agencies/managers responsible for overhaul and repair of distinct areas of aircrafts, for example, engines, frames, or hydraulic systems.

III. IMPACT OF TECHNOLOGY REPAIR CENTER PLAN ON MILITARY CONSTRUCTION PROJECTS PROPOSED FOR THE FIVE AIR MATERIEL AREAS

As an introduction, the investigative staff would like to point out that considerable difficulty was experienced in attempting to review and evaluate the military construction projects proposed for the AFLC's five AMA's because, due to varying instructions issued by AFLC personnel working in the control tower, it was not always clear whether a project's flight pattern was inbound, outbound, or in a hold pattern.

A. MCCLELLAN AIR FORCE BASE

As a result of the proposed implementation of the TRC plan, the investigative staff found there would be, in varying degrees, a need for the AFLC to alter, revise, or cancel the military construction projects proposed for the McClellan AFB which were in support of the directorate of maintenance. To begin with, all such projects were proposed and validated in accordance with the objectives of the AFLC depot plant modernization program which, as of now, has little relationship with the objectives of the TRC plan. Also, the projects were approved before Air Force headquarters or the OSD had any detailed information as to the magnitude and estimated cost of the TRC plan, and before the proposed changes in the missions, types of work, and workloads of the five AMA's.

There follows the results of a review made by the investigative staff of the maintenance projects proposed for McClellan AFB which demonstrate the confusion which abounds within the AFLC as to the validity of the projects.

The AFLC proposed fiscal year 1974 military construction program, as submitted to Headquarters, Air Force, in July 1972, contained five projects in support of the directorate of maintenance. In November 1972, another project, which was not funded in fiscal year 1973, was added to the program, that is, Alter Aircraft Armanent and Avionics Shop (\$1.225 million).

The following chart identifies the six maintenance projects and traces their inclusion/deletion from the Air Force fiscal year 1974 military construction program from the time of their submission from SMAMA to Headquarters, AFLC; from Headquarters, AFLC, to Headquarters, Air Force; from Headquarters, Air Force, to the OSD; and from Headquarters, Air Force, to the Congress. Of the six projects, only the Weapons Systems Components Plating Shop (\$2.480 million) project was included in the program submitted to the Congress.

PROJECTS PROPOSED FOR McCLELLAN AFB FOR INCLUSION IN FISCAL YEAR 1974 MILITARY CONSTRUCTION PROGRAM

Project title	Scope (square feet)	Amount (thousands)	Base to command May 1972	Command to HQ USAF July 1972	HQ USAF to OSD Oct 1, 1972	OSD to HQ USAF October-- November 1972	HQ USAF to OSD November-- December 1972	OSD to HQ USAF December 1972	HQ USAF to OSD November 1972	OSD to OMB December 1972	President's Budget January 1973	Revised President's Budget April 1973	To Congress May 3, 1973
Weapons system components plating shop	65,000	\$2,480	X	X	X	X	X	X	X	X	X	X	X
Add to depot aircraft overhaul facility	184,000	5,277	X	X	X	O	X	O	X	X	X	X	X
Alter aircraft armament and avionics shop	33,574	1,224							X	X	X	O	
Aircraft weapons calibration shelter	52,000	2,592	X	X	O								
Convert to communications and electronics shop	19,200	612	X	X	O								
Depot electronics overhaul and test shop	35,200	1,703	X	X	O								

Note: X—Point in program where project was approved. O—Point in program where project was deleted.

Discussed below are the six projects shown on the foregoing chart and what effect the TRC plan has on their current validity:

1. *Weapons System Components Plating Shop*—\$2,480,000.

This is the only project included in the Air Force fiscal year 1974 military construction program submitted to the Congress and it will be dealt with later in this report.

2. *Add to Depot Aircraft Overhaul Facility*—\$5,277,000.

This project is the second increment of a general purpose Depot Aircraft Overhaul Facility which was included in the Air Force fiscal year 1973 military construction program. Funds in the amount of \$3,991 million were approved for the first increment (\$7.798 million requested) with the added requirement that the entire project be restudied and revalidated. The OSD, even after a reclamation by the Air Force, disapproved the second increment for inclusion in the fiscal year 1974 program because the first increment had not been fully funded and the reprogramming action had not been approved by the Congress.

In addition, the investigative staff learned that the entire project has to be revised because, under the proposed TRC work load realignment, the functions performed by several shops which had been scheduled for relocation into this proposed building would be moved to other AMAs. For example, of the seven shops totaling 80,000 square feet which had been programmed for one bay of this building, three shops (hydrostatics, rafts and rubber, and parachutes) with a total of 35,000 square feet would be transferred out of SMAMA.

3. *Alter Aircraft Armament and Avionics Shop*—\$1,224,000.

This project, which involves an alteration to existing maintenance space, was included in the Air Force fiscal year 1973 military construction program submitted to the Congress but it was not funded. The same project was included in the Air Force fiscal year 1974 program as a "late starter" but was deleted in April 1973 at the request of AFLC officials. The investigative staff learned that SMAMA officials, after preliminary details of the proposed TRC realignment of workloads was made available to them, found that avionics work was being moved out of the SMAMA and, therefore, this project could no longer be justified. These SMAMA officials advised that when this was brought to the attention of Air Force Headquarters there was considerable "heart burn" because, by this time, the Air Force program was ready for submission to the Congress.

4. *Aircraft Weapons Calibration Shelter*—\$2,592,000.

This project involves a facility for operational checkout of the hydraulic and electronic systems of late model fighter aircraft. Under the AFLC depot plant modernization program, there was a requirement to consolidate these operational functions but it was deleted from the Air Force fiscal year 1974 program for budgetary reasons. Nevertheless, until April 1973, SMAMA and AFLC officials considered it a valid project and intended to include it in the fiscal year 1975 submittal to Headquarters, Air Force. These officials, after learning the details of the TRC realignment of workloads, no longer consider this a valid project because it is directly related to the armaments and avionics shop project which, as mentioned above, was deleted from the fiscal year 1974 program.

5. *Convert to Communications and Electronics Shop*—\$612,000.

