CONTRACTING-OUT PROCEDURES

HEARINGS

BEFORE THE

SUBCOMMITTEE FOR SPECIAL INVESTIGATIONS

OF THE

COMMITTEE ON ARMED SERVICES

HOUSE OF REPRESENTATIVES

EIGHTY-SEVENTH CONGRESS

FIRST SESSION

UNDER THE AUTHORITY OF

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HEARINGS HELD AUGUST 8, 9, 10, 11, 16, 1961

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CONTRACTING-OUT PROCEDURES

TUESDAY, AUGUST 8, 1961

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE FOR SPECIAL INVESTIGATIONS,
Washington, D.C.

The subcommittee met at 10:10 a.m., Hon. F. Edward Hébert (chairman of the subcommittee) presiding.

Mr. HÉBERT. The committee will be in order.

The chairman desires to make the following statement.

This morning we commence with the Department of the Army and will follow with the Department of the Navy and the Department of the Air Force, in our procurement study of a system which has the popular title of "contracting out." For definition we refer to an area which deals primarily in services performed by civilian contractors for the different services.

This subject sometimes leads into broad questions of policy per se. But the subcommittee's interest is not with policy but with practice and how the practice in given areas affects the capabilities, readiness, and efficiency in the performance of total military missions and, of equal importance, the cost of one practice versus another. It is, therefore, to questions of capabilities and cost that we address ourselves.

Contracting out takes many forms. We shall consider some, but not necessarily all, of the types of services for which contracts are let; and we will concern ourselves, in part, with the transfer of services formerly performed by the military to civilian contractors.

In the field of equipment maintenance, we will have to consider whether or not the services performed contribute to the readiness posture and capabilities of the services, particularly in emergencies.

Next, we will consider some of the things for which the services have contracted; as to whether or not they are or should be within the capabilities of the military themselves.

I think that this statement outlines, as briefly as is possible, the scope of this hearing.

These contracts are sometimes spoken of as "think" contracts. But on inquiry, we find a word has been coined; they are "effort contracts." We shall not, in the first instance, consider the capabilities of the "think" factories themselves, but we shall consider the subject matter of these contracts given out to civilian contractors. We will learn that these contracts must be asked for by the name "effort" because they have no end product; perhaps, not even a conclusion.

Now, we will discuss some of these subjects with the Department of the Army.

Now, Mr. Courtney, you have some witnesses?

Mr. COURTNEY. Mr. Chairman, Mr. Ignatius, the Assistant Secretary of the Army, is here. He has a prepared statement and he is to be followed by General Bunker, addressing themselves to the whole scope of the committee's inquiry.

Mr. Ignatius has a prepared statement, and under the rules may he proceed without interruption and in order?

Mr. HÉBERT. Without objection, the biographical sketch of Mr. Ignatius will appear in the record at this point.

(The biographical sketch of Mr. Ignatius is as follows:)

BIOGRAPHY OF HON. PAUL R. IGNATIUS, ASSISTANT SECRETARY OF THE ARMY (INSTALLATIONS AND LOGISTICS)

Paul R. Ignatius was born in Los Angeles, Calif., in 1920. He attended public schools in Glendale, a suburb of Los Angeles. In 1942, he received an A.B. degree with honors from the University of Southern California, and was elected to Phi Beta Kappa.

During World War II, Mr. Ignatius served as a lieutenant in the Navy, principally as an aviation ordnance officer aboard the carrier *Manila Bay*, in the Pacific. For a brief period of time he was a member of a staff responsible for preparing a comprehensive manual for the Navy's Bureau of Supplies and Accounts.

In February of 1947, Mr. Ignatius was awarded the degree of master in business administration from Harvard University. In the following 3 years he served as a research assistant and as an instructor in business administration at Harvard. He resigned from the Harvard staff in 1950 to form, with two of his Harvard Business School associates, the management consulting and research firm, Harbridge House, Inc.

During the 11 years since its founding, Mr. Ignatius played a major role in the development and expansion of Harbridge House. A great part of this effort was devoted to consulting and research in military supply and procurement, and in the procurement responsibilities of a large segment of defense industry. Among the major projects he undertook were the planning and establishment of the Army Management School at Fort Belvoir and the Army Logistics Management Center at Fort Lee. In 1957 he was responsible for the preparation of a comprehensive analysis of the supply systems of the three military departments in connection with the Department of Defense's logistics system study project.

Mr. Ignatius has lectured at the Army War College, the Industrial College of the Armed Forces, and the Foreign Service Institute. He has also taught courses in defense industry procurement for the University of California and Fordham University. From time to time he has published articles on management and logistics subjects.

Mr. Ignatius was appointed Assistant Secretary of the Army (Installations and Logistics) on May 22, 1961. In this capacity, his responsibilities include: procurement and production including procurement policy; logistical single manager activities and material management including storage, distribution, maintenance, and disposition; communications, medical, transportation, and other service activities of the technical services; materiel and materials requirements and industrial mobilization; military assistance program (exclusive of financial management); industrial labor relations; military construction; command, industrial and civil real property; management and engineering at industrial facilities and logistical installations; physical security of industrial facilities; Alaska Communication System; and housing and public quarters.

In 1947 Mr. Ignatius married Nancy Sharpless Weiser of Holyoke, Mass. They have four children: David, 11; Sarah, 9; Amy, 7; and Alan, 2.

Mr. IGNATIUS. Thank you, Mr. Courtney.

Mr. Chairman, and members of the committee, we appreciate the opportunity of discussing with the committee the Army's policy for "contracting out." This is, of course, an area of considerable interest throughout the Army and one which must be considered in many of our major decisions. Since the subject matter covers an extremely

wide spectrum of activities, I will restrict my comments to major areas of interest.

Basically we contract out for any of three general reasons: either it is required by a directive; it results from an internal improvement plan or change of mission; or it arises from a lack of inhouse capacity—due either to lack of a facility, or lack of people of appropriate skill. On the other side, some of what we do inhouse results from a lack of commercial capacity.

In 1953, the Office of the Secretary of Defense first published Directive 4100.15 which stated that the policy of the administration was to use Government-owned and operated commercial and industrial type facilities only where it could be clearly demonstrated that private enterprise could not perform the service or provide the product necessary to meet current and mobilization requirements, or that operation by the Government was necessary in the execution of the military mission.

Under the impetus of this directive, Department of Defense began the survey of certain specified categories of activities in 1954. In 1955, Bureau of the Budget published Bulletin 55–4 (revised in 1957 as BOB Bulletin 57–7), prescribing an administration policy similar to that already in effect in the Department of Defense.

Under these directives, the Army surveyed 650 commercial-industrial-type activities and, as a result, closed and curtailed over 150 of them. An example of the categories surveyed in the initial survey and one rather clear-cut result of this program concerns Army bread bakeries.

Early in the program, the Office of the Secretary of Defense designated military bread bakeries as a "commercial-industrial-type activity" subject to the policy requirements of the Bureau of the Budget bulletins. Extensive studies were made of the 31 Army bakeries in the continental United States in 1955. The elements considered in these studies were:

(*a*) The need to maintain a rotation base for military specialists required to operate bakeries in oversea areas.

(*b*) Overall costs including, in addition to labor and materials, charges for overhead and utilities services.

(*c*) Comparisons of costs of military production against prices of commercial suppliers.

Although specific cost data contained in the 1955 reports no longer are available, the studies indicated that costs for Army-produced bread ranged from considerably less to approximately the same as bread procured from local commercial sources.

Upon review of the reports and recommendations submitted by the Army, the Office, Secretary of Defense, approved continuation of 14 of the 31 bakeries surveyed. One of these was to be used for the training of career enlisted bakery personnel and the other 13 for rotation of enlisted bakery specialists to and from oversea areas. Thus, 17 bakeries were closed as a result of this program. However, since Army bread bakeries were, and now are, operated almost exclusively by enlisted military personnel, very few civilian employees were affected by the closings and the Army was able to utilize the enlisted military personnel formerly engaged in bakery operations for more essential military activities.

Only 13 bakeries now are operated at continental U.S. Army installations, due to changed requirements. These bakeries meet the criteria for continued operation and are the minimum number necessary for training and the specialist rotation support program.

More recently, in 1959, BOB Bulletin 60–2 was published as a revision and expansion of the two preceding bulletins. Under this expanded program, Department of the Army reviewed and evaluated an additional 1,284 activities. Of the activities evaluated, all were approved for continuance at the previous level except six approved for discontinuance and nine for curtailment. Even these decisions were not a direct result of the Bureau of the Budget bulletins, but rather a result of separate Army actions in the management of its operations.

I think it might be well to point out that BOB Bulletin 60–2, as well as previous policy issues related to commercial-industrial activities, did not require that decisions as to the discontinuance or curtailment of Army facilities be based on cost alone. Of far more importance and value to the Army were the provisions that decisions might be based on:

(*a*) National defense requirements, such as the training of military personnel to insure combat readiness, and

(*b*) Infeasibility of procurement from commercial sources because of the clear relationship of the activities to the basic missions of the Army or the administrative impracticability of contracting out.

Practically all of the decisions made by the Army in the latest survey of commercial-industrial activities were based on one or the other of these two criteria.

In 1960, the Office of the Secretary of Defense published DOD Directive 4151.1 which applied the reasoning of the Bureau of the Budget bulletins to the materiel maintenance area. It, in fact, posed no new requirement for the Army because it did little more than prescribe for the Department of Defense a policy already in effect in the Army.

The actions which have resulted from BOB Bulletin 60–2 and DOD Directive 4151.1 have not been significant since both only required us to reexamine policies which had been in effect for a significant number of years prior to their publication.

So much for external directives. Of far more consequence to the Army in the area of "contracting out" or otherwise reducing our requirement for personnel is our own internal improvement actions.

As in the other military departments, the Army strives constantly to get the most defense out of the dollar and personnel limitations—a particularly true cliche. We constantly look for ways in which we can save time, improve management or reduce requirements so that we can do the best possible job within the funds and personnel ceilings which we have. And I would say that the Army is doing an excellent job of distributing its limited resources toward meeting its requirements.

One example of an Army internal program is the depot improvement plan which was implemented in fiscal year 1961. The basic concept is that we should have only that storage space required for our present

and mobilization requirements, located where required to fulfill apparent missions, present or future.

Though easy to state in simple terms, this is a tremendously complex problem. The result of the plan to date has been a phased program for deactivation, reduction or consolidation of depot activities throughout the continental United States. The plan is, of course, constantly under study and the results in each fiscal year are dependent upon the progress of the plan at that time.

It is apparent that such a plan as this, though not directed by anyone outside the Army, has an immediate, but not specifically determinable impact on personnel, yet it is mandatory if we are to apply our resources to the best possible advantage.

In production-type military overhaul, we supplement our inhouse capability by contract facilities, and have since 1948. One factor considered in contracting out overhaul is the inability of the Army to perform the service because of a lack of facilities or a shortage of required skills. Weaponry changes are so rapid that often we find it uneconomical to invest the time and funds in training or facilities necessary for maintenance even though the weaponry is combat related. There are, in fact, decided advantages to contracting in some areas.

As a general rule, contractors are used for overhaul when—

(*a*) Workloads in support of mission-essential equipment ex-
epot maintenance activities.
rt of nonmission-essential

al equipment is introduced
maintenance capability has

ately 14 percent, or $22 mil-
ance overhaul program was
year 1960. Of this amount
e; the remainder was spent
marine, and rail equipment,
unt of electronic equipment
t in fiscal year 1961. I will
rail equipment maintenance
uipment in these categories
ing a source of contractual

uipment have enhanced our
he past 13 years, contractual
over 250 firms, any one of
nder emergency conditions.
ntractors are presently en-
equipment, supplementing
n.
d by contract facilities with
ntained at Charleston, S.C.
arily as a mobilization base
essential equipment in the
rkload. Since commercial
nore economical to contract

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marine repairs in the general locale of operations rather than to establish inhouse capabilities.

Depot maintenance of rail equipment also is accomplished by both contract and inhouse facilities. The one maintenance facility retained inhouse is at Ogden, Utah. It, as a primary mission, performs depot maintenance on locomotives and locomotive cranes in the western area; maintenance of this equipment in the East, where we have a reduced workload, is accomplished by contract. Commercial repair facilities for rolling stock—i.e., boxcars, tankers, et cetera—are readily available throughout the country and, with minor exceptions, this maintenance is accomplished by contract.

As you can see, we do not compromise on our efforts to have an inhouse capability for depot maintenance of mission-essential equipment. Another example of this is in the field of aircraft maintenance which represented the majority of the contract maintenance in fiscal year 1960. The Army started work at the aircraft depot maintenance facility at Corpus Christi, beginning July 1 of this year, picking up an inhouse capability which we have not had previously. We have prepared a separate presentation on aircraft maintenance which will be given, with your permission, Mr. Chairman, after my discussion.

What is the result of contracting? In personnel, although there is no way of identifying what specifically is reflected in these statistics, civilian employment in the Army decreased from 429,217 on June 30, 1957, to 390,046 on June 30, 1960. A significant portion of this reduction resulted from lower workloads and congressional and Presidential limitations on personnel spaces. To a much larger degree, the reduction has resulted from work and management improvements made by the Army by continuation of its own policies. It is doubtful that contracting out per se had any very great effect on civilian personnel employment.

In regard to comparative cost, we find it difficult to discuss comparisons between inhouse and contracting out. A comparison of out-of-pocket cost with a contract price is clear cut. The difficulty arises when elements of depreciation, interest, and taxes on funds previously spent for capital assets have to be taken into consideration. On a case-by-case basis, valid comparisons can be made, but these cannot be gathered together into overall statistics which compare cost in broad areas.

Contracting out is a closely reviewed area, but the Army's method of management does not provide comprehensive data at our level related to personnel, specific funds, or to a specific fiscal year. Under our system, which we believe gives the maximum management at the minimum cost, available resources are distributed to subordinate commanders who also receive missions, priorities, and policies to insure that these resources are applied effectively toward meeting the overall Army requirement.

A commander, under this system, often can and does make the decision to go to contract. Before he does, however, he must weigh the decision against his mission, attempt to adjust available personnel, or try to obtain relief from the workload. He must measure the adverse impact upon the existing work force, decide the advantage to the Government, and consider the policies and criteria from higher authority under which the decision must be made.

Has contracting out affected our combat potential, not only now but in the future? I can find no specific instance of loss in our combat readiness position caused by contracting out. If we had unlimited resources, we would try to keep our inhouse capabilities at a higher level. This, I believe, would enhance our combat capability.

However, within limited resources, we believe that we have the proper balance for our present situation. Our decisions to date as to what we will do inhouse and what must be done by contract, whether as a result of external directives or internal improvement, have represented our very best judgment and experience. As the missions and resources change, we must constantly go through the process of determining the best mix. This we will do.