This project would convert a general purpose shop area to an environmentally controlled depot electronic component repair area to include sensitive test equipment and mockups required for repair of electronic ground communications systems and navigational aids. AFLC officials advised this continues to be a valid project, the only question being that, since this type of work would be consolidated into SMAMA, it will have to be reevaluated to determine if the scope is adequate to handle the increased workload.

6. *Depot Electronics Overhaul and Test Shop*—\$1,703,000.

This project would provide a facility for testing, aligning, and certifying mobile and fixed ground radar systems. The AFLC considers this to be a valid project but it will have to be reexamined to determine whether the scope is sufficient to handle the realignment of workloads being moved into SMAMA.

In addition to the two projects mentioned above, which were deleted from the fiscal year 1974 program because of the realignment of workloads at SMAMA, AFLC officials advised that two additional projects were deleted in April 1973 from the fiscal year 1975 program because they can no longer be justified under the TRC plan. These were projects for (1) "Ground Equipment Vehicle Parking" (\$268,000) for the repair of aerospace ground equipment and (2) alteration of "Organizational Aircraft Maintenance Shop" (\$434,000).

B. OTHER FOUR AIR MATERIAL AREAS

After reviewing the military construction projects proposed for the McClellan AFB, the Investigative Staff asked AFLC officials to review the depot plant modernization programs for the other four AMA's (OOAMA, OCAMA, SAAMA, and WRAMA) and to determine if the proposed TRC plan would affect any proposed projects for these installations. Shown on the following schedule are the projects which were included in the fiscal years 1974, 1975, and 1976 military construction programs as of April 1973 that will have to be deleted, or substantially reduced in scope, because of the change in missions, types of work, and total workloads under the TRC plan:

MILITARY CONSTRUCTION PROJECTS DELETED OR REVISED, FISCAL YEAR 1974-76 PROGRAMS

(Dollar amounts in thousands)

Base and project title	Fiscal year	Original cost	Reposture costs	Difference
Hill AFB (OOAMA):				
Instrument shop.....	1974	\$776	0	-\$776
Maintenance hangar.....	1975	4,443	\$3,821	-622
Material control lab.....	1976	248	0	-248
Production support.....	1976	505	0	-505
Tinker AFB (OCAMA):				
Add to/alter engine test and storage.....	1975	413	95	-318
Add to/alter avionics shop.....	1975	906	0	-906
Turbine shop.....	1976	410	0	-410
Industrial labs facility.....	1976	5,000	3,000	-2,000
Kelly AFB (SAAMA):				
Aircraft general purpose shop.....	1975	1,864	0	-1,864
Aerospace ground equipment shop.....	1975	208	0	-208
Aircraft maintenance organizational shop.....	1976	1,496	0	-1,496
Robbins AFB (WRAMA): No projects affected.....				

Although the investigative staff did not visit the other four AMA's, questions were raised as to the requirement for and the scope of some of the projects which the Air Force is retaining in its fiscal year 1974 military construction program submitted to the Congress. For example, \$6,961 million was requested to construct a 280,213 square foot "Depot Aircraft and Engine Accessories Overhaul Shop" at Hill AFB (OOAMA). After the TRC study was completed and it was known that OOAMA would perform most of the landing gear repair workload, the title of the project was changed to Depot Aircraft Landing Gear Overhaul Facility," and the amount was revised to \$6.858 million. The investigative staff, however, could find no evidence that the Air Force had considered whether the design of the facility, including its size, would be adequate to accommodate the increased landing gear repair workload.

IV. PROJECTS FOR WHICH AIR FORCE IS CURRENTLY REQUESTING FUNDS FOR McCLELLAN AIR FORCE BASE

A. DEPOT AIRCRAFT OVERHAUL FACILITY

The Air Force plans to request a total of \$13.075 million for a "Depot Aircraft Overhaul Facility" which would have five bays and a total of 460,000 square feet. Included in the Air Force fiscal year 1973 military construction program was a request for \$7.798 million to construct the first increment (three bays, 276,000 square feet). The Committee on Appropriations, House of Representatives, approved the funding of \$3.991 million with the stipulation that the Air Force, after revalidating the need for the project, could request reprogramming of the balance of \$3.807 million from other obligational authority available to the Department.

On March 21, 1973, the Air Force concluded there was a valid requirement for the project and requested permission from OSD to ask Congress to approve the reprogramming action. On April 4, 1973, OSD deferred action on the reprogramming request until the investigative staff completed its review of the military construction projects proposed for McClellan AFB. According to an OSD official, there was an even more compelling reason not to approve the reprogramming request; namely, that he was aware the AFLC planned to implement a TRC plan which

would realine the missions, types of work, and workloads performed by the AMA's, but he knew little regarding the details. In his opinion, with which the investigative staff agrees, no approval action should be taken until the Air Force has (1) reexamined this project and its supporting economic analysis and (2) can assure the OSD it is a valid project taking into consideration both its depot plant modernization program and the impact (of the implementation) of the TRC plan on this installation. AFLC and SMAMA officials acknowledged that the scope of certain shops programed for relocation in the first increment would have to be revised based on what they now know of the implementation of the TRC's. As previously mentioned in this report, OSD disapproved including the project for the second increment (\$5.277 million, two bays, 184,000 square feet) in the fiscal year 1974 program because the first increment had not been fully funded.

On May 3, 1973, the Air Force again submitted the request for reprogramming action to OSD but, according to OSD officials, it probably will not be approved until OSD can further study the impact of the proposed TRC plan and can make an overall review of the requirement for aircraft overhaul and repair facilities on a DOD-wide basis.

The present aircraft component maintenance shops, consisting of approximately 34 operations, are located at 21 buildings scattered throughout the base—some as far as 3 miles from the main disassembly and overhaul shops—and similar maintenance operations are currently being conducted in several of these buildings. According to SMAMA officials, the wide dispersal of the operations necessitates the duplication of equipment, materials, and manpower, as well as excessive transportation and extended flow times (large pipeline inventories), making it difficult to meet aircraft repair schedules. These officials also claim that the current state-of-the-art repair techniques and mechanized material handling systems cannot be used due to limitations of the existing facilities. They further stated that the concentration of all operations in the proposed facility would permit the incorporation of a mechanized material handling system which would reduce flow time and eliminate the transportation system that is presently necessary because of dispersed shop locations.