(The annexes attached to the statement are as follows:)

Contracts for depot maintenance, fiscal year 1960—Missiles

Contractor	Location	Service contract for overhaul of components and assemblies for—	Gross amount of contract
Western Electric Co	Greensboro, N.C	Nike-Ajax	$267,000
Airesearch Manufacturing Co	Los Angeles, Calif	Nike-Hercules	26,000
Firestone Tire & Rubber Co	do	Corporal	86,000
Gilfillian Bros., Inc	do	do	4,000
Raytheon Manufacturing Co	Andover, Mass	Hawk	63,000
Martin Co	Orlando, Calif	Lacrosse	49,000

Contracts for depot maintenance, fiscal year 1960—Engineer construction equipment

Contractor	Location	Service contracted for overhaul of—	Amount of contract
J. C. George Service Corp	Syracuse, N.Y	Snowplows	$65,020.46
Gibson Motor & Machine Service	Lawrence, Mass	Snowplows, tractors, sweepers, and trucks.	143,444.37
Graves Equipment	Northampton, Mass	Graders	5,151.57
Howe Bros	Center Brunswick, N.Y.	Trailers, snowplows, and trucks.	101,521.19
J & P Implement Co	Central Bridge, N.Y	Engines and components, snowplows, and cranes.	85,703.73
Vincent S. Jerry & Sons, Inc	Plattsburgh, N.Y	Tractors	10,197.39
Northeast Motor Rebuilders, Inc	Central Bridge, N.Y	Engines	36,553.47
H. O. Penn Machine Co	Newington, Conn	Tractors	40,912.02
Portsmouth Truck & Tractor Co	Portsmouth, N.H	Trucks	13,042.49
Connell Motor Truck Co	Stockton, Calif	Generators, tractors, sweepers, and trucks.	99,481.36
Holt Bros	do	Tractors	43,372.12
Shepherd Machine Co	East Los Angeles, Calif.	Compressors, generators, tractors, and sweepers.	204,319.24
Border Machine Co.:			
Electrical Division	El Paso, Texas	Generators	236,250.91
Industrial Division	do	Tractors, compressors, and cranes.	131,196.55
General Machine Co	Spokane, Wash	Snowplows, tractors, graders, sweepers, and trucks.	184,980.82
United Aircraft, Sikorsky Division.	Stratford, Conn	Main gear box	427,673.78
Delco Products Division, General Motors Corp.		Damper assembly	33,612.78
Central Air Repair	Burbank, Calif	Pump fuel boost emergency	4,382.42
Instrument Associates	Great Neck, N.Y	Gage fuel indicator	10,065.51
Aero Precision, Industries, Inc	Oklahoma City, Okla	Blade assembly propeller	96,956.76
Carson Machine & Supply Co	do	Cooler assembly	8,090.21
United Aircraft Sikorsky Division	Stratford, Conn	Clutch assembly	16,949.00
Vertol Aircraft Corp	Morton, Pa	Central transmission	209,750.00
Nasco Service Corp	Miami, Fla	Starter assembly	111,507.86
Central Air Repair	Burbank, Calif	Generator, multiple	25,645.08
Aeronautical Instrument Laboratories, Inc.	Middletown, Pa	Instruments	15,295.70
Big State Industries, Inc	Mineral Wells, Tex	Tail rotor blade	21,171.80
		Main rotor blades	9,008.24
			26,123.34

Contracts for depot maintenance, fiscal year 1960—Engineer construction equipment—Continued

Contractor	Location	Service contracted for overhaul of—	Amount of contract
Central Air Repair	Burbank, Calif.	Pump assembly	$31,793.24
Flight Enterprise, Inc.	Hartford, Conn.	Scamp and crash damage H–21	32,000.00
Aeronautical Instrument Laboratory, Inc.	Middletown, Pa.	Altimeter and indicator repair	16,910.00
SMS Instruments Co.	Jamaica, N.Y.	Indicators, multi-type	62,053.00
Canadian Commercial Corp.	Montreal, Quebec, Canada.	Engine repair	284,540.00
Action Manufacturing Corp.	Philadelphia, Pa.	Hydro boost cylinder	10,650.00
Crown Lee Corp.	San Bernardino, Calif.	Cooling fan	10,600.00
Airepair of Stockton, Inc.	Stockton, Calif.	Crash damage	30,650.00
Central Air Repair, Inc.	Burbank, Calif.	Shimmy damper	8,165.00
DeHavilland Aircraft of Canada.	Ontario, Canada	Crash damage VIA	25,000.00
Bell Helicopter Corp.	Fort Worth, Tex.	Gear box tail	28,875.00
Aerodex, Inc.	Miami, Fla.	Engine repair	703,187.00
Canadian Pratt & Whitney	Montreal, Quebec, Canada.	do	180,245.00
Aeronautical Instrument Laboratory, Inc.	Middletown, Pa.	Transmitter	24,915.00
Haag Tractor Co.	El Paso, Tex.	Tractors	70,276.76
C. O. Johnson	Denver, Colo.	Trucks, snowplows, graders, and cranes.	121,218.85
Gregory Poole Equipment Co.	Raleigh, N.C.	Tractors, graders, and engines	42,566.02
Thompson Tractor Co.	Birmingham, Ala.	Tractors and engines	68,495.57
Independent Engineering Co., Ind.	O'Fallon, Ill.	Generators	7,158.95
H. L. Musgrave, Inc.	Robinson, Ill.	Trucks, snowplows, and concrete mixers.	10,779.84
Seiler Instrument & Manufacturing Co.	St. Louis, Mo.	Precision instruments	65,896.99
Western Machinery Co.	do	Trucks and tractors	5,524.80
Berry Bros. Machine Co.	Dallas, Tex.	Tractors, sweepers, and trucks	33,400.48
Carson Machine & Supply Co.	Oklahoma City, Okla.	Generators, graders	44,747.50
Lewis Motor Co.	Marshall, Tex.	Tractors, trailers, trucks, compressors, and cranes.	162,457.69
J. A. Riggs Tractor Co.	Little Rock, Ark.	Tractors, sweepers, and trucks	107,143.43
Tri State Equipment Co., Inc.	Memphis, Tenn.	Tractors, compressors, and graders.	14,866.95
Waukesha Sales & Service	San Antonio, Tex.	Trucks, tractors, generators, and rollers.	8,218.53
Atlantic Tug & Equipment Co.	Syracuse, N.Y.	Tractors	37,981.53
Detroit Supply Co., Inc.	Albany, N.Y.	Engines	4,179.76

AIRCRAFT AND COMPONENTS

Curtiss-Wright Corp.	Wood-Ridge, N.J.	Engine repair	$13,709.23
Avco Manufacturing Corp.	Williamsport, Pa.	do	1,061,684.86
Bell Helicopter Corp.	Fort Worth, Tex.	Closed circuit repair	42,612.76
Aerodex, Inc.	Miami, Fla.	Engine repair	169,341.00
Avco Manufacturing Corp.	Stratford, Conn.	Closed circuit engines	171,887.80
Hiller Aircraft Corp.	Palo Alto, Calif.	Components, closed circuit	4,176.37
United Aircraft, Sikorsky Aircraft Division.	Stratford, Conn.	Scamp and retrofit H–34	489,600.00
Big State Industries, Inc.	Mineral Wells, Tex.	Scamp H–13	119,612.45
Aero Corp.	Atlanta, Ga.	do	29,700.00
Beiser Corp.	Tucson, Ariz.	Scamp H–19	123,462.53
Continental Motors	Muskegon, Mich.	Engine repair	635,034.86
Airepair	Stockton, Calif.	Scamp H–21	190,450.00
East Coast Aviation	Lexington, Mass.	Scamp H–13	105,475.00
Hayes Aircraft Corp.	Dothan, Ala.	Scamp L–19	162,334.56
Aero Corp.	Atlanta, Ga.	Scamp H–21	472,597.62
Northwestern Aero	St. Paul, Minn.	Scamp H–13	43,580.00
Parsons Corp.	Stockton, Calif.	Scamp U–1A	3,817.62
Intercontinental Manufacturing Co., Inc.	Brady, Tex.	Main rotor blade repair	119,856.19
Erle L. Bacon	Santa Monica, Calif.	Scamp L–20	153,425.04
United Aircraft, Sikorsky Division.	Stratford, Conn.	Scamp L–19	83,059.16
		Hydro mech. clutch repair H–34.	118,105.00
		Hydro mech. clutch repair H–19.	85,930.00
		Main rotor blade repair	168,000.00
Curtiss-Wright Corp.	Wood-Ridge, N.J.	Intergear box	11,503.00
Big State Industries	Mineral Wells, Tex.	Main transmission	263,473.04
Curtiss-Wright Corp.	Wood-Ridge, N.J.	Gear box repair	19,292.04
Big State Industries	Mineral Wells, Tex.	Main transmission	75,094.15
Continental Motor Corp.	Muskegon, Mich.	Engine repair	4,385.22

Contracts for depot maintenance, fiscal year 1960—Engineer construction equipment—Continued

Contractor	Location	Service contracted for overhaul of—	Amount of contract
United Aircraft, Sikorsky Division.	Stratford, Conn	Main rotor assembly	$999,498.29
		Components H–37	1,308,874.00
Lawrence Aviation Industries, Inc.	Long Island City, N.Y.	Main gear box	435,997.47
Airborne Accessories Corp	Hillside, N.J	Main transmission assembly	125,047.47
Parsons Corp	Traverse City, Mich	Actuator repair	261,528.61
Lawrence Aviation Industries, Inc.	Long Island City, N.Y.	Rotor blade assembly	65,263.61
Southern Aviation	Shreveport, La	Tail rotor hub	508,114.15
Beach Aircraft Corp	Wichita, Kans	Propeller repair	16,724.17
United Aircraft, Sikorsky Division.	Stratford, Conn	Scamp L–23–E	5,519.95
Cooper Accessories & Propeller Repair.	Dallas, Tex	Tail rotor blade	29,560.44
Central Air Repair	Burbank, Calif	Magneto assembly	3,165.82
Big State, Industries, Inc	Mineral Wells, Tex	Component repair	6,177.43
American Armature Corp	Miami, Fla	Shimmy damper assembly	11,210.00
Aerodex, Inc	do	Auxiliary servo unit assembly	717.83
Jaurick Aircraft Co	Arlington, Wash	Central transmission	92,596.60
		Transmission assembly, forward or aft.	81,862.12
Bell Helicopter Corp	Fort Worth, Tex	Main rotor blade	34,821.83
Lawrence Aviation Industries, Inc.	Long Island City, N.Y.	Main rotor assembly	108,667.68
Aerodex, Inc	Miami, Fla	Rotor hub forward and aft	237,247.53
American Armature	do	Cylinder and piston assembly	196,000.00
United Aircraft, Sikorsky Division.	Stratford, Conn	Repair crash damage	65,016.00
Big State Industries, Inc	Mineral Wells, Tex	do	56,991.95
Northwestern Aeronautical Co	St. Paul, Minn	Repair engine	5,000.00
Intercontinental Manufacturing Co., Inc.	Brady, Tex	Repair crash damage	187,828.39
Avco Corp	Stratford, Conn	Engine repair	6,541.28
Spartan Aircraft Corp	Tulsa, Okla	do	533,032.77
Bell Helicopter Corp	Fort Worth, Tex	Scamp and crash damage	196,800.00
Parsons Corp	Stockton, Calif	Rotor blade, main	31,228.29
Continental Motors Co	Muskegon, Mich	Engine repair	131,622.24
Spartan Aircraft Corp	Tulsa, Okla	do	113,852.70
Universal Aircraft Industries	Denver, Colo	Crash damage VIA	369,698.85
Hayes Aircraft Corp	Dothan, Ala	Scamp L–19	15,702.00
Universal Aircraft Industries	Denver, Colo	Crash damage	98,091.00
Accessories Unlimited	Oklahoma City, Okla	Carburetor	2,211.00
Cooper Accessories & Propeller Repair.	Dallas, Tex	Propeller assembly	1,050.00
The Decker Corp	Bala-Cynwyd, Pa	Clocks	3,066.00
Cooper Accessories & Propeller Repair.	Dallas, Tex	Generators	2,873.00
Spartan Aircraft Corp	Tulsa, Okla	Pump, carburetors, and piston assemblies.	32,822.00
Curtiss-Wright Corp	Wood-Ridge, N.J	Engine repair	7,234.00
Central Air Repair	Burbank, Calif	Fuel	712,150.00
Central Aviation & Marine Corp		Accumulatory assembly H–23	2,324.00
Nasco Service Corp	Miami, Fla	Voltage regulator	2,052.00
American Aeromotive Corp	do	Engine repair	8,881.00
Central Air Repair	Burbank, Calif	Pump assembly	129,500.00
Canadian Commercial Corp	Washington, D.C	Closed cycle	2,997.00
Action Manufacturing Co	Philadelphia, Pa	Component repair	100.00
Air Overhaul, Inc	Torrance, Calif	Valves	4,055.00
Bell Helicopter Corp	Fort Worth, Tex	Crash damage	5,715.00
American Airmotive Corp	Miami, Fla	Flight control servo unit	61,855.00
Standard Aircraft Equipment	Farmingdale, Long Island, N.Y.	Carburetors	4,335.00
A. Biederman, Inc	Glendale, Calif	Component repair	26,298.00
Brady Industries, Inc	Brady, Tex	Crash damage	3,975.00
Sperry Gyroscope Co		Amplifiers	19,226.00
Hayes Aircraft Corp	Birmingham, Ala	L–23 repair	3,040.00
Air Overhaul, Inc	Torrance, Calif	Strut and starter assembly	29,258.00
Big State Industries, Inc	Mineral Wells, Tex	Main transmission	7,654.00
Airepair of Stockton, Inc	Stockton, Calif	Strut assembly, H–19 and H–21	23,925.00
Curtiss-Wright Corp	Wood-Ridge, N.J	Engine repair	94,460.00
			52,350.00

Contracts for depot maintenance, fiscal year 1960—Engineer construction equipment—Continued

MARINE, 1960

Contractor	Location	Service contracted for overhaul of—	Amount of contract
Canal Marine Repair, Inc	New Orleans, La	Vessel repair	(1)
		LCM 8027	$2,934.00
		BT 280	290.00
Saucer Marine Service, Inc	do	Vessel repair	(1)
		LCM 8311	215.00
		ST 1995	2,585.00
		BARC 2X	3,698.98
		BARC 4X	1,491.00
		LT 1940	1,725.00
		BT 1793	188.00
		J 3753	2,664.25
		BT 1793	5,973.00
		BT 280	250.00
Pacific Fisherman, Inc	Seattle, Wash	Vessel repair	(1)
		T 89	6,707.80
Lake Union Dry Dock Co	do	Vessel repair	(1)
		Col. Basil O. Lenoir	26,788.54
Gunderson Bros. Engineering Co	Portland, Oreg	Vessel repair	(1)
		LT 643	94,222.97
		BG 6086	1,610.00
		BC 6482 and 6483	1,200.00
Gulf Marine Ways, Inc	Pascagoula, Miss	Vessel repair	(1)
		LCU 1508	7,250.44
American Marine, Inc	New Orleans, La	Vessel repair	(1)
		FS 790	6,975.08
Champion Machine Works	do	Vessel repair	(1)
		LCM 8079 and 8311	696.08
		LCM 8079	395.70
		LCM 8311	300.00
Higgins, Inc	do	Vessel repair	(1)
		LCM 8423 and 8424	6,173.00
Colonna's Shipyard, Inc	Norfolk, Va	Vessel repair	(1)
		MV *Hickory Knoll*	44,370.60
Western Brand Diesel, Inc	West Norfolk, Va	Vessel repair	(1)
		LCM 1579	4,205.72
Barbour Boatwork, Inc	New Bern, N.C	Vessel repair	(1)
		LCU 1573	1,755.90
William J. Detyens Co	Charleston, S.C	Vessel repair	(1)
		LT 1956	16,015.31
Old Dominion Marine Railway Corp.	Norfolk, Va	Vessel repair	(1)
		LCU 1579	2,213.91
Associated Naval Architects, Inc	West Norfolk, Va	Vessel repair	(1)
		LCM 8039	2,791.23
Wilmington Shipyard, Inc	Wilmington, N.C	Vessel repair	(1)
		LCU 1578	16,015.31
Ardell Marine Corp	Brooklyn, N.Y	Vessel repair	(1)
		Lt. S. S. Coursen	1,500.00
Caddell Dry Dock & Repair Co	Staten Island, N.Y	Vessel repair	(1)
		BK 8476	1,498.88
		BSP 1774	2,040.40
		FB 814	2,750.73
		BSP 1774	1,479.76
		Maj. Gen. W. H. Hart	6,651.56
		Q 644	2,443.20
Rodermond Industries	Jersey City, N.J	Vessel repair	(1)
		Maj. Gen. W. H. Hart	23,118.00
United Boat Service Corp	New York, N.Y	Vessel repair	(1)
		Q 645	1,342.20
		T 24	250.00
		BSP 1773	340.80
		T 24	252.40
		FB 814	150.00
		Q 635	1,650.00
		T 24	197.50
Martinolich Ship Repair	Oakland, Calif	Vessel repair	(1)
		FMS 811	36,251.00
Moon Shipyard & Repair Corp	Norfolk, Va	Vessel repair	(1)
		Q 649	234.78
		Q 647	178.51
		LCU 1531	1,559.16
		LCU 1579	110.00
		BC 198	3,697.00
		ST 1987	867.52
		LCU 1554	2,064.75
		LCU 1584	694.42
		LCU 1593	475.47
		ST 1988	6,197.65

[1] Not available.