The first three bays would contain such shops as a machine shop, shops for sheet metal manufacturing and sheet metal repair, a welding shop, and a foundry. The shops located in these three bays would replace existing shops occupying 317,650 square feet in 14 buildings, of which 257,796 square feet would be turned over to the base engineering office.

According to AFLC officials, the request for \$7.798 million for the depot aircraft overhaul facility was justified because the maintenance workload at SMAMA would be increasing the AFLC needed to have a wartime maintenance workload surge capability, and the revised economic analysis indicated that the project was still an attractive investment. The revised economic analysis, which generally conformed with the recommendations made by the investigative staff in its report submitted on April 20, 1972, showed that the net investment for the first increment of the project, adjusted to present value, was about \$5.8 million as shown below:

Primary construction cost.....	\$6, 120, 507
Supporting facility cost.....	¹ 344, 035
Initial outfitting equipment.....	1, 648, 824
Design cost.....	628, 716
Other cost.....	259, 370
Subtotal	9, 001, 452
Less—value of existing buildings to be released for other use.....	3, 245, 304
Net investment	5, 756, 148

¹ These two amounts comprise the requested \$7.798 million in military construction funds, adjusted to present value.

The economic analysis indicated that there would be one-time cost savings, adjusted to present value, of about \$0.6 million and recurring annual cost savings of about \$2.3 million which, adjusted to present value, would amount to about \$17 million over the 25-year economic life of the project. The total discounted cost savings were \$17,699,973, making a savings-investment ratio of 3.07.

The one-time cost savings included such items as inventory reductions, value of production and transportation equipment which could be released for other use and avoidance of replacement purchases of this equipment.

The annual recurring cost savings of \$2,277,645 included about \$2.1 million for increased productivity. Cost savings were also projected for avoidance of some of the costs presently incurred for preventive maintenance of equipment, maintenance and repair of buildings, and transportation.

The investigative staff was told by SMAMA officials that the net investment cost and projected cost savings shown in the economic analysis could be affected by the realignment of maintenance workloads under the TRC concept. These officials stated they could not, at this time, determine whether the workload realignment would significantly affect the savings-investment ratio. They were confident, however, that the ratio would remain in excess of 1.0 and that the project would still be an attractive investment.

B. WEAPONS SYSTEM COMPONENTS PLATING SHOP

The Air Force fiscal year 1974 military construction program includes a request for \$2.48 million to construct a 60,000 square-foot weapon system components plating shop. This is another military construction project which was approved by the AFLC based on its depot plant modernization program for McClellan AFB. Further, in addition to not knowing the full impact of the implementation of the TRC plan on this project, the most disturbing and confusing factor is that AFLC officials, as of April 1973, were not certain were the building would be erected, if funded.

In order to consolidate the overhaul and repair functions at this installation, AFLC officials approved four military construction projects which would be erected in a straight line and all four projects would be serviced by an elaborate and expensive mechanized material handling system. The complex would consist of: a hydraulics shop (\$874,000), which was funded in fiscal year 1970, would be building No. 1; building No. 2 would be the first increment of the depot aircraft overhaul facility (\$7.798 million) for which the Air Force is currently seeking approval of a reprogramming action to obtain full funding; building No. 3 would be the second increment of the depot aircraft overhaul facility (\$5.227 million) which was deleted from the fiscal year 1974 program by OSD because the first increment was not fully funded; and building No. 4 would be the proposed plating shop.

Given this set of facts, the investigative staff queried AFLC officials regarding the logic of requesting funds to build a new plating shop when neither of the two increments of the depot aircraft overhaul facility has been approved and fully funded. Without the depot aircraft overhaul facility to house functions related to the plating shop, the professed problem of inefficiency in the production line for overhaul and repair would not be solved. The AFLC officials conceded that without the depot aircraft overhaul facility they would have to relocate the site for the proposed plating shop, probably at a location near the existing plating facility, which is 2 miles away.

The purpose of a plating shop is to increase the usable life of aircraft components by increasing their strength, hardness, wearing surface, and to provide protection from corrosive elements. The existing plating shop was constructed in 1952 and has an area of 49,580 square feet. The proposed plating shop was requested because the existing plating shop was considered too small and because it has an antiquated exhaust system which cannot effectively remove toxic fumes. The AFLC officials claim that the size of the present facility and the exhaust system interfere with the use of the latest plating techniques, create health hazards, and result in high equipment maintenance costs.

As previously indicated, a total of \$2.48 million in MCP funds was requested for this project. The economic analysis for this project showed the net investment, adjusted to present value, to be about \$3.5 million as shown below:

Primary construction cost.....	¹ \$1, 627, 327
Supporting facility cost.....	¹ 428, 593
Initial outfitting equipment.....	1, 199, 373
Design cost.....	233, 870
Other cost.....	23, 640
Net investment.....	3, 512, 803

¹ These two amounts comprise the requested \$2.48 million in military construction funds, adjusted to present value.

The economic analysis indicated that there would be a one-time cost savings, adjusted to present value, of about \$1.5 million and recurring annual cost savings of about \$285,000 which, adjusted to present value, would amount to about \$2.1 million over the 25-year economic life of the project. The total discounted cost savings were \$3,627,851, making a savings-investment ratio of 1.03.

The one-time cost savings included the value of production and material handling equipment which would be released for other use, avoidance of replacement purchases of this equipment and avoidance of overtime and additional shift labor costs which would otherwise be incurred in the renovation of the existing facility.

The annual recurring cost savings of \$284,759 includes \$69,341 for increased productivity and \$169,288 for release or reassignment of 12 indirect workers. The economic analysis indicates that 6 of these 12 workers could be released or re-assigned because relocation of the plating shop adjacent to the aircraft repair support shops would allow for the installation of a mechanized material handling system interconnecting all related shops. The estimated annual cost of the six positions, which included forklift, tug and pickup drivers, and material dispatchers, is \$84,644. Total cost savings for these six positions over the 25-year economic life of the facility, adjusted to present value, would be \$635,246.

The present value of initial outfitting equipment for the proposed plating shop includes \$208,950 for mechanized material handling equipment consisting of bridge cranes, monorails, and conveyors. The investigative staff attempted to determine whether this amount was an equitable allocation of the total cost of the entire mechanized material handling system proposed for the SMAMA maintenance directorate, since savings of almost \$84,000 in recurring annual personnel costs are dependent on this system. Officials of the SMAMA provided the investigative staff with various estimates of total procurement costs for the period fiscal years, 1971-76 and these estimates ranged from \$3 million to about \$6 million. The \$6 million estimate of about \$4.3 million to be expended for equipping the existing overhaul complex with mechanized materials handling equipment. About \$1.7 million was to be used for mechanized material handling equipment which would be procured as initial outfitting equipment for the plating shop and the first and second increments of the depot aircraft overhaul facility. The mechanized material handling equipment for the plating shop and depot aircraft overhaul facility was planned to tie into the mechanized material handling system for the existing overhaul complex.

The investigative staff found, however, that the mechanized material handling system for the existing overhaul complex is not included in the current depot plant modernization program. The investigative staff was told by SMAMA officials that the justification for this system was no longer valid in light of reduced overhaul workloads, the Vietnam situation, and depot maintenance workload reposturing under the TRC concept. The SMAMA officials said that the need for the system would be restudied and it may be put back into the depot plant modernization program at some future date. If this occurs, according to AFLC officials, an economic analysis of the overall system would be prepared. An AFLC official advised that the annual savings in material handling cost projected for the plating shop could be realized only if both increments of the proposed depot aircraft overhaul facility are funded and constructed so that the plating shop could be tied into the overall material handling system.

The investigative staff is of the opinion that the \$84,644 in annual recurring savings in material handling costs attributed by the AFLC to the plating shop building in the economic analysis is more properly attributable to the overall mechanized material handling system and should be included in an economic analysis of that system. Also, the savings may never be realized since there is no assurance at this time that the overall mechanized material handling system will ever be included in the depot plant modernization program and purchased, or that both increments of the overhaul facility will be funded and constructed. If the projected savings in material handling cost were not included in the economic analysis for the proposed plating shop, the projected savings during the 25-year economic life of the proposed facility, adjusted to present value, would be \$2,992,605, and would reduce the savings/investment ratio from 1.03 to 0.85.

AIR FORCE STUDY ON MC CLELLAN DEPOT AIRCRAFT OVERHAUL FACILITY

Mr. SIKES. In addition to that, the Air Force has recently completed and forwarded to the committee a study on the depot aircraft overhaul facility at McClellan which the committee requested last year. That will also be put in the record unless there is objection.

[The study follows:]

Study and Justification for McClellan
Depot Aircraft Overhaul Facility

The following information supports the \$7.8 million first increment (authorized in FY 73) of the Depot Aircraft Overhaul Facility (total cost \$13 million) proposed for McClellan AFB, California.

JUSTIFICATION: Aircraft support shops are presently located in fourteen buildings scattered throughout the industrial complex; some far from the aircraft repair lines. This necessitates duplication of equipment, materials and manpower, as well as excessive transportation and extended flow times, making it difficult to meet aircraft repair schedules. In addition, modern repair techniques, equipment and mechanical handling systems cannot be used due to facility limitations. Upon completion of the proposed project, reduced flow times, enhanced worker productivity, and increased reliability of work performed will increase this depot's ability to respond to forces in the field. This increased response is particularly needed to provide the capability to rapidly and effectively support mobilization if required by national emergencies. These same characteristics will also significantly reduce normal operating costs so that proposed investment costs will be rapidly amortized.

As directed by Congress, a detailed study has been accomplished which fully substantiates the need and scope of this facility.

STUDY FINDINGS:

Workload: A thorough analysis of workload requirements shows that the long term workload for McClellan AFB will remain at the 7 to 8.5 million manhour level through the foreseeable future. This determination was made as part of a larger analysis which was the basis for Air Force implementation of the Technology Repair Center concept. Programmed workloads support the need to continue depot modernization at McClellan AFB.

Capability: The experience and quality workmanship of McClellan AFB in maintaining an advanced fighter-type technical competence, engineering expertise, and industrial resource capability is important to the Air Force. In addition, the Sacramento area provides about one-third of the total Air Force depot hire capability which would be critically needed to support mobilization. In contrast with this background of personnel attributes the current facility posture is very mixed ranging from excellent to inadequate. Modernization of the inadequate portion of the physical plant is needed to obtain required economic and response capabilities.

Present Conditions of Facilities: The Aircraft Repair Lines at McClellan are located in adequate, functional hi-bay facilities that are ideally suited and utilized for the overhaul and repair of fighter type aircraft. In contrast, the supporting functions that are a vital element in the timely and efficient production in these aircraft lines are scattered throughout the base in functionally inadequate and often deteriorated facilities. These functions, some of which are duplicated in various areas, are as much as one and one-half miles from the aircraft repair lines causing excessive transportation costs and extended flow time. The scattering of functions also present span of control problems. The duplication of functions such as machine shops, welding shops, paint shops, etc., made necessary by widely scattered operations, have resulted in duplication of equipment, manpower, space, supervisory and support personnel, and material station banks. The functional inadequacy of facilities limits worker productivity and the use of

modern repair equipment and procedures.

By locating the support shops in a single building in close proximity to the aircraft repair lines, the project siting will substantially reduce the requirement for transportation equipment (i.e., pick-ups, tugs, hi-lifts), equipment operators, dispatchers, parts tracers, materials and material station banks. It will reduce component routed-flow time by as much as 60% which will increase responsiveness accordingly. In addition, it will provide for better management and control.

Required Scope for the First Increment of the Depot Aircraft Overhaul Facility: The present depot maintenance shops involved in the proposed project are now housed in fourteen widely scattered buildings with 317,650 SF. The shops in this space are to support manufacturing and repair type functions. This commonality provides an ideal situation for accomplishing these closely related functions in one facility, minimizing duplication and the routed flow of parts. The relocation of these shops into one facility results in 257,796 SF of space being returned to the Base for disposal.

The new facility requires less space than the present shops (i.e., 317,650 SF vs 276,000 SF) since it will be more efficient. Similar shops requiring related skills will be located adjacent to each other maximizing utilization of space and equipment.