Contracts for depot maintenance, fiscal year 1960—Engineer construction equipment—Continued

Contractor	Location	Service contracted for overhaul of—	Amount of contract
Norfolk Shipbuilding & Dry Dock Corp.	Norfolk, Va.	Vessel repair	(1)
		LCU 1532	$3,937.29
		Land ship No. 2	1,939.70
		LCU 1515	2,604.34
		LCU 1584	3,913.18
		BT 6400	6,947.79
		LCU 1577	7,910.64
		FS 313	23,855.42
		BD 2587	35,314.80
Moon Engineering Co.	do.	BG 6087	997.00
		Vessel repair	(1)
Horne Bros., Inc.	Newport News, Va.	*Pvt. Carl V. Sheridan*	2,641.00
		Vessel repair	(1)
		No. 2 gantry crane	4,340.16
John Swenson Dry Docks	Jersey City, N.J.	Gantry crane	3,974.82
		Vessel repair	(1)
		Q 643	11,115.07
		BK 8478	1,485.00
		BK 8479	1,485.00
		BSP 1773	2,243.76
Marine Basin Co.	Brooklyn, N.Y.	BK 8477	1,898.50
		Vessel repair	(1)
		BK 8426	1,314.50
		J 3788	915.24
		Q 644	3,499.10
		BSP 1774	9,803.31
		ST 2030	2,904.80
Thames Shipyard, Inc.	New London, Conn.	Vessel repair	(1)
Craig Bros. Marine Railway, Inc.	Norfolk, Va.	J 3672	854.70
		Vessel repair	(1)
		J 3769	991.54
Sassafras Boat Co.	Georgetown, Md.	LCU 1579	115.00
		Vessel repair	(1)
		J 7665	18.50
		J 3742	610.88
		Q 637	437.00
		Q 606	97.50
Quincy Shipbuilding & Repair Corp.	Quincy, Mass.	Vessel repair	(1)
		BC 201	4,847.46
		T 506	974.50
		T 508	5,019.40
		T 506	75.00
John Trumpy & Sons	Annapolis, Md.	Vessel repair	(1)
Davis Boat Works, Inc.	Newport News, Va.	J 3700	490.00
		Vessel repair	(1)
		T 499	3,305.99
		T 517	5,659.31
		Land ship No. 1	6,091.00
		T 507	4,986.94
		T 505	6,403.99
		LCM 6232	4,630.89
		LCM 6293	3,643.80

[1] Not available.

Secretary IGNATIUS. With your permission, sir, I will be followed by Major General Bunker, commanding general, U.S. Army Transportation Materiel Command, in St. Louis who will discuss aircraft maintenance.

Mr. HÉBERT. All right, General Bunker.

Does any member of the committee have any questions to ask the Secretary?

Mr. Kitchin?

Mr. KITCHIN. Not at this point.

Mr. HÉBERT. Mr. Norblad?

Mr. NORBLAD. This has to do undoubtedly with aircraft repair. Canadian Commercial Corp. has a contract for about $1 million, I notice, for engine repair both here and in Montreal. I was rather curious about that.

Mr. HÉBERT. Well, we will go into that. General Bunker will go into that.

Mr. NORBLAD. Thank you.

Mr. COURTNEY. He is going to discuss aircraft maintenance.

Mr. NORBLAD. Is that aircraft or automobile?

General BUNKER. That is an aircraft engine.

Mr. HÉBERT. That will be discussed by General Bunker.

Mr. Secretary, I have only one question to ask. I fail to find here a definitive answer or a positive answer as to whether or not the letting out of contracts is more economical or more costly than the inhouse work.

You roam all over the field here, first in left and right and in center, and then behind the homeplate, but come up with no decision. What is your opinion?

Secretary IGNATIUS. Well, I think that we have tried in the Army, and I think with good success, as the other witnesses will attempt to point out, to go out for services only when we do not have the capability inhouse sufficient to do it or only where we lack the technical competence to do the work.

The Army, I think, has done a very good job of balancing what it does inhouse and what it does out of house.

So that in order to answer your question in terms of a cost comparison, if we have the capability we want to do it inhouse, and the reason we want to is in order to be ready to meet our mission, which is to close with and defeat the enemy in sustained combat.

When we can't do it and yet need the services and have to go out, we have to pay the cost of these services which we either don't have at all or don't have in the requisite quantity.

Now, in terms of the costs of these effort contracts, undoubtedly the salaries that we might pay for a civilian engaged in an operations research or a management consulting firm would be, generally speaking, higher than the civilian pay scales that we have in the Army on a direct salary basis.

When we get into overhead loadings on these things, I think you get into fairly complicated questions. In comparison to military personnel, the salaries would also be higher, but there are other costs associated with military personnel that would have to be taken into account. I don't know that I have answered you.

Mr. HÉBERT. You have not.

I am trying to find out here the figures—after the two directives came out, to make a survey. You refer to the bakeries, but I am sure there was another figure here as to how many operations were closed down and subsequently contracted out.

Mr. KITCHIN. If I recall correctly, 7 were closed and 8 reduced, weren't they, out of that 1,280-some?

Secretary IGNATIUS. Yes sir, in the second one.

That was quite some time ago. I do not have any figures on that.

Mr. HÉBERT. Well, out of all this study, only seven were closed down?

Secretary IGNATIUS. In this particular one—in this one of the 1,200 or so.

Mr. HÉBERT. Well, suppose you tell us, Mr. Secretary, in what fields, in what areas, was the contracting out policy adopted by the Army? Which previously had been done inhouse by the Army? Bakeries is No. 1.

Secretary IGNATIUS. That is one.

Mr. HÉBERT. All right. No. 2.

Secretary IGNATIUS. That we mentioned.

Mr. COURTNEY. Aircraft maintenance.

Secretary IGNATIUS. Yes. In the field of aircraft maintenance, we have had a situation where as we began in recent times having larger numbers of aircraft in the Army, we did not have a capability to maintain them.

Mr. HÉBERT. Then it was not a substitute?

Secretary IGNATIUS. No.

Mr. HÉBERT. It was an overflow?

Secretary IGNATIUS. Well, we just didn't have the capability.

Now, I think what we have done—and General Bunker will go into this—represents what I think is basic Army policy in this whole area, to build some capability inhouse. We are building about 40 percent of our depot maintenance requirement and the rest we will do outside.

Mr. HÉBERT. Now, we have bakeries and airplane maintenance. What else was changed?

Secretary IGNATIUS. Well, sir, as the Army has always placed a lot of emphasis on its own arsenal system and the preservation of various skills there, we have found that as technology expands very rapidly it is difficult sometimes to keep up with all of these skills. And occasionally it is necessary now to go out and hire consultants to do technical studies.

Mr. HÉBERT. Now, you are leaving the area of maintenance and hardware and going into the area of "think" factories.

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. No. Let's hold it straight down the line.

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. So then I am to understand, the committee is to understand, there were only two areas in which there were changeovers. One was in bakeries and one was in airplane maintenance.

Secretary IGNATIUS. No, there are more.

Mr. COURTNEY. There is housing maintenance.

Mr. HÉBERT. Marine maintenance.

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. Only those two areas.

Secretary IGNATIUS. I think that a good deal was done also in the area of janitorial services—this kind of thing. More has been let out.

Mr. HÉBERT. That is leasing out janitorial. What else? There are three.

Secretary IGNATIUS. I have a list here of activities approved for discontinuance during the period 1954 to 1959. This is a 5-year period.

Ice cream manufacturing plants, 5.

Bakeries, 17.

Mr. KITCHIN. May I interrupt right here?

Secretary IGNATIUS. Yes, sir.

Mr. KITCHIN. All of these were supplemented by private contracts, contracting out, when they were discontinued as far as the Army was concerned?

Secretary IGNATIUS. I believe so, yes, sir. This is well before my time.

Can you help me on that, Colonel Dennison?

Mr. KITCHIN. The service still continued through contracting out when they were discontinued by military personnel?

Colonel DENNISON. The rules under which the decision was made, sir, under the BOB bulletins, only provided us with a decisionmaking process. And in some cases we just don't know whether it was replaced totally or in part, because all the bulletin required us to do was to make the decision.

Then in the field and under other directives as to how you get out of business, how you get out of something like this, and how you contract for replacement if required, this was done as separate actions—not necessarily related to the decision to close. We have no way at this moment of pulling back in and saying: This much of this work went to contract.

Mr. HÉBERT. What happened after you closed them down? You had to have the facilities. You had to have the production.

Mr. COURTNEY. You had to have the ice cream.

Mr. HÉBERT. You had to have the ice cream and you had to have the bread. What happened? Somebody just closed down the ice cream factory and he didn't know what would happen?

Mr. KITCHIN. Let me ask this question.

On some of these closures, such as ice cream, did you have additional facilities that were not closed that were adequate to supply?

Colonel DENNISON. Not in ice cream, sir.

Mr. KITCHIN. What about in your bakeries? You had, I believe, 17 left. One was used for training and the others were for bringing the boys back in, for inservice training, so to speak. And in addition to that, they were supplying the bread to the Army.

(Secretary Ignatius nods.)

Mr. KITCHIN. Now, did that supply all of the total needed by the Army in continental United States, or were you contracting out other facilities for bread in addition to the 17 still maintained?

Colonel DENNISON. In relation to the ice cream, sir, it is safe to say that all of that went to contract.

Mr. KITCHIN. Yes.

Colonel DENNISON. In relation to the bread, probably all of the bread being produced by the bakeries which were closed because of a question of location went to contract.

In some other areas, such as some tire retreading facilities—they were closed down, but some were kept on.

Again, here, part of the workload came back into those which were retained, because among the things which we could do under the bulletin was to compress what we had.

Mr. KITCHIN. So the list that the Secretary is getting ready to read does not mean that any of the items mentioned in the closures have been contracted out in their entirety.

Colonel DENNISON. That is right, sir.

(Secretary Ignatius nods.)

Mr. KITCHIN. And there is no way to tell whether you maintain a partial production within the military and a partial contracting out, all contracting out, or whether the facilities are just closed down and you don't use them?

Secretary IGNATIUS. I would suspect it would be a combination of those things. But this is something maybe we could check. What I have is the number that were approved for discontinuance.

Mr. HÉBERT. You see, Mr. Secretary, what we are trying to find out is what is the most economical to operate and how can we get the best out of the tax dollar.

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. Now, again, in some other hearings—you are not responsible. You weren't there. You are just coming into the picture now.

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. But the records ought to show—some records should have been kept to indicate whether this was a more economical or a less economical move.

Now, the committee is put in this position. We conduct these hearings with the objective of economy.

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. Of saving, of elimination of waste.

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. And then we have the witnesses of the Army testifying, "Well, we don't know."

Secretary IGNATIUS. Well——

Mr. HÉBERT. What kind of decision can we come out with, if we are not given the facts?

Secretary IGNATIUS. Well, do we have the records—it seems to me the question is a fair one that is being raised here.

Do we have in our system, or do you have in your testimony data on this. I think it is a fair question.

General BUNKER. I have some, yes.

Mr. HÉBERT. We should know, whether we should recommend a continuation of this system or whether we should recommend its elimination. This is a very important area.

Secretary IGNATIUS. Yes, sir, it is.

Mr. KITCHIN. If I understood the Secretary correctly, or if I recall the statement made in his prepared statement: that in the general category of overall policy and proceedings with reference to the closure or continuance, and so forth, that it was impossible to get a cost analysis, as an overall proposition. And only you could, you contend, when you get to a specific item.

Secretary IGNATIUS. Yes, sir.

Mr. KITCHIN. When there were certain hidden costs, in the elements of overhead, income taxes——

Secretary IGNATIUS. Yes, sir.

Mr. KITCHIN (continuing). Depreciation, capital investment.

Secretary IGNATIUS. Yes, sir.

Mr. KITCHIN. That you couldn't bring into play in figuring these cost elements, is that correct?

Secretary IGNATIUS. Yes, sir; that is correct. Although on a case-by-case basis, I think you could.

Mr. KITCHIN. I think—the only way in the world we would get it, then, Mr. Chairman, is by proceeding on an item-by-item basis—if we can't get it in the broad category of that, of then proceeding on a case-by-case basis, and have a sampling of at least what is the procedure.

Secretary IGNATIUS. At least I could do that category by category.

Mr. HÉBERT. That is the reason I asked that.

Secretary IGNATIUS. With regard to bakeries, my testimony did make reference to costs. And the cost of doing it in-house was roughly comparable to what it cost to buy it from commercial sources.

I would think that in each of these several categories here we might be able to provide cost data.

I think the question is a fair one. And I would hope we did this in 1954–59. Otherwise, there is no point to the exercise, as you point out.

Mr. HÉBERT. That is right, absolutely nothing.

Secretary IGNATIUS. This is what the industry calls a make-or-buy decision.

And normally you shouldn't make yourself what you can buy more economically on the outside.

Mr. HÉBERT. Now, there must have been a reason, a philosophy or thinking behind the directives issued by the Bureau of the Budget, supplemented by the Department of Defense.

Secretary IGNATIUS. Yes, sir.

The basic reasoning as set forth in the directives is that this is an economy, a free private enterprise economy, and we should not go out of our way, so to speak, to be in competition, the Government to be in competition.

Mr. HÉBERT. That is correct.

However—unless it is in the interest of the Government not to do so.

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. Now we come up 8 years later and we have no figures to show whether it was in the interest of the Government or not in the interest of the Government.

Mr. KITCHIN. I think, Mr. Chairman, another thing.

If I recall correctly——

Secretary IGNATIUS. Yes, sir.

Mr. KITCHIN. An answer to the chairman's statement, or an attempt to answer his question, was that price and cost alone was not the only prerogative granted under this BOB policy.

Secretary IGNATIUS. Yes, sir. And I think that is an important distinction. And the chairman has touched on that also.

There is such a thing as maintaining a capability.

Now, this has been very evident to me in the last few weeks, when we have been attempting to develop a good deal of figures for the Congress with regard to the so-called Berlin supplemental.

We were interested in this, in the question of increased quantities of equipment, in order to support a larger Army.

And it was perfectly evident as we began this work, under the time frame established in the planning, that one of the main sources for increased equipment within a short period of time was from rebuild of serviceables in our inventory.

And I think that this is a very important point here, as to why we need to have in the Army capacity to do this kind of thing, because you can't in the short run get equipment by starting new lines.

You can add to lines already going. But you have to have a rebuild capacity. You have to have the skills. And you have to have the equipment.

You always have to have certain facilities that you can't get easily on the outside. The ammunition field is a case in point.

So that we feel very keenly about this, in the Army.

And as I said in my prepared testimony, I believe, based after all only on the limited time that I have been here—but I believe that the Army does a very excellent job of striking an optimum balance between what we need to do inhouse in order to have the skills for mobilization, and what we go outside for. I think we do a good job on that.

Mr. HÉBERT. Now, Mr. Secretary.

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. The committee will ask you to be prepared.

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. At the end of the presentation of the Army's testimony, to express an opinion as to whether or not this policy should continue or be discontinued.

Secretary IGNATIUS. All right, sir. I will

Mr. HÉBERT. We want to know your opinion. And you can only base that opinion on the facts at your hand.

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. But I want to give you warning ahead of time.

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. That that question will be asked you, now.

Secretary IGNATIUS. I appreciate that.

I think it is a fair question. And I will do my best to give you a good answer.

Mr. HÉBERT. All right.

General Bunker.

Without objection, the biographical sketch of General Bunker will appear in the record at this point.

(The biographical sketch of General Bunker is as follows:)

BIOGRAPHICAL SKETCH OF MAJ. GEN. WILLIAM B. BUNKER

General Bunker was born September 30, 1910, at Fort Slocum, N.Y. His mother is the daughter of Commodore William H. Beehler, U.S. Naval Academy, 1865, and his father was Col. Paul D. Bunker, U.S. Military Academy, 1903.

General Bunker entered the U.S. Military Academy and was graduated and commissioned in the Cavalry in 1934. In 1936, he transferred to the Engineers and attended Massachusetts Institute of Technology, where he was awarded a degree of master of science in Engineering in 1937. From 1939 to 1942, he was stationed in Nicaragua in charge of a large canal survey.

During World War II, he was the Deputy in charge of the Transportation Corps' supply program. In early 1945, he made a 6-month trip to Paraguay for the State Department to conduct a transportation survey of that country.

In 1948, with the beginning of the Berlin airlift, General Bunker was placed in charge of the terminal operations—gathering shipments and loading aircraft in the U.S. Zone and unloading and distributing cargo in Berlin. He organized a similar system between Korea and Japan with the outbreak of hostilities in 1950.

In the latter part of 1950, the Chief of Transportation assigned General Bunker the responsibility of investigating the application of the helicopter to Army transportation. This investigation resulted in an immediate and large-scale expansion of this activity.

In 1954, he was assigned as the commandant of the U.S. Army Transportation School, Fort Eustis, Va., and in September 1955 he was given his present assignment as commander of the U.S. Army Transportation Materiel Command with headquarters in St. Louis, Mo. He was promoted to major general on June 1, 1961.