Position within Modernization Program: The first increment of the Depot A/C Overhaul Facility is the keystone to continuing the modernization of the maintenance complex at McClellan AFB. Following a hydraulic shop (provided in the FY 70 MCP), this facility provides the next step in developing a totally modern physical plant for aircraft overhaul at this depot. This basic project should be approved before most follow-on modernization can be programmed at this installation.

Quantifiable Benefits: The quantifiable benefits are as follows:

a. Manpower reduction of 164 personnel at a recurring annual savings of \$2.231 million.

b. The consolidation of functions from 14 scattered inefficient facilities into one concise, efficiently laid out facility.

c. The release and disposal of 15 portable and 14 semi-permanent buildings with a net floor space of 257,796 SF (some from secondary moves).

d. The total space occupied by the Maintenance function at McClellan AFB will be reduced by approximately 100,000 SF.

e. Significant savings in flow times and travel are projected such as:

(1) A reduction in average flow time from 22 to 18½ days - based on 5082 items in the Generator Federal Supply Class (6115).

(2) A reduction in average flow time from 41 to 23 days in the Armament Shop - based on 2076 items in Pylons (FSC 1560).

(3) A reduction in average flow of one day for the F-111 aircraft from 52 to 51 days - based on 190 aircraft per year and 251 work days per year the F-111 operational fleet will be increased by .75 aircraft.

Intangible Benefits: In addition to quantifiable benefits, the project will provide intangible benefits, such as; 1) improved quality of work performed resulting in improved weapons systems in the field, 2) reduced risk to personnel and material due to safer worker areas and reduced handling, 3) better management due to a reduced span of control, 4) benefits to be obtained from secondary moves made possible by releasing space adequate for the functions to be accommodated, and 5) an improved worker atmosphere.

Economic Analysis: The study includes the recalculation of economic benefits to be derived from investment in this facility using House Appropriations Committee Investigative Staff approved methodology. Technology Repair Center workload realignments are taken into account in this recalculation. In addition to the personnel benefits enumerated above, the economic analysis identifies a one-time savings of \$548,027. The savings/investment ratio for the first increment investment of \$7,798,000 is 3.07.

Conclusion: At the direction of the Congress specific justifications, including workloads, for the Depot Aircraft Overhaul Facility have been reviewed and the results validate the need to continue modernizing the Depot Industrial Complex at McClellan AFB through the provision of this facility. The depot maintenance capability at McClellan must be modernized and upgraded to produce needed responsiveness to operational units in the field and mobilization. In addition, savings to be obtained from this project are sufficient alone to warrant the investment. In summary, the Air Force concludes that there is a valid requirement which should be funded as soon as practicable to obtain maximum benefits.

Mr. SIKES. While the Air Force recommends that we proceed with construction of the facility the surveys and investigation staff does not so recommend. Has the Air Force had an opportunity to study the staff report?

Colonel MORROW. No, sir; we have not.

Mr. SIKES. We would like to have your comments on the report when you have had an opportunity to see it. Of course, we reserve the right to have the surveys and investigations staff comment on your rebuttal.

Colonel MORROW. Yes, sir.

[The information follows:]

AIR FORCE REVIEW OF HAC STUDY ON MCCLELLAN CONSTRUCTION

The Air Force has reviewed the report entitled, "Report to the Committee on Appropriations. U.S. House of Representatives on the Depot Repair Facilities Proposed for McClellan AFB, Sacramento, Calif." We are pleased to note that the report does not impugn the justification of McClellan DPMP projects which we feel implies credit to both the DOD process of review/approval and on the investigators themselves.

The directive was very broad and general and the investigation and the report covered the directive in a like manner. Many areas pertaining to depot maintenance and facility programing were covered and consequently within the time allotted none were examined in finite detail. We believe the investigators share this opinion.

The workload programing decision which drew the greatest comment was the Air Force plan to implement the Technology Repair Center (TRC) concept, although the report stated that no detailed analysis in this concept was made. The general rationale, timing, and advantages of TRC are described. The most significant question raised by the investigators was the completeness of Air Force planning at the time of the investigation. The planning which is still in process concerns how (not what, when, and where) workloads will move during the implementation. These details include: accommodation of personnel involved; transportation arrangements; documentation of actions; and notifications. This planning will be complete in August 1973. Based on the status of planning, at the time of the investigation (May 1973), the report recommended funding be deferred until Air Force affords the Office of the Secretary of Defense (OSD) an opportunity to again review and approve the projects, taking into consideration implementation of the TRC plan. Air Force has complied with this suggestion. Since the kinds and quantities of workloads to be placed in each maintenance facility at all Air Force depots have been determined, Air Force provided the information to OSD. The information embraced data provided under TRC workloading using the automated Depot Maintenance Programing System which was used to validate the projects as early as November 1972. The need is to correct existing deficiencies which are not eliminated by the realignment of workloads under the TRC concept. As a result, OSD continues to support the validity of the depot maintenance projects submitted to the Congress.

Concerns expressed in the report regarding military construction programing procedures and project justifications, it appears, result from the staff's understandable emphasis upon the visible, formal, programing process. In this connection, most of the decisions as to project approval were based on many formal and informal detailed exchanges of information between responsible officials at different levels in AFLC, Hq USAF, OSD, and OMB. This allowed officials to apply their knowledge of firm and proposed future courses of action long before formal decisions were made. By this means five of the six projects originally proposed for McClellan were deferred. Because of this thorough and intensive review, only the most firm and justifiable projects are presented to the Congress for appropriations.

In the development of TRC, Air Force made a "detailed analysis" requiring a year and employing the best expertise available. The work includes over a thousand pages of analysis, backup information, and computer data. OSD supports the concept because it reduces excess capacity, improves facility utilization, and provides a responsive depot maintenance structure with maximum economy.

In summary, the Air Force finds no critical data in the report not previously considered which would invalidate OSD and Air Force approval of the depot maintenance projects addressed. In compliance with the recommendation of the investigative report, Air Force informally resubmitted justifying data to OSD, including the effect of the TRC concept, on the projects before the committee. OSD continues its support of maintenance projects in the depot plant modernization program. Accordingly, in light of the above, the Air Force requests funding approval for these projects.

Mr. SIKES. What is the status of the reprogramming request for the depot aircraft overhaul facility?

General REILLY. Mr. Chairman, it is in the Office of Management and Budget at the present time.

Is that correct, Mr. Lee?

Mr. LEE. Yes, sir.

Mr. SIKES. Is it needed at the scope requested last year?

Colonel MORROW. Yes, sir; it is needed at the scope requested last year. Sir, if I may elaborate somewhat, basically all five bays of this facility, programed in two increments, and the plating building are needed at McClellan to effectively support the peace to war transition. It is also essential that we maintain the technical competence and engineering expertise in fighter-type aircraft at McClellan for the same purpose.

The depot aircraft overhaul facility is the keystone to our modernizing the scattered substandard facilities that we have at McClellan. We intend to keep McClellan at a substantial level of workload, actually even above what it is at the present time. As a consequence we will need the facility in question at the scope that has been portrayed to the committee.

Mr. SIKES. Can you be certain how the establishment of the TRCs will affect your workload there?

Colonel MORROW. Yes, sir; we can. We have the details of the TRC plan sufficiently clear that we know exactly what kind of work and what quantities we are going to put into this facility. Sir, I would be glad to provide the committee a detailed listing of not only each type and quantity but also a detailed layout plan showing each piece of industrial plant equipment which will go into the new facilities.

Mr. SIKES. That will be useful. I would like to have that for the record.

[The information follows:]

TRC AFFECT ON McCLELLAN WORKLOAD

A complete listing of all equipment and detailed building layout will be made available to the subcommittee staff. The material is very voluminous.

Mr. SIKES. The investigations staff was told by the SMAMA officials that net projected cost savings shown in the economic analysis could be effected by the realignment of maintenance workloads under the TRC concept. This relates to the first increment of this depot overhaul project, so that indicates that there are workloads which will be changing in this facility as a result of the TRC concept.

It would also indicate that you perhaps should revise the economic analysis if you haven't already done so to reflect the changed workloads and changing savings as a result of the changed workload.

Have you done this and will you provide it for the committee?

Colonel MORROW. Essentially it has been done. There are some final details that are still being prepared at the present time to make it in presentable fashion. The savings/investment ratio of about 3.07-to-1 we anticipate will remain fairly well intact.

Mr. SIKES. You have examined the workloads for this first increment of facilities so that you know it is required under the TRC concept?

Colonel MORROW. Yes, sir; we have.

Mr. SIKES. What is the computed savings/investment ratio for this facility?

Colonel MORROW. Slightly over 3-to-1, Mr. Chairman.
[The information follows:]

REVISION OF ECONOMIC ANALYSIS TRC CONCEPT

The savings/investment ratio of 3.07-to-1 has been confirmed.

Mr. SIKES. You have got a plan of this facility which you can go over now, or later with our staff, to show exactly which workloads will be performed in which areas of this facility?

[The information follows:]

PLAN FOR MCCLELLAN DEPOT AIRCRAFT OVERHAUL FACILITY

A plan is available and will be provided to the staff upon short notice. Since this facility is designed for general purpose type work, it is extremely adaptable to changes in workload. A large portion of the space is for work benches which can easily be shifted around in response to even daily changes in workloads.

AIRCRAFT REPAIR COMPLEX

Mr. SIKES. As I understand it, this facility is the second increment of four of a single complex into which you would consolidate aircraft repair functions at this base. Is that right?

Colonel MORROW. Yes, sir; the four projects are: First, a hydraulic shop which the committee approved in the fiscal 1970 MCP, then the first and second increments of this depot aircraft overhaul shop, and finally, the metal processing shop which is before the committee at this time.

Mr. SIKES. Could you show the location of those three facilities, the proposed locations?

Colonel MANSFELDER. The fiscal year 1970 hydraulic shop, the first increment, three bay, second increment, two bay, and the plating shop are planned to be located in a line at this location. Nearby is the major aircraft overhaul complex.

Mr. SIKES. You are also planning a second increment to the depot overhaul facility?

Colonel MORROW. Yes, sir; we are.

Mr. SIKES. Where will that fit into the complex?

Colonel MORROW. Right here, sir.

Mr. SIKES. How can you scope the size of this facility until the impact of the TRC implementation has been analyzed?

Colonel MORROW. We think we have analyzed it sufficiently well so we are pretty sure of the scope of it. However, we are presently re-validating and verifying the actual scope of the second increment for submission to the committee in a later year.

Mr. SIKES. When will you complete that revalidation?

Colonel MORROW. By the end of July we should have it completely revalidated.

Mr. SIKES. Would you provide that information to the committee?

Colonel MORROW. Yes, sir.

[The information follows:]

DEPOT A/C OVERHAUL McCLELLAN IMPACT OF TRC ON SCOPE

The information will be provided to the committee as soon as it becomes available.

SMALL SAVINGS FROM WEAPONS SYTEMS COMPONENTS PLATING SHOPS

Mr. SIKES. You are requesting a weapons systems components plating shop at a cost of \$2,480,000. How is this function performed at the current time?

Colonel MORROW. Sir, we are presently doing the plating work, the plating and the etching and cleaning that is necessary for the metal that is treated there, in a substandard building that lacks adequate vapor, dust, and other environmental control. It is inadequate and substandard.

Mr. SIKES. How does this shop tie in with the others that we have discussed?

Colonel MORROW. Sir, this shop will be located on the end of the other three projects which are in a line. You can see they are all placed adjacent to each other and the plating shop is in blue right here [indicating].

Mr. SIKES. Will there be a mechanized materials handling system between these facilities?

Colonel MORROW. Yes, sir; there will be.

Mr. SIKES. Provide for the record the economic analysis of this project.