General Bunker is active in many professional and technical societies including the American Helicopter Society, the National Defense Transportation

Association, the Association of the United States Army, and is an associate fellow of the Institute of the Aeronautical Sciences. In addition he is the author of many articles which have appeared in various technical magazines.

Mrs. Bunker is the former Crystle Carr, the daughter of Lt. Col. William L. Carr (retired), and has one son, Paul D. Bunker III.

General Bunker's decorations include the Legion of Merit with two Oak Leaf Clusters, the Army Commendation Ribbon, the order of the British Empire (U.K.), and the Medalla de Distincion (Nicaragua).

General BUNKER. Thank you, sir.

Mr. COURTNEY. One question before we leave here.

On these numbers—you took the ice cream plants and bakeries and so on. Are you dealing with continental installations or are you talking in that figure of worldwide?

Colonel DENNISON. Continental and Alaska—continental United States, sir, Alaska and Hawaii.

Mr. COURTNEY. You are not considering in there any of the installations abroad?

Colonel DENNISON. No, sir.

Mr. COURTNEY. And that is true of all the figures, is it?

Colonel DENNISON. These figures which are related to the BOB bulletins.

Mr. COURTNEY. Well, then, I would take it from that that the BOB bulletin in your opinion is not applicable abroad.

Colonel DENNISON. It was specifically so stated.

Mr. COURTNEY. Specifically so stated.

Colonel DENNISON. As not being.

Mr. COURTNEY. That is right. That is all continental United States or Alaska or Hawaii.

Colonel DENNISON. What is now the 50 States.

Mr. COURTNEY. The 50 States.

Colonel DENNISON. Yes, sir.

Mr. COURTNEY. I just wanted to clear that up.

General BUNKER. Mr. Chairman and members of the committee, I am going to discuss the maintenance of Army aviation equipment and the use of commercial contractors in the performance of this function.

First, I will discuss the depot level or major rebuild and overhaul program.

Prior to July 1957 depot level maintenance of Army air equipment was accomplished by the Department of the Air Force. In October 1955 the Office of the Secretary of Defense approved the transfer of depot support of Army aircraft from the Air Force to the Army. This transfer was predicated upon the use of contractor and existing maintenance facilities of the other services and prohibited the establishment of any new Army facilities.

In December 1959 the Office of the Secretary of Defense rescinded restrictions imposed in the original transfer and authorized the Army to perform limited inhouse depot level maintenance of aeronautical components.

In addition, at this time the Department of the Army was requested to make plans to attain capabilities to overhaul end item aircraft and aircraft engines. To this end, the Army has recently reactivated the U.S. Army Transportation Aeronautical Depot Maintenance Center at Corpus Christi, Tex., of which I shall speak later.

The major portion of Transportation Corps depot level maintenance has been and will continue to be performed on a contract basis with the remainder being accomplished inhouse or by cross-service agreements.

A general feel for the magnitude of the program can be appreciated by the amount of the annual budget for overhaul which is about $25 million.

I shall first discuss our experiences.

II. AIRFRAME OVERHAUL

In 1957, when we assumed responsibility for depot overhaul of aviation equipment, the Army instituted the standard configuration and modification program—SCAMP—for airframe overhaul.

This program was designed to inspect the entire aircraft on a 3-year cyclic basis and to perform all maintenance which was due or shortly to become due; to incorporate all outstanding modifications and technical order compliances; and to bring the aircraft to the user in the maximum state of operational readiness economically practicable.

The scheduled cost of SCAMP was consistently about four times the funds available for this program. Also, experience and research gave evidence that, with proper preventive maintenance and active technical followup with field commanders, no great amount of airframe deterioration need be anticipated. Therefore, the Army adopted the inspect and repair only as necessary—IROAN—program.

IROAN is predicated upon the Army field commander performing that preventive maintenance and installing those modifications which are authorized for his echelons of maintenance. With increasing maintenance capability in the field Army, this assumption has been found to be tenable.

IROAN is not a cyclic principle. Aircraft are nominated for overhaul by commanders only as they show evidences of deterioration beyond his capability to curb by preventive maintenance.

Crash damage aircraft also are overhauled under the IROAN program. During the past year, the total cost of IROAN of Army aircraft, including crash damage aircraft in the continental United States, has been only slightly over a million dollars. This may be compared with estimates of approximately $16 million which would have been required under the previous SCAMP principle.

We cannot be certain at this time that this cost will not increase as weaknesses in preventive maintenance performance or requirements make themselves apparent. However, the principle does seem to be sound and we are now overhauling aircraft by contract under the IROAN principle which specified that the contractor will return the aircraft to a satisfactory used equipment status. Specifications have been devised which establish the standards of used equipment to which aircraft are to be overhauled.

Up to date we have received very few nominations of aircraft for IROAN from field commanders, except for crash damage equipment. There are no recorded instances of excessive deterioration when prescribed preventive maintenance has been performed.

We feel that the cost of this program has been minimized to the maximum extent practicable within the framework of our present mode of operation.

In order to verify our engineering judgment of this program we have contracted for an analytical overhaul of one of our cargo helicopters and will continue such surveillance on a random basis.

I would now like to discuss:

III. AIRCRAFT COMPONENT OVERHAUL

Pursuant to the memorandum of agreement relative to transfer of responsibilities from the Air Force to the Army, it was considered in the best interests of the Governmeint to establish overhaul contracts on a contractor furnished parts concept. This basic policy was established in order to delay the introduction of an additional broad range of items and tools in the Army supply system which would not be required within the normal scope of the military mission.

Our contractors were accustomed to the Government furnished equipment concept under Air Force contract procedures, therefore the transition to contractor furnished parts was not at once favorably received.

Also, under the contractor furnished parts concept, the contractor had no way to predetermine the parts required until disassembly and inspection.

This action resulted in a delay in the timely procurement of parts required for the overhaul.

The contractor ordered his parts from other manufacturers and, as a result, took his place in the production line to get his parts produced. In many instances he was competing with large Government and other civilian orders.

Contractors also experienced financial difficulties because they had to increase their investment in shelf stock and their contractual deliveries were delayed.

While the contractor furnished parts concept did offer many advantages and was improving, as the Transportation Materiel Command gained more experience during the period from 1957 to the present, we have gradually changed over to a policy of Government furnished parts. This will not only assure a better support of our oversea customers but will:

(*a*) Reduce overhaul turnaround time from about 13 months to 6 months, and

(*b*) Expand the production base to emphasize small business participation.

Initially, component overhaul contracts were awarded to cover a fixed quantity of items. As requirement information was not entirely dependable, modifications as to quantities were required. In order to obviate the necessity for revision of quantities, a more flexible type of contract was required.

The indefinite quantity type, which provides for a minimum and a maximum quantity, enabled the Government to order and meet quantities as are actually available for overhaul. The Transportation Material Command did, however, award a contract covering overhaul of a quantity of engines on a fixed-price basis. This method of procuring contract maintenance proved to be unsuccessful for the reason that no contractor can accurately predetermine the full scope of work that will be required.

The present method for accomplishing component overhaul is to utilize indefinite quantity contracts, which are the result of the negotiation of competitive quotations submitted by bidders covering labor, certain mandatory work, and services. Parts and materials supplied by the contractor are reimbursed at actual net cost.

In addition to the normal component overhaul contracts we have some "closed circuit" overhaul contracts which are usually with a prime manufacturer in support of the Army's test program on new items of equipment. The purpose of this type of contract is to—

Provide for analytical overhaul with attendant investigations and determination of the cause of unsatisfactory conditions;

Render engineering reports and recommendations for extending the life of the component;

Accomplish engineering evaluation for the development, manufacture, and testing of prototype kits for the modification;

To determine the time between overhaul of major time change components; and

To determine the range and quantities of line items to be procured and stocked for repair and overhaul.

A review of the award of contracts discloses that 25 percent of the total dollars or 44 percent of contracts awarded for contract maintenance were placed with small-business concerns.

I know that most of you are aware of our recent reactivation of the air repair facility at Corpus Christi which I would like to discuss:

IV. ARMY AVIATION DEPOT MAINTENANCE FACILITY

As stated previously, in December 1959, the restrictive provisions on establishment of an Army aircraft depot maintenance facility and an inhouse capability were rescinded by the Secretary of Defense. Factors affecting this decision were steadily increasing inventory of more complex aircraft and the increased importance of Army aviation to the Army's mobility objectives. Based on a request of the Department of the Army, the Secretary of Defense authorized the establishment of an aeronautical depot maintenance facility in order to permit the Army to gain and maintain technical competence essential to the successful management of its aeronautical maintenance program.

The basic objectives of this program encompassed the establishment of a facility capable of the overhaul and repair of the full range but not the full quantity of mission-essential aeronautical materiel. The projections of this plan over the next 5 years have been based on an ultimate goal of approximately 40 percent of the total fifth-echelon maintenance program. Dut to the growth of the aeronautical program in terms of inventory quantities and increased equipment complexity, the establishment of the fifth-echelon capability within the Army should not have an appreciable effect on the dollar level of overhaul repair programs accomplished by contract.

The Corpus Christi facility was designed and built by the Navy Department for the overhaul and repair of aircraft, engines, and all related components, and is valued at approximately $23 million for the complete facility. An estimated $700,000 for rehabilitation of this facility is considered to be a good investment for the activation of a complete depot maintenance activity.

The total value of the materiel to be returned to service from this facility cannot at this time be reasonably projected; however, a sample portion (engine and aircraft overhaul) can be fairly accurately computed. For the first year, the estimated direct overhaul cost of $3.3 million will yield a return of $16.5 million value of material recovered.

As mentioned by Secretary Ignatius in his remarks, the primary functions to be accomplished at this depot are as follows:

(*a*) Maintain a base which will provide maintenance capability during a national emergency.

(*b*) Effect prototype installations and develop man-hour standards so that more definitized maintenance work specifications for competitive contracting can be developed.

(*c*) Retain, within the military sphere, a source of skills for oversea assignments and a home assignment for skilled personnel returning from overseas.

(*d*) Fabricate aircraft parts for out-of-production aircraft and critically needed long leadtime items required on an emergency basis.

(*e*) Perform overhaul and effect repairs to crash damaged aircraft having various degrees of damage and requiring job operation rather than production line maintenance.

To summarize, the activation of this depot will enable us in the Transportation Corps to advance side by side with industry in executing a difficult but essential maintenance program and provide a source of information to industry to better enable them to assist us in performing, by contract, the functions of aeronautical maintenance.

In addition, the Transportation Corps also operates four fourth-echelon maintenance shops located at the general depots where our supplies are stored. While their primary function is in support of aircraft stationed in the geographical area in which they are located and the care and preservation of depot stocks of aeronautical equipment, they have performed certain overhaul operations. This program has been based on skills and labor available not required to meet the fluctuating requirements received from the field activities.

Although this discussion has been primarily on depot level of maintenance, I feel it would be desirable to mention briefly our:

V. FIELD AND ORGANIZATIONAL MAINTENANCE

In the Army, filed and organizational maintenance are responsibilities of the commanders of the using units. As a matter of basic policy, we desire that these functions be performed by military units in order that they may be deployed with the equipment in the event of emergencies.

Due to shortages of personnel in units and other special considerations, however, there are a few significant instances in which their function is "contracted out."

a. All of our school aircraft at both Camp Wolters, Tex., and Fort Rucker, Ala., are supported by contractors for their full range of organizational and field maintenance. As a matter of interest, this covers almost one-quarter of our U.S.-based aircraft.

b. All of our test aircraft are supported by maintenance contractors at Fort Rucker, Ala., and Fort Huachuca, Ariz.

c. Most field maintenance at Fort Sill, Okla., is performed by contract.

Approximately one-third of the Continental Army Command's maintenance dollar goes for contract maintenance.

VI

In oversea areas we have established a reasonably effective aircraft-maintenance facility at Sandhofen, near Mannheim, in Germany, but have otherwise been forced to lean heavily on indigenous contractors. With the increasing emphasis on the unfavorable balance of payments, however, we are now bringing most of the expensive components back to CONUS for overhaul.

The major problem is "contracting out" overseas for aircraft maintenance has been in supplying the required parts on a timely basis and accurate forecasting of requirements.

VII

All in all, the Transportation Corps has enjoyed a highly successful program of contract maintenance of Army aviation equipment. This has followed our similar experience in railway and marine equipment for many years.

We feel that, with the availability of our new facility at Corpus Christi and our long list of competent contractors, we can successfully perform our mission in any emergency.

We feel that the costs that we have experienced have been reasonable and that we have been particularly successful in keeping the Army's investment in tools and facilities to a bare minimum consistent with our military responsibilities.

(The chart attached to the statement is as follows:)

Depot maintenance (CONUS) accomplished and cost—Air equipment

	Inhouse		Contract	
	Quantity	Cost	Quantity	Cost
Fiscal year 1958:				
Aircraft	10	$314,207	422	$1,868,221
Engines	15	95,770	1,492	2,380,550
Components	2,952	141,039	7,481	1,442,896
Total		551,016		5,691,667
Fiscal year 1959:				
Aircraft	0	0	445	5,150,243
Engines	7	87,949	963	2,909,692
Components	7,716	611,157	10,221	4,333,595
Total		699,106		12,393,530
Fiscal year 1960:				
Aircraft	0	0	484	7,287,000
Engines	532	2,065,000	1,318	3,859,000
Components	13,913	2,296,000	11,067	5,355,000
Total		4,361,000		16,501,000
Fiscal year 1961 (4th quarter estimate):				
Aircraft	88	264,000	72	1,133,000
Engines	800	3,352,000	2,036	9,276,000
Components	1,031	400,000	32,110	10,324,000
Total		4,016,000		20,733,000

Mr. HÉBERT. General, you have had personal contact with this situation?

General BUNKER. Yes, sir.

Mr. HÉBERT. For how many years, now?

General BUNKER. Six years, sir.

Mr. HÉBERT. Six years.

General BUNKER. Yes, sir.

Mr. HÉBERT. What is your opinion on the contracting-out features?

General BUNKER. It is my opinion that the contracting for maintenance operations and certain other things that we have done has not deteriorated our military capability, that in any area we do need the ability to perform a portion of all work—a sample, if you will, as a yardstick or standard of performances and costs, as a testing capability for degree of recovery, and that sort of thing. Fundamentally our contractors have been responsive to speedups to meet our requirements, they have been generally quite conscientious in quality control, and their costs as we have experienced them, where you can directly relate them, have been in general quite comparable.

The reason I can't answer that more accurately is that, as you are very well aware, sir, our methods of cost accounting make it rather difficult to clearly outline exactly what an operation on a large military establishment costs.

Mr. HÉBERT. It seems to me your cost-accounting system ought to be given a complete overhauling, if you can't tell how much you are getting out of your dollar.

General BUNKER. It is a question of paying for the excess capacity needed for mobilization, and whether you can separately cost that to one side.

Mr. HÉBERT. I recognize that.

But you can't come up with an answer.

Geneal BUNKER. Yes, sir, we can.

Mr. HÉBERT. Well, what is the answer? Is it more economical to contract out than it is not to?

General BUNKER. Generally the figures that we have worked up show in most instances a slightly higher cost by contract, on most things.

On certain items there have been rather large variations. But usually the reason for it can be determined by investigation. But I have some samples here.

For example, the R–1820 engine, which is about a 1,200-horsepower engine, our inhouse costs are $4,475, and our contract costs are $4,539, or, in other words——

Mr. HÉBERT. Where is that, General?

General BUNKER. These are just some figures that I have.

Mr. HÉBERT. Is it in here?

General BUNKER. No, sir.

Mr. COURTNEY. It is not in the print.

Mr. HÉBERT. It is not here.

General BUNKER. A smaller, opposed, six-cylinder engine, for fixed-wing aircraft: $2,205 inhouse against $2,214 done by contract.

On the other hand, I have some rather significant differences, to give an example of my other statement. On the overhaul of an engine in an industrially funded facility, the price that was trans-

ferred to that facility was about $7,500 for the overhaul of an engine, which when overhauled commercially would cost about $2,800. Some of that $7,500 went to pay the mobilization base of this industrially funded facility.

That is why I say they are not directly relatable.

There was no other work in the facility, and obviously the total account had to be paid. But in general we have found the costs roughly comparable. The slightly higher cost for contract, as Mr. Secretary said, represents the fact that the contractor pays taxes and has depreciation and other things not included in our costing structure.

Mr. HÉBERT. Yes, but under your costs there you entered the cost of mobilization.

General BUNKER. Yes, sir. Well, that is the rule of the game under industrial funding of an installation of that type, sir.

That is why I say those figures are not talking really about the same thing.

Mr. HÉBERT. I recognize that. And we come out with not the same thing, too.

General BUNKER. But those first figures I gave, which showed around a 5- or 10-percent difference, is a best estimate of trying to compare directly relatable things, sir—around a 5- or 10-percent difference.

Mr. KITCHIN. And may I ask a question right there?

Mr. HÉBERT. Yes, sir.

Mr. KITCHIN. In those instances where you shaw a 5-percent differential or a 10-point differential of contracting out, do you take into cosideration, when you release the military personnel involved in the inhouse operation, the value of that personnel to the Army and other activities? Is that taken into consideration in getting the cost?

General BUNKER. That is taken into consideration in making the decision as to whether it will be contracted out or not.

Mr. KITCHIN. But you take it into consideration in your cost figures?

General BUNKER. No, sir; they were not.

Mr. KITCHIN. So if you take that into consideration in your cost figures, then you probably are a little bit ahead of the game in contracting out?

General BUNKER. Yes, sir.

Mr. KITCHIN. In those instances where the percentage differential is so small?

General BUNKER. That is correct. And also in that one, where they were quite large.

The reason that we paid $7,000 for overhauling an engine which could be commercially overhauled for $2,500; some or most of that $5,000 difference went to pay the cost of having a mobilization base and having trained people that you had to have for other requirements.

Mr. HÉBERT. It had nothing to do with the engines.

General BUNKER. Yes, sir; but was in this particular instance directly charged to the engine.

Mr. KITCHIN. Well, that is true. But the inverse is true, also, Mr. Chairman. When you release the personnel in an inhouse operation

and count the services, the value of the services in another sector of that particular operation, or in another piece of equipment or something of that nature, then you are still gaining.

General BUNKER. That is right.

Mr. KITCHIN. As against that cost, the personnel to do another function.

General BUNKER. That is correct.

Mr. KITCHIN. And the value of that service is not added into the cost on a comparative basis, as against your commercial operation.

General BUNKER. Well, an example of that came up, sir, on the question that has been included in one of these questions in the lists that were presented.

I closed the Holabird rail rebuild shop about 2 years ago. Our workload for that shop was something less than 50 percent of its capacity, and therefore it enjoyed a very high overhead rate.

In considering closing it, we recognized the fact that we have and could maintain an operation at Ogden, Utah, where the skills and knowledge of this profession, which is getting rather rare, of maintaining particularly steam railway equipment, could be maintained. And under those circumstances the decision was primarily a cost one.

If, however, we didn't have any facility, we undoubtedly would have kept it open without regard to how much more it cost us to perform the work there, because of the low workload and the rather large facility they had to keep going.

Mr. NORBLAD. They were civilians doing this work at Ogden, I take it?

General BUNKER. Yes, sir. There were civilians at both places.

Mr. NORBLAD. At both places?

General BUNKER. Yes. And there were approximately 90 civilians released at Ogden, about half of whom found other jobs. About half of them were ex-retired railroaders.

Mr. NORBLAD. I didn't mean to say civilians. I was trying to distinguish Government employees as against contractor's employees.

General BUNKER. Yes, sir; these were Government employees.

Mr. NORBLAD. In both cases?

General BUNKER. Yes, sir.

Mr. HÉBERT. Now, Mr. Secretary, you understand?

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. You will supply for the record—I know you do not have it now—the details, or the categories of the items as far as you are able to ascertain?

Secretary IGNATIUS. Yes, sir.

(The information is as follows:)

With reference to the question of relative costs of inhouse operation as against contracting for these services, a true comparison of overall costs is usually not possible due to the difficulty of computing elements of depreciation, interest, and taxes on funds previously spent for capital assets, and of deleting Army costs related to the overall mission such as mobilization requirements. Cost, including the above elements, is not always a factor in determining whether a service or product will be produced inhouse or by a contractor. National defense requirements, including security and combat effectiveness, or the lack of inhouse capabilities might determine the source of the supplies or services without specific consideration of relative cost estimates.

In those cases where costs were a determining factor in the evaluation of Government-owned and operated facilities, the following is a sample of cost comparisons:

Activity	Government cost	Commercial cost
Tire retreading activities (average within CONUS).	$17.40 to $22.58 per tire	$21.80 to $39.80 per tire.
Ophthalmic goods (average)	$3.13 per lens	$5.45 per lens.
Ice plants (Fort Benning)	$4.99 per ton	$7 per ton.
Office equipment repair (Fort Carson, Colo.)	$8.20 per typewriter	$12.35 to $16.50 per typewriter.
Bread bakeries:		
Fort Monmouth, N.J	$0.1338 per pound	$0.1027 per pound.
Fort McPherson, Ga	$0.1395 per pound	$0.1612 per pound.
Fort Sill, Okla	$0.1012 per pound	$0.1133 per pound.
Fort Carson, Colo	$0.0953 per pound	$0.1078 per pound.
Drycleaning plants:		
Fort Benning, Ga	$0.3636 per piece	$0.3630 per piece.
Fort Sam Houston, Tex	$0.374 per piece	$0.346 per piece.
Coffee roasting plants	$0.776 per pound	$0.821 per pound.

These samples indicate that some activities are more economical to perform inhouse while others are more economical to contract. No overall answer as to whether or not contracting is more economical or more costly than the inhouse work is possible.

Mr. NORBLAD. May I ask one question?

Mr. HÉBERT. Yes.

Mr. NORBLAD. What about in time of emergency, where you have one of these steam engines and an aircraft is 10,000 miles away and there is no contractor to do the work? Are you prepared with your own people under combat to get that done?

General BUNKER. Yes, sir. This is one of the reasons we have reduced our operations overseas, in addition to this program.

We have established at Corpus Christi a mission of training a unit ready to move overseas, and we have established certain cellular teams of specialists in maintenance of various aircraft to move overseas.

Mr. NORBLAD. It seems to me one of the functions of the military in a time of peace, or relative peace, is to be constantly training their people so they can go into combat areas.

General BUNKER. That is correct.

Mr. NORBLAD. And be a self-sufficient unit ready to make their own repair and maintenance.

General BUNKER. We have units capable of performing each level of maintenance in the Army.

Mr. NORBLAD. The fact that you are contracting out a great deal doesn't lessen the efficiency or the ability to do your own repair in a combat base, many miles away from a contractor in time of combat?

General BUNKER. No, sir.

The unit, for example, that we have stationed at Atlanta in the shop—and it is issued a certain amount of property to work on as their skills in any individual area reaches the point where they can qualify. They work side by side with the civilians, working in the shop to learn the trades.

(Mr. Norblad nods.)

General BUNKER. And by being jointly located, can be pulled out without the mission there collapsing if they did.

Mr. NORBLAD. Yes.

In other words, you are satisfied that this contracting out system does not impair the training ability or the ability of your own men in uniform to perform this repair work at a remote area in time of emergency?

General BUNKER. Within the personnel authorizations that we have, I am satisfied.

Mr. NORBLAD. That is what I am driving at.

General BUNKER. Yes, sir.

Secretary IGNATIUS. We try to contribute to that capability also through our Reserve program, where we try to maintain units that are trained in these supporting activities of maintenance and overhaul.

Mr. NORBLAD. Of course, I also assume some of these contractor personnel would be available to go with your people in time of emergency, to act as experts or technicians to advise.

General BUNKER. We have three Reserve maintenance——

Mr. NORBLAD. No. I mean civilian employees—not Army employees.

Secretary IGNATIUS. Technical people?

Mr. NORBLAD. Technical people from the contractor.

General BUNKER. Yes, sir, we have about 50 technical representatives.

Mr. NORBLAD. I know in my own experience at an oversea base during World War II—I was with the bombers, as an Army personnel. There were a lot of contractor personnel, I believe, from Martin, going around giving advice and technical aid to the men doing the repair work on the planes.

General BUNKER. The contract in which you are interested, sir, is a modification contract. We secured the engines for our DeHavilland Caribou procedurement from Air Force excess.

Mr. NORBLAD. I don't follow you, from the beginning.

Secretary IGNATIUS. Canadian.

General BUNKER. Canadian.

Mr. NORBLAD. Yes, I asked about that. What is it?

In Washington, D.C., and one in Montreal, I noticed.

General BUNKER. That is because the contracts with the DeHavilland Corp. are made through a contractor which is an arm of the Canadian Government, called the Canadian Commercial Corporation. And some of the contracts list the contractor as DeHavilland, which it is not. It is the Canadian Corporation.

Mr. NORBLAD. These are some British planes, you mean, that the Army bought, or Canadian?

General BUNKER. No, sir. They are Canadian aircraft. But the engine contract is for the modification of an excess, out-of-production engine to meet production of this new aircraft.

Mr. NORBLAD. Well, in other words, the basic question would be answered by this: The Canadian Commercial Corporation comes into the picture because you bought certain planes from a Canadian manufacturer, is that it?

General BUNKER. That is correct, sir.

Mr. HÉBERT. May we have the contracts, Mr. Courtney?

Mr. COURTNEY. Now, Mr. Chairman, we pass with that, and with the supplementary information which the Secretary will supply, to a consideration to what has been described as "effort" type.

At the direction of the Chair, we inquired of the Department of the Army the scope, and obtained a listing of some of these contracts. And it is to them, and as to the subject matter, that the attention of the subcommittee is directed now.

Mr. HÉBERT. These are these "effort" or "think" contracts?

Mr. COURTNEY. These are—well, I don't want to get into semantics. If you want to get them, you have to ask for "effort" type contracts. So I better stick with that. Then I won't be lost in the woods.

Secretary IGNATIUS. Mr. Chairman and Mr. Courtney, we have with us General Ely, who is Director of Research for the Army, who can talk about some of these specific contracts in as much detail as we can provide at the moment.

We just got the list recently. I would like to make a general statement with regard to these "effort" or "think" contracts.

Many of them fall into two categories: One, management services, that is, management advisory services. And, secondly, what is sometimes called operations research.

The basic Army policy governing work of this kind is set forth in AR 1–110, which sets forth both the basic policies and procedures for contracting for this kind of work.

You might be interested in just a quick summary of the controls that are established by this policy statement.

With regard to the management consulting and advisory services, these must be approved contract by contract, or project, by the Comptroller of the Army, and by the Assistant Secretary of the Army for Financial Management.

There are three basic criteria that these gentlemen use in reviewing requests for contracting of this kind. The first one is that the work requires technical knowledge not available in the Army.

Secondly, that the project may require an outside, disinterested opinion. As you know, often businesses contract with consultants for this kind of thing, because the people on the job sometimes are committed to a particular structure of organization, and it is sometimes useful to have an outside, objective look.

Mr. HÉBERT. That is the blanket that covers everything.

Secretary IGNATIUS. Well, we try not to do that.

Mr. HÉBERT. It is.

As a matter of fact, isn't that a good escape clause?

Secretary IGNATIUS. Well, if it is not policed properly, it certainly could be.

Mr. HÉBERT. It is the avenue that leaves it way open to the Army to say, "Well, we want an outside opinion," and you go outside and get an opinion on ice cream cones, or anything else that you desire.

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. I think that will be developed.

Secretary IGNATIUS. It could be abused.

And the third point or criterion is that the requirement is of sufficient urgency in terms of time that your available people who might have the technical competence are not able to do it within the time and still do the other work that they are responsible for.

The other category of these "effort" type contracts is the operations research area, where you have these studies of various kinds—mathematical analyses, and so forth. And here the Chief of Research and

Development of the Army is the person responsible for approving these. And he applies some of the same criteria that would be applied to the management engineering.

One other category is the field of logistics studies, concerned with the supply system and distribution system of the Army. And here the Army has designated its Army Logistics Management Center at Fort Lee, Va., as the agency responsible for knowing about and approving contracts of this kind.

The point of this is to have a repository of knowledge here, to know what is going on, and to try to prevent someone from reinventing a wheel.

Now with regard to these specific contracts—these are from my review in the R. & D. area.

And General Ely, who is on my right, can respond to this. And we have other people here familiar with individual contracts and in greater detail.

Mr. HÉBERT. All right, Mr. Courtney——

Mr. SANDWEG. Could I interrupt, please?

Mr. HÉBERT. Yes, Mr. Sandweg.

Mr. SANDWEG. Mr. Secretary, is this review that you spoke of, of contract by contract, regardless of cost?

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. All right. Mr. Courtney.

Mr. COURTNEY. We have these listings as to which the specific questions were suggested by the subcommittee.

One is a contract with Opinion Research Corp. of Princeton, N.J., as follows:

Awarded a contract in February 1961 to conduct a 6 months' study designed to enhance West Point's ability to attract highest quality candidates from throughout the United States.

The contract—giving the number of it—is for $40,000.

The stated purpose is that the—

contractor will report results and recommend communication methods for motivating outstanding students to seek admission to West Point.

Now this effort is said to be still in the "development stage." Now the subcommittee would be interested in knowing the military purpose to be accomplished by this contract, and also the timeliness of the contract.

General ELY. This one happens to fall in an area that has never been referred to the Chief of R. & D., and I believe Major Miller is here who can speak to that.

Mr. HÉBERT. Getting more cadets wouldn't be in research and development, then, General?

General ELY. Beg pardon?

Mr. HÉBERT. I said, getting more cadets for the Academy wouldn't fall within the category of research and development?

General ELY. Not thus far.

Mr. HÉBERT. Not thus far.

General ELY. Major Miller——

Mr. COURTNEY. From what office?

Major MILLER. I am from the Office of Deputy Chief of Staff for Operations.

Mr. COURTNEY. What is your first name?

Major MILLER. George Miller, sir.

The purpose of this contract was to try to determine what factors influence career selection by outstanding young men in our secondary schools throughout the United States.

Not only what factors interest them specifically, but also what factors are deemed to be influential by their teachers, their guidance counselors, and their parents, so that, in fact, we can attract the highest quality, the finest young men in the United States to desire, seek out, and obtain appointment to the Military Academy.

We have great confidence in our Academy to produce and train a fine young man, but the finer the young man who comes in, the better the product for the Army. And so we were trying to determine what factors are involved in career selection for the outstanding young man throughout our secondary schools.

Mr. COURTNEY. Well, what communication recommendations—what method of communications have been recommended?

Major MILLER. There have been no recommendations made as yet. The study involves determining what communications means might be used to communicate an image of the Military Academy and of the Army as a career, which would be desirable in the eyes of the outstanding young man and his counselors.

Mr. KITCHIN. This is a high-class advertising project? Isn't that essentially what it is? Not from the standpoint of pictures on bulletin boards.

Major MILLER. No.

Mr. KITCHEN. No, but I mean it is advertising with respect to the quality of education, the necessity for career personnel—something that will attract the young man to want to go and make a career of this.

Major MILLER. Yes, sir. It is trying to find out what should be done in this field.

Mr. KITCHIN. Now, when you find out, the Congress would be absolutely interested and eager to know. [Laughter.]

Because I know some of the situations arise almost weekly with reference to congressional appointments, whereby the Congressman has utilized every available piece of information at his hand with reference to the individual's school, background, personality, et cetera, and then uses the good judgment that he has with reference to his knowledge of the family and whether he in his opinion thinks that the boy is qualified and wants to make a career, and sometimes with all of that information we fall flat on our faces—having a boy either flunk out intentionally to get out of the Military Academy, or having him not turn out to be the type of guy we thought he was.

So if that does result in any concrete information of any benefit, we would like to know about it.

Major MILLER. Certainly, the intention is to communicate to Congress any information that is found out, sir.

But more to the point, if we can have a result arise that we do stimulate more outstanding young men to request you to nominate them, then you have a greater selection and can thereby have a greater field from which to choose.

Mr. HÉBERT. You can't get any more than the number of appointments you are allowed, no matter how much time you spend. And, for every 1 you appoint, you make 10 enemies.

Mr. NORBLAD. That has nothing to do with their ability to play a good game of football, by any chance, does it?

Mr. COURTNEY. No, that is handled separately.

Major MILLER. I think not.

Mr. NORBLAD. Is that handled separately?

Major MILLER. This particular thing is designed to try to find out how we can motivate what the secondary schools feel to be their most outstanding young men.

Mr. HÉBERT. Admiral Rickover is in charge of that program. [Laughter.]

Mr. COURTNEY. Now the second—are you through?

Mr. HÉBERT. No. I want to find out too, on what we were discussing prior: Now what stimulated this $40,000 expenditure with this—what is the name of this outfit?