[The information follows:]

1. DATE 15 JAN 1973	2. FISCAL YEAR 1974	MILITARY CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT AF	4. INSTALLATION McCLELLAN AIR FORCE BASE		
5. PROJECT NUMBER 403-74-107		6. PROJECT TITLE 211-15A METAL PROCESSING SHOP				
ECONOMIC EVALUATION - DOD INVESTMENTS						
1. DESCRIPTION OF PROJECT: A 65,000 SF modern depot aircraft plating shop with downdraft ventilation to replace an outdated, remotely located facility (Bldg 666 - 44,280 SF).						
2. PROJECT BENEFITS ABSTRACT: Reduced preventive maintenance, improved workforce productivity as a result of consolidating and modernizing metal processing techniques and reduced transportation costs will result in one-time savings of over \$1,846,000 and an annual savings of nearly \$285,000.						
SUMMARY OF PROJECT COSTS - FORMAT A			SUMMARY OF PROJECT BENEFITS - FORMAT B			
1. INVESTMENT			1. PERSONNEL	PRESENT	PROPOSED	ANNUAL SAVINGS
a. Primary Construction Cost	\$1,963,000		a. Civilian	\$867,395	\$624,979	\$ 242,414
b. Supporting Facility Cost	517,000		b. Military - N/A			
c. Initial Outfitting Equipment	861,000		c. Other - N/A			
d. Design Cost	233,870		2. OPERATING			
e. Other Cost	30,000		a. Materials	\$ 29,658	\$ 6,911	\$ 22,747
f. Total Costs	\$3,604,870		b. Utilities	15,407	19,274	(3,867)
2. VALUE OF EXISTING FACILITIES	-0-		c. Maintenance & Repair	31,746	17,647	14,099
3. NET INVESTMENT	\$3,604,870		d. Other - Transportation	9,366	-0-	9,366
			3. OVERHEAD (No Change)			
4. PRESENT VALUE (P.V.) OF INVESTMENTS			4. TOTAL ANNUAL SAVINGS			\$ 284,759
a. P.V. of Primary Construction Cost	\$1,627,327		4a. PRESENT VALUE OF ANNUAL SAVINGS			\$2,712,045
b. P.V. of Supporting Facility Cost	428,593		5. ONE-TIME SAVINGS			\$1,846,371
c. P.V. of Initial Outfitting Equipment	1,199,373		5a. PRESENT VALUE OF ONE-TIME SAVINGS			\$1,891,827
d. Design Cost	233,870		6. TOTAL P.V. OF BENEFITS (BOD)			\$4,603,872
e. P.V. of Other Cost	23,640					
f. Total P.V. of Investments	3,512,803		7. TOTAL P.V. OF BENEFITS (BASE YEAR)			\$3,627,851
5. PRESENT VALUE OF EXISTING FACILITY	-0-					
6. P.V. OF NET INVESTMENT	\$3,512,803		8. ECONOMIC LIFE 25 YEARS DISCOUNT FACTOR 10%	TABLE A 0.788		
				TABLE B 9.524		
7. SAVINGS/INVESTMENT RATIO		1.03	9. BENEFICIAL OCCUPANCY DATE (BOD) FY-76			

Note: Economic Evaluation has not been adjusted to reflect workload changes due to TRC realignments.

Mr. SIKES. The savings/investment ratio for the plating shop is computed at 1.03, which is not very impressive. Is this saving based on inclusion of a materials handling system in this facility and those adjacent to it?

Colonel MORROW. Sir, it is based on the mechanized materials handling that will be associated with the plating shop itself. It is not based upon the mechanized materials handling system that would be serving the total combined facilities complex.

Mr. SIKES. What is the necessity for the facility when the savings/investment ratio is so low?

Colonel MORROW. Sir, we are presently in an inadequate situation. We are precluded from meeting Occupational Safety and Health Act standards. We are in a very inefficient method of operation and we do not have enough space there to accommodate large enough tanks to accomplish the titanium etching that is necessary for some of the large sections of the wing panels on the F-111.

It is a question of necessity. The project will pay for itself. The inclusion of the mechanized materials handling into it brought the savings/investment ratio down to 1.03-to-1. If we were to take that out, of course the facility by itself would have a higher payback but we would not realize the ultimate efficiency for the plating shop.

Mr. NICHOLAS. When I was out there and was shown the plans for this facility one of the reasons for putting all these buildings together was so that the entire facility could be served by a single materials handling system. I gathered that a great deal of the increased efficiency was to come from this materials handling system which would eliminate people, trucks, and so forth.

Now, according to the investigations staff report, the Air Force says that it can't justify this overall materials handling system for the four buildings in the complex and the Air Force Logistics Command or SMAMA—I can't remember which—says they have taken this project out of their long-range program. Is this correct?

Colonel MORROW. Sir, first of all, the mechanized materials handling, that is incidental to the plating shop is still going in. The other materials handling system to serve the whole complex, when it first was presented to the Air Force was for an exceptionally complex and costly system. We do need something similar to this. We need a system but we have sent it back to McClellan for an additional analysis to see whether it can be simplified and the cost reduced.

Mr. NICHOLAS. Meanwhile this is not in your—

Colonel MORROW. No, sir, it is not there. It is not necessary, not essential. It will be justified on its own basis. We project that there will be a justification for such a system, maybe not at the scope it was originally presented to the Air Force.

Mr. NICHOLAS. According to our investigations staff report, and I wish you would discuss this with them and work over the notes, the materials handling system in the plating shop would tie in with this overall materials handling system. It probably would be to some extent eliminated or reduced in the plating shop if the big system doesn't go. They compute that if you take that materials handling system out of the plating shop the savings investment ratio goes down to .85.

Colonel MORROW. Sir, the general handling system will be justified on its own merits. It will produce its own savings. It would not reduce the savings investment ratio of the plating shop itself.

LOCATION OF PLATING SHOP

MR. PATTEN. If the second increment of the depot aircraft overhaul facility doesn't materialize where will you locate the plating shop?

Colonel MORROW. Sir, we would locate the plating shop where it is now planned. We would still desire that it be placed here in close proximity to the other shops that it so closely supports.

MR. PATTEN. Is there much noise from this plating shop?

Colonel MORROW. Noise is not a particular problem. Primarily it is toxicity and corrosive effect of fumes that are exhausted. One of the reasons for building a new plating shop is to provide a downdraft ventilation system, equipped with scrubbers, that will remove pollutants and toxic properties of the fumes before they are exhausted. The system will also provide greater protection for personnel working in the facility.

MR. PATTEN. You just blow it outside; right?

Colonel MORROW. It will eventually be exhausted outside only after it has been scrubbed for all pollutants. That is one of the reasons for getting the new facility.

MR. PATTEN. If your reanalysis of the second phase of the aircraft facility there indicates that it doesn't need to be scoped at the same size and you go ahead and build the plating shop at its presently planned location, won't this constrict the manner in which you can plan for the second increment of the aircraft repair facility?

If in fact there is no second increment of that facility won't the plating shop be in the wrong place for establishing any integrated materials handling system.

Colonel MORROW. Let me say first we certainly plan on having a second increment. We feel it is essential because we are vacating some 13 scattered separate buildings by building both of these increments.

We will still be in about some six scattered locations if we don't get the second increment. The scope of the second increment may be somewhat less than the sum of the scopes of the six individual facilities. This is because the new facility will permit a more economic and efficient functional layout of activities.

We feel the plating shop would still be appropriately placed.

MR. PATTEN. Your workload might or might not affect physical size, although it easily could. It also might affect the justification for the project.

The savings which you anticipate now might well change because of the different workload and so forth. So, the project might then become less urgent. If you find it slips to the 1978 program, there you will be with the plating shop 200 yards away.

Colonel MORROW. Since we know what is going into McClellan at the present time, we already know what is going into the second increment as well as the first, there is no doubt in our minds of what is needed.

What we are doing at the present time, as I mentioned to you, is we are reverifying, having Sacramento reprepare the necessary documentation. We have already gone through it with the engineers and we are convinced in our own minds through our automated utilization system that the requirement will remain substantially intact.

However, the manual validation and documentation, is following and we will have that in July.

Mr. PATTEN. What would be the result of deferring this project for a year?

Colonel MORROW. Sir, if we defer the first increment, we would have to remain in our present 13 scattered locations, and continue a sub-standard operation. If we defer the second increment we would still be in some six scattered locations. We would be unable to consolidate and realize all the benefits are confident will accrue.

Mr. PATTEN. You are not referring to the plating shop particularly? What would be the result of deferring the depot aircraft overhaul facility until you have had a real chance to analyze your workload at McClellan as a result of the TRC implementation and the fiscal year 1975 budget level?

Colonel MORROW. Sir, my answer earlier was addressed toward this particular project.

Mr. PATTEN. You are telling me.

Colonel MORROW. We do not see any additional guidance coming out that is going to change the justification and the workload we already project into there. The consequence of deferring would simply mean that we would remain less efficient and less economical.

Mr. PATTEN. Let us go back to just the plating shop.

Colonel MORROW. Similar with the plating shop, sir, the plating shop itself is in a very deteriorated condition. We would have to continue operating in the plating shop with make-do and makeshift means.

For instance, we have to disassemble some of the parts because we are unable to put tanks large enough in there to take some of the wing panel sections. We have to disassemble and put them in there a piece at a time and then match them up later after we get them out.

We would have to continue this operation which is very inefficient.

Mr. PATTEN. What savings would you forgo in that year? What would be the cost or the savings in that year? Could you provide that for the record?

Colonel MORROW. Yes, I can. I will provide it for the record.

[The information follows:]

ECONOMICS OF MCCLELLAN PLATING SHOP

Annual tangible savings which will be delayed include :

Personnel -----	\$242, 214
Operating -----	42, 545
Total annual savings loss-----	284, 759

Excluding annual tangible recurring savings, inflation will increase acquisition costs for construction and equipment by 5 percent to 7 percent (\$220,000). In addition to tangible savings which will be lost, there are many intangible considerations. For example, production losses due to inadequate plating tank sizes and congested routed item flow makes production schedules almost impossible to meet. This lack of response would be a particular handicap if mobilization were required. New processing methods being used today by aircraft developers require that these same new techniques be added to our plating facilities; for example, chemical milling. Without these new processes, inefficient makeshift operations try to simulate these required methods at additional costs and reduced quality of work performed. Unsatisfactory pollution and environmental conditions affecting personnel health and safety will continue at an unquantifiable cost.

Colonel MORROW. We have essentially two things, recurring costs, annual costs that we would lose, plus one time cost avoidance that we would probably lose.

Mr. PATTEN. I have one more overall question.

Do you have an encroachment problem at McClellan?

General REILLY. Mr. Jackson or Colonel Reed, whoever wants to address it.

Mr. JONKERS. I don't have the answer.

Colonel REED. There are some considerations of urban encroachment. However, the type air mission that we have had there, flying mission, primarily 130 type activities and EC-121's, can continue to operate in spite of the urban encroachment.

We have experienced encroachment and we have had plans and discussions with the community trying to forego any serious future problems.

Mr. PATTEN. Any questions?

ECONOMIC ANALYSES

Mr. LONG. The savings/investment ratio, it would seem, practically always comes out less favorable than planned. Is that right?

Colonel MORROW. Sir, we don't believe so. As a consequence of this committee's and your particular insistence, Dr. Long, in earlier years we have changed our methodology and made it much more conservative.

Earlier in the hearings we testified that we have incorporated methodology changes that do decrease our savings/investment ratio, our stated claims, but we would anticipate still achieving the same benefits that we would have even without the restatement.

Mr. LONG. Well, how long has this new system been in effect?

Colonel MORROW. We have just introduced it this year, for the fiscal 1974 budget.

Mr. LONG. How bad were your other systems?

Colonel MORROW. Not very. These methodology changes reduced our estimated projected savings by a little less than 10 percent, sir.

Mr. LONG. What about your investment? Doesn't your investment usually turn out to be much greater because of cost overruns and all?

Colonel MORROW. No, sir; the changes that we made were primarily things such as discounting current year dollars that we were projecting.

We had in the past discounted only to the year of construction and by backing it up another year, as you know, sir, we would actually decrease the value in current year dollars of our savings but—

Mr. LONG. I am not talking about inflation now. I am talking about the increase in construction costs.

Colonel MORROW. No, sir, our costs have not increased. Our savings have decreased somewhat, by slightly less than 10 percent.

Mr. LONG. Why wouldn't your investment costs go up? Don't most of these things end up costing more than you had planned?

Colonel MORROW. Sir, I defer to General Reilly. That question is on construction costs.

General REILLY. Our general cost experience has been very good, Dr. Long. I think the wisdom in building large projects is borne out by the very favorable bids that we have had. On the average our costs have been below the programed amount for depot modernization projects.