Major MILLER. The Opinion Research Corp.

Mr. HÉBERT. Maybe Gallup would have done it a little cheaper.

Mr. COURTNEY. He may be next door to Opinion Research Corp.

Mr. HÉBERT. Who is Opinion Research Corp., of Princeton, N.J.?

Major MILLER. This is an independent opinion research organization, sir, a civilian organization, deemed to be either the most outstanding or one of the most outstanding of the type of corporation in the field by Dun & Bradstreet, when the report was requested on the organization.

And the organization was recommended to the Superintendent of the Military Academy by his civilian public relations advisory committee, which consists of public relations executives from a number of leading corporations and senior members of several public relations counseling firms.

Mr. HÉBERT. We used to call them press agents. [Laughter.]

Major MILLER. And these gentlemen who met voluntarily to give advice on public relations to the Superintendent, said if he wanted this kind of opinion information, that this particular corporation was the most reliable corporation.

Mr. HÉBERT. Who was the Superintendent?

Major MILLER. Who is the Superintendent?

Mr. HÉBERT. I know who it is.

Who was the Superintendent who recommended this, or wanted to get this study?

Mr. KITCHIN. On this particular contract it says "February 1961." So it would be the Superintendent now.

Mr. COURTNEY. February 1961.

Major MILLER. February, sir.

Mr. HÉBERT. Then this is just a recent one.

Major MILLER. Yes, sir.

Mr. HÉBERT. Well, now, is the Academy dissatisfied with its graduates, or dissatisfied with its undergraduates?

Major MILLER. I don't believe either is the case, sir. I think we would like to get finer young men out of which to make better graduates.

Mr. HÉBERT. Well, you aren't geting the finest in the country?

Mr. COURTNEY. What happened to the flower of our youth?

Major MILLER. I think we can always do better, sir.

Mr. KITCHIN. They lost some football games recently. [Laughter.]

May I ask the major a question? And if this is an unfair question, just say so.

What has been the reaction of your shop over there with reference to the action on the floor yesterday of making it a 5-year obligation after graduation, from either of the Military Academies?

Major MILLER. I don't know a shop reaction, sir.

My own reaction, particularly as regards the subject under debate, is that I trust this won't make it more difficult to get the most outstanding young man.

Mr. KITCHIN. Well, on the contrary,, wouldn't it—knowing that he had a 5-year obligation before he undertook this particular schooling and go into one of the Academies, don't you think we would eliminate a lot of those that say: "I just want an education, and when I am through with it, the heck with the Army, I will get out"?

Wouldn't the psychological effect be at least in favor of the long-term obligation that he has to fulfill, if he understood that is this schooling in an Academy? Frankly, I was for the 7 years. I think we ought to have a 7-year course.

Mr. HÉBERT. I think 7 years, too.

Then the remarks concerning the football team, I move to make this observation.

I think a little bit more consideration should be given to a good stout pair of legs and a good stout heart, and not all to the long hair. [Laughter.]

We want the composite man. We want the man who can fight, as well as the man who can think.

And I, for one, am very strong that West Point, and the Air Force Academy and the Navy, have not only the best football teams, but the best basketball teams and the best everything.

I think these things are very important, because we certainly can't fight wars with boys who just have a pencil in their hands and can figure out that pi means so and so.

Mr. GAVIN. Only those that know mathematics.

Mr. HÉBERT. Mathematics.

We need a little brains out there, and physical ability.

Mr. GAVIN. Has this Princeton research corporation taken into consideration whether or not the boy has the energy and resourcefulness and courage, and all of those things, that may be essential when he got into combat?

He may be a good mathematician, but if he gets into combat someplace he has to have those attributes, in addition to brains, too.

I just wondered if you examined that angle of it.

Major MILLER. When the survey was first considered, sir, the Opinion Research Corp. representatives visited the Military Academy, to find out what kind of a young man the Military Academy was interested in, which is the young man who could be a leader in combat.

I believe these factors are being considered.

Mr. COURTNEY. That would be a good beginning for any performance of this kind, I should think.

Mr. HÉBERT. Major, is there any consideration behind—of course, perhaps it is unfair to say it, but I want to ask the question anyway.

Was any thought given to the tendency, which is evident and obvious year after year, of the Academy officials to take away the power of appointment from congressional sources, and where they want it all unto themselves, to make their own selections without the wisdom of the Members of Congress who know people have votes someplace, maybe?

I don't know. I just wanted to know what their thinking was.

Major MILLER. I don't believe this survey was directed to that, sir.

Mr. KITCHIN. We will await the results. Maybe that is what the recommendation will be.

Mr. HÉBERT. That is what the recommendation is going to be: "Don't let the Members of Congress do it." [Laughter.]

In the 21 years I have been here, I have been very much impressed with the fact that the graduates of all the academies think that politics is a horrible thing, and—"Don't even talk to them" about politics.

Of course, they forgot how they got in there. [Laughter.]

That is after they have been baptized and washed and everything. They don't want to be soiled by fooling around with a politician. He is a horrible individual. A Member of Congress: "My goodness alive, don't talk to that man." But his papa and mama, I talked enough to them when he wanted to get in, I will tell you that.

Mr. Courtney.

Mr. COURTNEY. We have next a series of contracts.

General, I guess this would be yours.

Now, we asked some questions, Mr. Chairman, to identify these contracts and the area covered. We asked the identity of the contractor, the cost of the contract, the subject matter, and the results. And if incomplete, the reason why the contract was incomplete.

Now, here is a contract, called an "effort" type contract, to the Atlantic Research Corp., in Alexandria, for which $57,447 was paid.

The subject was an analysis of the 81-millimeter mortars, the M–29, and the M–23A3, for the purpose of defining certain elements in the performance of the present mortar and collecting a new body of data to be used in the proposed design and development of an improved medium mortar.

Now, the results of the undertaking to date: Recommendations—None.

If incomplete, the reason.

Now, the effort as of March 30, 1961. "Technology of instrumentation may not be advanced sufficient to measure elements involved."

Now, I think the subcommittee would like to know how this organization was selected, what its inhouse capabilities are, and whether the function of determining the capability of a military weapon isn't a military function for military people.

How does it happen that the question was asked for which there was no instrumentation available? Shouldn't this have been discovered earlier, before we got up to $57,000?

Those are a few questions.

General ELY. May I comment in general on this list, before we get into the specifics?

Mr. COURTNEY. Yes, sir.

General ELY. These—this list of contracts was obtained here some weeks ago and furnished to the committee. It consists——

Mr. COURTNEY. Months ago.

General ELY. Months ago.

It consists of the contracts that were let by our seven technical services.

In many cases, as you can see, they are relatively small contracts in dollar value.

Mr. COURTNEY. Cumulatively.

General ELY. Cumulatively they add up to quite a sum of money; yes, sir.

Mr. COURTNEY. Yes, sir.

General ELY. I am not prepared, without going to each technical service and getting some of these answers.

Mr. COURTNEY. Do you have any specifics, General Bigelow?

General BIGELOW. I do have some specifics with respect to two of the contracts that we have been able to identify.

The third has not yet been identified; that falls in my technical service area.

Mr. COURTNEY. All right.

Let me go over, then—I think the second one you have reference to is to the same contractor.

General BIGELOW. The same contractor.

Mr. COURTNEY. That is a contract for $62,811. The subject matter of the report——

Now, this information, Mr. Chairman, is all from the Department of the Army. We express no opinion on its content. The language is that of the Department of the Army.

Subject matter:

Project for conducting concept studies and preparation of designs for a new 81-millimeter mortar and a new 4.2-inch heavy mortar.

And this is reported as: No recommendations to date.

But the effort as of March 30—and this March 30, Mr. Chairman, was the return date on the information which the committee received. That is, March 30 of 1961:

Satisfactory progress in preparation of concepts study.

Now, General, can you tell us why the military could not conceive of the type of weapon most suited to it—this would be one question—to its needs?

And what capabilities this organization has to supplant the military mind and the military experience in the selection of a weapon?

General BIGELOW. This contract was let by Watervliet Arsenal.

Mr. KITCHIN. When?

General BIGELOW. The contract was entered into on the 18th of July of last year.

Mr. NORBLAD. Where is that arsenal, please?

General BIGELOW. Watervliet Arsenal is in the vicinity of Troy, N.Y.

One of their major missions is the research and development of mortars.

Early this year a study was underway, undertaken to revise and upgrade the military characteristics and the qualitative materiel requirements for medium and heavy mortars.

The arsenal has a very fine capability in this general area.

This was a broad study. It went back to the very basics in mortar fire and the development of mortars to deliver that fire.

Two studies that appeared here were let in support of the Watervliet Arsenal effort.

Mr. COURTNEY. Those are the two I read.

General BIGELOW. Those are the two to which you referred.

Mr. COURTNEY. Yes.

General BIGELOW. Because the time frame was such that they wanted to come up with the answers, some answers to some rather basic questions, early enough to proceed with the design and development of a mortar.

So we have a parallel approach, with differing ideas as to how to solve the mortar problem or how to improve the mortars. And therefore the added opportunity to select the best elements of differing ideas, or differing approaches.

The first contract to which you refer, let on the 18th of July, was completed this month.

We do not at this moment have an evaluation of the output of that contract. That will be the function and responsibility of the commanding officer of Watervliet Arsenal and his technical staff.

Mr. COURTNEY. Well, will that be reported to the committee, so we may have some understanding of what the service performed really was?

General BIGELOW. It may, indeed.

That, upon its evaluation, will be submitted to the Office, Chief of Ordnance, the Research and Development Division. And it, I expect, in all probability will be a part of the report that will go forward to the Office, Chief of Research and Development, Department of the Army.

Mr. COURTNEY. Now, the question has to do with the competence of this contractor.

It would be, at first blush, supposed that the military possessed the competence to make a judgment in a matter of this kind, based on their experience.

What would be the competence of an organization of this kind?

We know nothing about it. It recently bloomed on the stock market, around here. But we know nothing about the competence of its personnel in this very selective field.

General BIGELOW. Well, I think that the determination of the competence of Atlantic Research Co. rested with the commanding officer of Watervliet Arsenal.

Mr. COURTNEY. Then, we would understand that these arsenal commanders have this authority, is that right?

General BIGELOW. They have the authority. And they have the technical people on their staff to assist in assessing the capability of any of those research institutions.

Mr. COURTNEY. Well, will you tell us, so the committee may know, what influenced the decision to select this research corporation?

Is it full of retired officers who have had competence in the field, or are we dealing with mathematicians, and equations?

What is the competence of this organization, versus the military itself?

General BIGELOW. I can't respond to that personally.

As I say, it is the responsibility of the commanding officer of Watervliet to make that assessment, along with his technical staff, prior to the award of the contract.

Mr. COURTNEY. Can you supply the information to us, General?

General BIGELOW. We certainly can provide the evaluation.

Mr. COURTNEY. As well as the results of the contract.

General BIGELOW. Well, both.

First, is the evaluation of the agency to do the work. And finally, at the completion of the contract, is the evaluation of the product.

And I believe, if the committee so desires, we can submit both of those evaluations.

(Submitted at end of day's testimony.)

Mr. HÉBERT. You just said, General, that this ordnance place has the capability.

Now, why would they have to go outside? These are the experts.

General BIGELOW. A matter of manpower availability to put on this problem at any one time.

I don't know the number of man-hours that will be involved in completing such a basic study, starting with such a basic study and coming up with a new design or a great improvement on a current design in the mortar family, both for increased range——

Mr. HÉBERT. I think it would be of interest, too, to know how many individuals of this company worked on this project—1, 2, 3, 4, 5, 6, or 10?

General BIGELOW (addressing Mr. Wilson). Do you have the information on that?

Mr. HÉBERT. Do you have that information?

General BIGELOW. We do not have the information as to the number of people employed.

I think we have the man-years, though—have we not—man-years of effort, estimated to be required for the task (addressing an associate).

Mr. HÉBERT. Well, this is to go for 9 years, this study?

General BIGELOW. No, sir.

Mr. KITCHIN. Man-years.

Mr. SANDWEG. Man-years. For 1 year.

General BIGELOW. The man-years.

Mr. HÉBERT. Well, within the great framework of the Army personnel, individual competent officers couldn't be assigned to this task?

They have more task forces over there in the Pentagon than they have officers. Every day we get ad hoc committees, and task forces.

So why wouldn't it be just as simple and as easy and direct an approach to assign another task force to make this important study, of competent men in uniform?

General ELY. May I respond to that?

Mr. HÉBERT. Yes.

General ELY. Mr. Chairman, that problem, as brought out with these two contracts, is the same problem we face in essentially every operations research type contract that we undertake.

We have within the Army, certainly in general, the capabilities to do the job if we want to pull those men off the other work that they are doing and assemble them from wherever they might be.

For instance, to do this job, I am sure that General Bigelow could have brought a task force from Watervliet, and Watertown, and from his own staff, and probably from some of the field commands that are

using the weapon, and have made a very good study of the relative capabilities.

But every one of these involves an interview and a lot of time.

In other words, to make these studies, I would assume that the Atlantic Research Corp. people are going to have to visit some of our field commands that are working with the weapon, that have had experience in comparable weapons.

I would expect that they will have to go to Watervliet and—they will have to go to a number of places. I would expect that they are going to have to bring in scientists that know metallurgy and know ballistics.

So for any given study, almost any study I could think of, there is within the Army the people who could be pulled together to make a very fine study. But you are going to take them away from something that we would in many cases feel is more important. And in the end we lose, by diverting them to this one mission for the time that it would take to carry it out.

Mr. HÉBERT. You couldn't utilize Reserve officers called to active duty for their tours instead of assigning them to come up and sit with congressional committees and report back what they hear?

General ELY. If we could find the Reserve officers with the right capabilities, I am sure we would.

Mr. HÉBERT. Don't you know the capabilities of the Reserve officers?

General ELY. I am sure we have a good reading on it.

But I doubt that we have the knowledge and detail of Reserve officers and their training in mortars, their knowledge of metallurgy, and their knowledge of ballistics, that we could pull together, and say, "Give us a study on this."

I would be surprised if we could.

Mr. NORBLAD. Well, if it is a case of manpower shortage as far as Ordnance is concerned, wouldn't it be interesting if you had been here a few weeks ago when we were listening to the testimony about the closure of Benicia and Mount Ranier, where we have a surplus of some 2,000 or 3,000 technical men in the ordnance field who are being thrown on the open market and out of jobs.

Mr. HÉBERT. Raritan, also.

Mr. NORBLAD. Raritan, also.

General BIGELOW. I might respond further.

The people that will be affected by the closeout of Benicia Arsenal, and the others that are in that same category—

Mr. NORBLAD. There are two or three more.

There is one at Lake Erie, I have forgotten the name of it, and one at Toledo, too.

General BIGELOW. Rossford.

Mr. NORBLAD. Yes, that is what I mean.

General BIGELOW. They are not the people that can do this engineering type of job. They are supply people, storekeepers, maintenance technicians, rebuild shopmen, and that sort of thing. They are not the engineers that we would expect to produce on some rather basic studies like this.

Mr. KITCHIN. May I ask this one question?

I understand that nobody here is available to answer the question as to what this particular research corporation is, and that is how

many personnel, what percentage of engineers, capacity, and so forth, that are within that group of personnel.

Is this a professional interview group, or do they do the engineering studies themselves?

General ELY. I don't know Atlantic Research Corp. But I would assume that they have a mixture of physicists and chemists and metallurgists inhouse, who can interpret what they can get from interviews and from analysis of papers and other information that they can get. In other words, they are not just interview people, no.

And it is a good research corporation.

Mr. KITCHIN. I am not doubting the reliability of the research organization. I just wanted to find out what their particular function was in this case.

General BIGELOW. Well, in one of these contracts—and I can't refer specifically to which one—they actually get out and do some laboratory type work. They do some firing. They instrument the range.

Mr. NORBLAD. Aren't you people doing that constantly in your Army Field Forces?

General BIGELOW. I didn't hear you.

Mr. NORBLAD. Aren't you people doing that constantly, in your Army Field Forces?

General BIGELOW. We are certainly doing it at Aberdeen. We are doing it to the extent that, as I understand it, we do not have room for this project up there.

Mr. KITCHIN. Where are they doing their firing in their experimentation?

General BIGELOW. I wasn't thinking of room in the sense of geography. I was thinking of room in terms of people to put on this particular job, because of other very high priority projects.

Mr. KITCHIN. But you do know where they are doing their actual firing or——

General BIGELOW. They did some of their firing at A. P. Hill. And they may have done it all there.

Mr. SANDWEG. Could I interrupt for a moment, please?

General Bigelow, this apparently is one of the types of contracts that had to be approved by the Chief of the R. & D. Section of the Army?

General BIGELOW. I will have to reserve answering that question, because I don't know.

It is my understanding that the project was approved, the overall project, for the development of these mortars.

But the individual contracts in support of them can be approved by the commanding officer of Watervliet Arsenal.

Mr. SANDWEG. The Secretary testified, though, that these are reviewed contract by contract.

Perhaps that can be explained.

General ELY. This depends on time.

The Secretary was referring to our current policy. And we have been progressively, over the last 2 years, endeavoring to tighten up on the administration and control of this.

At the present time, the laboratory chief at Watervliet could not do this without coming in through Ordnance, to the Chief of Research and Development.

When this was let, I don't know, or when this contract was made I don't know.

Secretary IGNATIUS. There is another point that I think ought to be in the record.

We have a position of Assistant Secretary of the Army for Research and Development. We do not now have that person sworn in in office.

Contracts of this type are not in my area. They are in the area of the R. & D. Secretary. He has been nominated—the individual has been selected and he has been nominated.

But this type of thing would come under his purview, from the standpoint of the Army secretariat.

And in our assignment of responsibilities, the R. & D. Secretary has procurement authority for R. & D. work.

I do not have responsibility for making determinations and findings and actually procuring research and development work. This is the purview of the R. & D. Secretary.

Mr. SANDWEG. May I run that out, then, General Bigelow.

When this is approved as a project in the Pentagon, at that time is there some notation made, or some justification made, or statement, that it can be accomplished inhouse or that it must be done partially outhouse and partially inhouse?

In other words, I think what we are looking for is some notification to higher authority that extra money, other than current operating expenses, are going to have to be put into this.

General BIGELOW. It does not as a rule require extra money.

It is the choice, and it may be subject to approval at a higher level. I just can't respond to that at the moment.

But it is a choice on the part of the commander of the installation charged with the mission, as to how he shall do it: whether he shall do it by contract, whether he shall do it inhouse, or whether he shall do it inhouse essentially with some supporting contracts.

Mr. SANDWEG. Then, up until this latest revision in procedure, he is completely autonomous in that field?

General BIGELOW. Within certain dollar limitations. And what they are I can't answer you.

Do you know?

Mr. WILSON. I am Stewart Wilson of the Office of the Chief of Ordnance.

Under the negotiating authorities, exception 1 is used in the R. & D. area, up to $100,000.

We are required on anything over that, of course, to come in and get a secretarial approval, or an authority to negotiate, under exception 11, and all other areas.

But under the first exception, we can go up to $100,000 on a contract, providing, of course, it has project, original project approval on it—where the contracting officer would not have to come in after that to get further approval.

Mr. SANDWEG. I don't understand this review, then, case by case. Is this some new directive that you have?

General ELY. I think we are confusing contract authority with the authority to undertake such a study.

When we review a request for authority to undertake an operations research study, we review it from the standpoint of should it or should it not be done. We don't review it from the standpoint that it is going to cost $100,000 or $50,000 or $1 million.

Mr. SANDWEG. Then it is not contract by contract? It is more case by case?

General ELY. It is case by case; yes, sir.

Mr. COURTNEY. To pass very quickly to another subject—not another subject, but this is one that is presumably completed. It is supposed to have been completed March 31, 1961—no, I beg your pardon, March 31, 1963.

And the same question is with respect to this contract. It is called a feasibility study: C.E.I.R., Inc.—formerly General Analysis Corp.—Los Angeles Research Center, 11753 Wilshire Boulevard, Los Angeles, Calif.

Now the contract date—the contract cost is $1,419,868, partially funded.

Subject matter [reads]:

Services to conduct a study for a period of 60 months beginning April 1, 1958, and ending March 31, 1963.

The primary objective is the development of a war game specifically designed to aid the study, analysis, development, and synthesis of combat systems of particular interest to the Signal Corps. Such systems include communications systems, electronic warfare systems, battle area surveillance systems, and automatic data processing systems.

In addition to the general purpose war game there shall be developed a variety of modifications of the game especially suitable for particular applications of the game.

The game shall be comprehensive in that it will take full account of the various interactions of signal systems with combat elements. It shall be capable of measuring the contribution of signal systems to combat effectiveness.

The game shall be mechanized, using suitable computing and analog equipment so that it can be played rapidly.

The rules shall use terms familiar to military personnel and shall be sufficiently clear and simple that the game can be played with little or no special training.

The contract is approximately 60 percent complete. No recommendations are submitted to date.

Now, the subcommittee would be interested in knowing the competence of this organization in the highly specialized field of combat. Who are the personnel who are devising this very simple game to be played by—it is specified it is to be a "clear and simple game," by the terms of the contract.

Who are they, and what is this all for?

Colonel DENNISON. We have some gentlemen here from the Signal Corps who I believe can respond to this part.

Mr. Wayne, or whoever, can respond.

Colonel PENCE. I am Col. Harvey Pence, from the Signal Corps. I am not familiar with this particular type of contract because I didn't know it was in the group until this morning.

I will find out and give you a full report on that.

Mr. HÉBERT. Well, the committee—I think the bells have rung.

Now the committee will stand in recess until Thursday morning. We will have to have you gentlemen back here with competent people who can answer the questions.

Mr. COURTNEY. Thursday morning?

Mr. HÉBERT. Thursday morning, because we have a full committee meeting tomorrow.

Mr. SANDWEG. No.

Mr. HÉBERT. We don't have a full committee meeting?

Mr. SANDWEG. No full committee meeting this week.

Mr. HÉBERT. Tomorrow morning, then.

We hate to inconvenience you, but you certainly inconvenienced us in your appearance without giving us answers to problems that were known, maybe not you individuals personally, but certainly to your Department for 3 months.

Mr. COURTNEY. Mr. Chairman, for the interest of the committee—I don't want to place anyone under any embarrassment, but your letter of March 16, 1961, was directed to the Secretary of the Army—and I would like to place it in the record now so it will be clear.

Mr. HÉBERT. Read it into the record.

Mr. COURTNEY (reading):

DEAR MR. SECRETARY: In accordance with the provisions of H.R. 78, 87th Congress, the subcommittee desires to be informed concerning those contracts let by the Department of the Army during the period January 1, 1957, to date, in the realm of basic research, management surveys, feasibility studies, and all other "effort type" contracts, wherein the ultimate objective was something other than a product or a piece of hardware.

Your reply, which should be prepared in order to reach the subcommittee no later than April 7, 1961, will include the identity of the contract, the cost of the contract, the subject matter, results of the undertaking, and such other data as would be necessary for an understanding thereof.

Your prompt attention to this request will be appreciated.

Mr. GAVIN. What is the date of that letter?

Mr. COURTNEY. March 16, 1961.

Mr. HÉBERT. The gentleman there?

Colonel HOLMAN. I am Colonel Holman.

Mr. Chairman, I can speak with authority on this subject. On the 23d of March we received in the Contracts Division, DCSLOG, a request for certain information regarding certain types of contracts which this subcommittee desired to have by April 7.

The Army responded immediately, in an effort to get this information worldwide, and we made some submissions to this committee, on two different dates.

As I recall, we did not meet the deadline of April 7, but we did have the information here by April 10.

This represented a great deal of work from all of our procuring agencies. I was the action officer in this case, and the case was coordinated throughout the Pentagon with the appropriate people.

I also attended a meeting some weeks ago when this subject came up regarding the hearings now in hand, and at that time, in talking with Mr. Sandweg, it was our impression—or I should say it was my impression that they were concerned with the types of contracts which were not particularly related to these "think" or effort type contracts.

At the time we were working on this paper, two types of terms were used: "think" and then "effort" type contracts.

In any event, we are referring to the submissions we made back in April.

My point is, sir, that during the discussions with Mr. Sandweg later, it did not occur to me that this was related to this particular

document. I was advised only yesterday morning that certain contracts were specifically specified to be discussed.

As far as I know, that was the first time that there was a relationship drawn between the two cases.

Mr. GAVIN. Who advised you?

Mr. HÉBERT. Mr. Sandweg.

Mr. SANDWEG. I think an explanation is due here, too. We had two separate approaches to this problem, that actually was coordinated. One was on contracting out, and the other was "efforts" type contracts.

At the time of the original request, the indications were that there would be hearings on both.

It was on Friday that we decided to combine them, and on Friday we notified the Army of the specific items that we would inquire into, that were brought up this morning.

There had been an understanding, I thought, that all of the "effort" type contracts that had been supplied to us in answer to our request would be subject to inquiry, if necessary.

Mr. HÉBERT. Well, naturally, if we asked for answers on a contract, it was to be presumed that they are going to be subject to inquiry. We just don't want to read the text, and then get confused by this conglomeration of words we hear.

We want to reduce it—like the man that is getting paid $1 million for the war games—where you put it in simple words that Congressmen can understand.

Mr. KITCHIN. Mr. Chairman, may I ask a question here? I will ask it of the colonel.

Is there any way possible that someone can be prepared to answer the type questions that have been asked thus far on these particular contracts by tomorrow morning?

Colonel HOLMAN. I would like to answer that question this way—if I may, sir?

There were some 1,000 to 1,500 contracts reported, worldwide, by our procuring agencies. We recognized at that time that questions might be raised, or could be raised about any one of this total.

It is my opinion, sir, that tomorrow morning is too early a date for the Army to respond in authoritative fashion on any one particular contract.

Mr. NORBLAD. Your commanding officer at this arsenal, up in New York State, would certainly let you know right from a telephone call.

Colonel HOLMAN. Sir, on any given contract the Army would, if the committee desires, I am sure, attempt to obtain the individual responsible, by the fastest transportation possible—to get the responsible individual here.

I am simply saying, sir, that on any given contract, given a reasonable period of time, the Army would attempt to respond.

Mr. KITCHIN. How many of these are in this particular group that you are asking now?

Colonel DENNISON. Twenty-three.

Mr. KITCHIN. So by tomorrow, it will not be possible to have witnesses here who can testify to all of the details with reference to these 23 contracts?

Colonel HOLMAN. Sir—if I might make this suggestion, sir?

On the contracts that you are interested in knowing about, an effort could be made, within a matter of hours, to make an evaluation as to how soon they could respond to them.

I am referring, for example, to a case which might be involved in the Chief, Signal Corps Office, for example. There may well be some individual there who is fully cognizant of what occurred and the reasons for the action taken at that time.

In that event, it is entirely possible tomorrow morning a man could be here.

Mr. HÉBERT. Well, we will excuse the Army tomorrow and continue with the Navy, in view of what the colonel has said.

Mr. Secretary, we want to give you enough time. Because we know you will probably need a little bit more time to find out what happened over in your shop.

Secretary IGNATIUS. Yes, sir.

Mr. HÉBERT. So you will receive from counsel the 23 that we have in mind.

Mr. SANDWEG. They have them.

Secretary IGNATIUS. We do.

Mr. HÉBERT. And we will be in daily communication with you. We don't need a subcommittee, and we won't need a task force, or an outside organization with a research and development contractor, to keep in touch with you daily.

Secretary IGNATIUS. That is right.

Mr. HÉBERT. So you can expect a call, every day, to find out if you are ready.

(Secretary Ignatius nods.)

Mr. HÉBERT. And as soon as you are ready, we want you back here.

The committee stands in recess until tomorrow morning at 10 o'clock——

Mr. KITCHIN. You will have the Navy tomorrow?

Mr. HÉBERT. Navy tomorrow. And I hope there is unification enough to get word to the Navy what we want.

(Further committee postadjournment remarks not reported.)

(Whereupon, at 12:06 p.m., the subcommittee adjourned, to reconvene at 10 a.m., Wednesday, August 9, 1961.)

(The following data was submitted by the Army in explanation of its contracts with Atlantic Research Corp.:)

The Ordnance Corps has a mission to develop mortars for the Army. In order to design and develop an improved medium mortar, it was considered necessary to define certain elements in the performance of the present medium mortars and to collect previously unknown kinematic data to be used in a new proposed design which would represent a significant advance in this field of weaponry.

The Watervliet Arsenal became aware that the current and predicted workload in the mortar unit of the arsenal was such that sufficient man-hours were not available to accomplish this work within a reasonable time frame. Technical competence was available, however, to supervise the work of a contractor.

Invitations for proposals to do the work were issued to a number of qualified contractors and six proposals were received. The proposals were analyzed by Watervliet Arsenal and that of the Atlantic Research Corp. was considered most acceptable. Detailed study and review of the technical proposal was performed by the research and engineering division of Watervliet Arsenal. Final review of the proposal was performed by Watervliet Arsenal price analysis office. The findings and determinations of the technical and financial reviews were furnished as a package to the Watervliet Arsenal contract board of awards as a part of the proposed contract package. In this contract the Atlantic Research Corp.

was the low bidder. Approximately 3,500 man-hours were used in this contract and this involved personnel with three Ph. D.'s, three master's degrees, two B.S.'s, all in the field of electronics and mechanical engineering.

The final report on the contract has not yet been submitted; consequently, the final evaluation has not been made. However, interim evaluations indicate that the instrumentation was well conducted, good legible records have been obtained, and data has been secured which can be satisfactorily reduced. It is already certain that the information which was sought, that is, a new body of data answering technical questions regarding the performance of these weapons under combat conditions, will be obtained.

The second Atlantic Research contract was for the performance of concept studies in the preparation of designs for a new 81-mm. medium mortar and a new 4.2-inch heavy mortar. The work could not be done inhouse for the same reason, namely, that the workload in the mortar unit of the arsenal was such that the work could not be accomplished in a reasonable time. In this case, Atlantic Research Corp's bid was not the lowest, although it was an intermediate one; however, the overall evaluation indicated that the contractor's proposal was the most advantageous from the technical standpoint. Similar reviews were made of this contract and submitted as before to the Watervliet Arsenal contract board of awards. The contract is not yet completed; however, results to date have been as follows: Contractor made sound recommendations on basic design concepts; also, the contractor's efforts have played an important part in bringing about 2 new mortar designs, namely, the 81-mm. XM93 and the 107-mm., 4.2-inch SM95. Approximately 5,300 man-hours will be used in this contract involving the same personnel cited for the other contract.

Copies of final reports on both contracts, together with Watervliet Arsenal evaluations, will be furnished shortly after completion of the contracts.

STATEMENT OF ASSISTANT SECRETARY OF THE ARMY PAUL R. IGNATIUS IN RESPONSE TO SUBCOMMITTEE INQUIRY

With respect to the committee's inquiry as to whether the Department of the Army's policy is satisfactory and should be continued, it is my belief that the present policy, as defined by Bureau of the Budget and Department of the Defense directives, permits the Army to discharge its responsibilities satisfactorily.

The policy is to use Government owned and operated commercial and industrial type facilities only where it can be clearly demonstrated that private enterprise cannot perform the service or provide the product necessary to meet current and mobilization requirements, or that operation by the Government is necessary in the execution of the military mission. I feel that we have been able to comply with this policy without compromising our combat effectiveness position.

In this connection, attention is invited to the instructions from the President to the Director of the Bureau of the Budget in July 1961 to explore the subject of contracting out with the Secretary of Defense, the Chairman of the Atomic Energy Commission, the Administrator of the National Aeronautics and Space Administration, and the Special Assistant to the President for Science and Technology.

74109—61——4

CONTRACTING-OUT PROCEDURES

WEDNESDAY, AUGUST 9, 1961

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE FOR SPECIAL INVESTIGATIONS,
Washington, D.C.

The subcommittee met at 10:07 a.m., Hon. F. Edward Hébert (chairman of the subcommittee) presiding.

Mr. HÉBERT. The committee will be in order.

Members of the committee, when we adjourned yesterday we announced the Navy would be here this morning. The Navy has appeared through the Assistant Secretary and his witnesses.

Mr. Secretary, will you identify the people at the table with you?

Secretary BELIEU. Yes, sir.

On my right, Vice Admiral Beardsley, Chief of Naval Material. Next to him, Bob Moore, rear admiral, Deputy Assistant Chief, Bureau of Ships.

Where is Captain Harrington?

Captain HARRINGTON. Right here.

Secretary BELIEU. Captain Harrington, Assistant Chief for Production and Quality Control, Bureau of Naval Weapons.

Captain Swain, special assistant to the Assistant Chief for Fleet Readiness, Bureau of Naval Weapons.

Two witnesses, our principal witnesses: Dr. F. D. Rigby, Director, Mathematical Sciences Division, and Dr. Shirley Silverman, Director of Research, Office of Naval Research. These will be the principal gentlemen. We have other backup witnesses if needed, sir.

Mr. HÉBERT. Now you are familiar with the discussion which we are going to have this morning, and these witnesses are prepared to answer?

Secretary BELIEU. To the best of our ability; yes, sir.

I have a prepared statement, as the chairman knows, plus the backup of more additional detail for the record, which the committee may pursue at its leisure, if it wishes.

The Navy has been presented by committee counsel with some 15 contracts, which I would like to address myself to a little later on when I get through. These are in answer to the committee's specific questions.

Mr. HÉBERT. You are prepared to respond to the questions on the 15 contracts?

Secretary BELIEU. Yes, sir; we believe we are. If there is some information we don't have, of course we will provide it.

Mr. HÉBERT. That is fine. Proceed, Mr. Secretary.

Secretary BELIEU. Thank you, sir.

Mr. Chairman and members of the committee, I am very happy to return today to reassure you regarding the policy evolved in the Navy regarding what is known as contracting out.

It is the Navy's policy, in consonance with its mission, to maintain a fleet in readiness for emergencies and to develop a capacity for repair and overhaul of an expanded fleet operating under war conditions.

This policy requires a representative capability inhouse for nearly every type of maintenance necessary to keep in readiness its ships, aircraft, and their associated weapons. Such capability provides for an immediate response to the fleet, maintains a mobilization nucleus of trained personnel within naval plants, achieves a balanced utilization of facilities, achieves maximum utilization of personnel and material, and sustains an engineering capability organic to the Naval Establishment.

In accomplishing the objectives of this policy, the Navy will develop or retain within its establishment, insofar as practicable, an industrial capability for maintenance and repair of mission essential ships, aircraft, weapons, and components. It will contract for:

(1) Nonmission essential weapons and components when military control and performance of such work is not required for military effectiveness, personnel training, or the maintenance of a rotation base;

(2) New weapons which are mission essential or nonmission essential where an inhouse capability has not yet been achieved; and

(3) Selected items where an inhouse capability does not exist, and where costs with other factors concerned are prohibitive to creating such a capability.

The policy I have just stated is not, in my opinion, in conflict with Bureau of the Budget Bulletin 60–2 and Department of Defense Directive 4151.1 and can be carried out within the framework provided by them.

Every cent expended from maintenance funds must achieve the maximum in defense. Over the years the Navy Department has maintained a searching and aggressive policy to discontinue activities no longer needed in its mission and to curtail or dispose of those activities as promptly as possible.

Enforcement of this policy in its final result does avoid competition with private industry in the furnishing of those services which can be obtained more cheaply from normal commercial sources without detriment to military capability. Bureau of the Budget Bulletin 60–2 does no more than formalize this policy.

From my statement that I am submitting for the record, it is apparent that discontinuance or curtailment of the bulk of activities affected to date has resulted from this prior policy and that only a mere handful of actions can be attributed to the issuance of Bureau of the Budget Bulletin 60–2.

The crux of the situation is that the Navy is discontinuing or curtailing certain activities no longer needed to support our mission and is contracting out for services when it can be demonstrated that better readiness of the fleet in support of its mission and a more sound mobilization base can be achieved thereby with the maintenance funds available.

Prior to World War II, the Navy, due to the uniqueness of its ships, its weapons, and its equipment, had developed both the capability and the capacity to accomplish practically all of its maintenance inhouse. This work consisted of the maintenance of ships, guns, aircraft, aircraft components, radio and electronic equipments.

During the war, with the vast expansion of the fleet, it became necessary to place some of the increased ship repair workload in private shipyards.

Following World War II, the Navy initiated a program to contract for depot maintenance of nonmilitary type aircraft, such as the R4D, R5C and JRF, in order to retain a mobilization potential within the rapidly declining aircraft construction industry. This action occurred quite naturally since our overhaul and repair depots were busily engaged in reworking combat aircraft for stowage as a mobilization reserve.

Shortly after World War II the Navy contracting out program accounted for 20 percent of its ships overhaul, 65 percent of its new ship construction, and continued 100 percent of aircraft new production.

As the post-World War II period progressed, many new technologies, new weapons, and new equipments evolved rapidly, such as jet engines, rockets, missiles, and vastly more sophisticated electronics. The Navy lost many skilled technicians and found it most difficult to recruit, train, and then retain the skills required to maintain these new items.

Concurrently, requirements for repair factilities and test equipment changed to a marked degree. Thus began a shift in the pattern of depot maintenance operation. Actually, rapid technological changes prohibited, because of costs, the Navy from developing an inhouse capability for each new weapon or equipment. In this manner, our present day practice of contracting out has evolved.

Department of Defense Directive 4151.1 is truly a reflection of Navy policy concerning maintenance of its equipment. As stated above, technological changes have prevented the Navy from attaining inhouse capability on certain mission essential items to the fullest extent.

In these instances it is believed that the best overall interests of the Government are being served without detriment to Navy capability to perform its mission.

In determining whether the maintenance of a weapon or equipment is to be contracted out, the Bureau of Naval Weapons considers several factors such as the following:

(1) Capability: Presently, an inhouse capability does not exist for every weapon and/or equipment nor will it be developed immediately for each and every item due to complexity and changing technology surrounding its maintenance. However, as each product stabilizes, providing the requirements warrant it, and the costs are permissive, an inhouse capability will be developed. It is possible that in some cases reliance on contractor maintenance may continue indefinitely. This would generally occur in cases where the contractor is the only source, possesses the necessary repair and test equipment and the cost to duplicate or move these facilities inhouse could not be justified. Contracting out will no doubt be employed to accomplish

one-time major modification programs which, if done inhouse, would seriously disrupt the normal flow of work.

(2) Logistic: In some cases contracting out would impose logistic problems upon the fleet by increasing the out-of-service time of major units. Inability to mesh such units with fleet deployments and other operational commitments would follow.

(3) Cost: It is normally less expensive to the Navy overall if maintenance and other weapons programs are accomplished inhouse. For example, additional pipeline (inventory) of repair parts would be required to keep a weapon system program attuned to the fleet deployments and operations if contracted out.

Examples of maintenance and repair programs continually performed by contracting out are:

(1) Major component (modules): For the repair of certain guided missiles. Here expensive test equipment is involved for rework test. Likewise, expensive production equipment is required for the rework, itself. The practice of contracting here is supporting the fleet today and there is no current need for a strict inhouse capability.

(2) Aircraft: Certain commercial type aircraft such as the R7V, R6D, R5D, and WV. These have, as the committee knows, commercial counterparts (CONNIE, DC–6, DC–4) and there exists either with the airlines, the original manufacturer, or an aviation maintenance source, a capability which meets current needs. These aircraft are large and therefore require large work areas which would displace the Navy's capacity inhouse for maintenance of the smaller combat-type aircraft.

Contracting out does impose certain administrative problems such as:

(1) Interpretation of specifications by contractor. This is not encountered to the same degree inhouse.

(2) Necessity for obtaining and reviewing price proposals.

(3) Negotiations.

(4) Diversion of material from the Navy supply system to the contractor's plant.

(5) Risks: When new bidders are awarded contracts.

(6) Engineering changes which occur during the performance and therefore require adjustments in price and may modify other terms and conditions of the contract.

(7) Cost overruns.

(8) Labor strikes which could jeopardize fleet operations and impair our ability to perform our mission.

Comparable cost: It is difficult to directly compare the cost of work being performed inhouse versus the same being contracted out. Here it is pertinent to include a statement made by the surveys and investigation staff of House of Representatives Appropriations Subcommittee which may be found in part IV, Operations and Maintenance, page 421 of the fiscal year 1960 hearings:

> B. Relative costs: The staff found it was not feasible to make a valid comparison of the cost of performing aircraft maintenance in depot and the cost of performing it by contract, due to inadequacies and variances in cost accounting systems and lack of comparability between work projects.

Contracting out to the extent practiced by the Bureau of Naval Weapons has had no effect upon the capability of the Bureau to perform its missions. It has not displaced personnel at the industrial activities managed by that Bureau.

Changes in personnel strength are usually brought about by revisions to weapon systems programs and by the consolidation of efforts within the industrial structure to attain overall economy.

There does exist, at the depot maintenance establishments managed by the Bureau of Naval Weapons, a capacity for more personnel based upon an 8-hour day, 5 days per workweek schedule.

Submitted as appendix I in my written report is a summary of the Navy ordnance plants which indicates mission and gives a brief description of each.

Appendix II thereto is a similar summary of the ammunition and missile depots.

These ammunition depots possess a capability for assembling and modernizing noncurrent ammunitions if required, but all have a capability for handling current weapons and ammunitions.

Next, I would like to talk about the Bureau of Ships.

The Bureau of Ships managed industrial complex is comprised of 11 naval shipyards and the U.S. naval repair facility, San Diego.

Appendix VI in my report outlines the missions of these activities and describes the principal function of each.

The naval shipyards, under military command, provide the active fleet with a well-dispersed self-maintenance capability which is fully and immediately responsive to the ever-changing requirements of the fleet in this thermonuclear age.

The larger portion of naval shipyard work is the repair and conversion of combatant-type ships, which is especially suited for accomplishment in these yards.

In addition, this is the type of work which the naval shipyards would be expected to accomplish in an emergency.

Through this procedure the Navy has been able to retain and maintain the essential skills and facilities possessed by our naval shipyards.

There are certain shops in the naval shipyards which operate solely to furnish specialized supporting services or products. However, because of low workload these shops are operating uneconomically and their services or products could possibly be obtained from commercial sources on a more practical basis.

Specific examples of such shops are foundries, forgeshops, and gas manufacturing plants.

We have kept these shops going for various reasons such as mobilization potential, no local industry, immediate response, and the like.

However, the Bureau of Ships policy is to curtail or effect disestablishment of uneconomical supporting-type shops if satisfactory arrangements can be made to procure their products and services from commercial sources. The shops so affected will vary in all shipyards.

In this instance we will be ridding ourselves of inefficient operations, we will reduce our expenditures for maintenance of expensive facilities and equipment, and we can direct the personnel to more needed operations.

With regard to naval shipyard performance, there are, of course, no infallible standards by which to measure shipyards, whether private or naval. Although it is possible to compare one shipyard with another, it is difficult to compare them with private yards.

Naval shipyards work exclusively on highly complex naval ships, while private yards, of course, devote much of their effort to commercial ship construction and repair. Nevertheless, the naval shipyards are generally acknowledged to have excellent capabilities. Their plants are renewed on a gradual, well-planned basis through the military construction programs.

Now, here, Mr. Chairman, when this statement was written, and I reviewed it, I decided to modify this—these particular two sentences —because they needed further explanation. I do this for emphasis.

We do have excellent facilities in our naval shipyards. But I do not want to give the impression that they are as modern as we would like to have them.

Mr. HARDY. I think you might expand on that a little bit.

Secretary BELIEU. Right, sir.

Mr. HARDY. Based on the hearings we recently had.

Secretary BELIEU. That is correct, sir.

Now, they have excellent capabilities and some of them are peculiar to the naval shipyards—drydocks and many other things we could mention. And their plants are—we do attempt to renew them on an annual basis when the plant—I would say they are as good as you can get under the conditions that normally we are faced with.

But the condition of the whole country's shipbuilding program, the facilities are such that they need to be brought more up to date. They need to have better tools. Technology, toolwise, needs to be increased, which is typical, I guess, of any manufacturing entity, but especially is it true in the shipbuilding field.

As we pointed out before another subcommittee of the Housed Armed Services Committee, this is a thing that the Nation needs to look at.

Now, some time down the future we will find that our shipbuilding capability within this country is not as strong and as vigorous and as bright and shining as that obtaining overseas. So this is what I wanted to emphasize at this particular point.

Now, these shipyards are run by unusually well-trained engineering duty naval officers. The best management analysts in Government and private industry have contributed to their organization.

The unusual challenge to which they have been subjected by the varied demands of the fleets and by new construction and conversion programs have developed skills of a variety and depth not likely to be equaled. This is demonstrated continually as the naval shipyards overhaul and return complex modern warships to forward areas, with all of their equipments and machinery in excellent operating condition, after only a minimum of time in the yard.

The naval shipyards have maintained the fleet's combat readiness with exceptional success from the time the first naval shipyard was established around the year 1800 to the present.

The United States has been in many wars in which seapower was crucial and in each has emerged victorious. As the naval shipyards in each conflict provided the chief logistic support, and as a fleet

cannot be effective without such support, it follows, inescapably, that the naval shipyards have done a tremendous job over the years.

Many factors must be considered before a decision may be reached as to whether to contract out for a task or have it performed at a field activity. Relative costs are, of course, very important. If highly specialized skills are required for the task, the availability of those skills in either private industry or a Government activity may be the determining factor. If there is sufficient time and a need to develop an inhouse capability, the task may be assigned to a field activity although the skills are currently available only in private industry; the Navy will contract with the firm having the specialized skills for training and other assistance required.

The impact of the work upon the field activity must be considered; if the task is of short duration yet requires considerable manning, its assignment to private industry will avoid unnecessary hirings and firings.

The urgency of the requirement may be the conclusive factor if either private industry or a field activity is able to complete the task within the required time. Normally, of course, several factors will be involved in any one decision and the Bureau must consider them all.

The Navy does not consider the basic missions of the naval shipyards have changed nor that the capability of these yards to perform has been lessened by "contracting out."

Private shipyards were and continue to be the primary source of Navy ship construction. Appendix VII of my written report shows the geographical distribution of new construction and conversion underway in private and U.S. Navy shipyards as of January 1, 1961. The Navy shipyards also have a capacity for additional personnel.

I would like to take up next the Bureau of Supplies and Accounts. This is an area in which the Navy is involved in contracting out under the cognizance of the Bureau of Supplies and Accounts.

Examples of services contracted out are stevedoring, packing and crating of household goods, office equipment repair, laundry and dry cleaning services, automotive equipment repair, rodent destruction and public works type maintenance functions.

A sampling was taken of Bureau of Supplies and Accounts operations. This sampling revealed that since fiscal year 1959, 240 personnel were replaced due to contracting out. For example, at the Naval Supply Depot, Guam, it costs $102,000 less per year for commercial stevedoring services and $21,000 less per year when packing and crating are contracted out.

With the exception of contract stevedoring this sampling indicates that the "contracting out" activity at Bureau of Supplies and Accounts managed supply centers and depots does not affect the readiness of the installations to perform their mission in the event of an emergency. Contract stevedoring, however, could reduce the capabilities of military marine terminal operations in emergencies.

The trend in contracting out in this Bureau has not had any signficant change in the past few years. Two exceptions exist, however. One is at the Naval Supply Depot, Clearfield, Utah, where the volume of contracting out has been increased due to workload involved in disestablishing this activity by July 1, 1964. The other is at the

Naval Supply Depot, Guantanamo Bay, Cuba, where the trend is toward the ultimate elimination of all contracting out.

Mr. HÉBERT. It is difficult down in Guantanamo now to contract out, isn't it?

Secretary BELIEU. That is why the trend is in the opposite direction. [Laughter].

The Bureau of Yards and Docks.

It is the policy of the Bureau of Yards and Docks to utilize private industry for the accomplishment of maintenance for the following purposes:

(1) Meeting seasonal and other peak workloads.

(2) Specialized work.

(3) When it could be demonstrated that the use of commercial facilities would result in a savings to the Government.

This Bureau maintains three construction battalion centers (at Davisville, R.I.; Gulfport, Miss., and Port Hueneme, Calif.) which accomplish depot type maintenance of facilities, automotive and construction equipment. The equipment is used by mobile construction battalions in the Atlantic and Pacific.

The Marine Corps operates two depot maintenance type establishments. They are: The Marine Corps Supply Center, Albany, Ga., and the Marine Corps Supply Center, Barstow, Calif. These activities are engaged in overhaul and repair of Marine Corps equipments such as tanks, automotive, components, weapons.

I have some charts, which are on the back of this presentation, prepared for the committee whenever it wishes, which indicate trends in the amount of work contracted out versus amount accomplished in-house. Percentagewise, I do not believe there is any noticeable effect which can be attributed to these directives, Bureau of the Budget Bulletin 60–2 and Department of Defense Directive 4151.1.

You may note that the Bureau of Ships chart is not projected very far into the future. These assignments are delicately balanced with the award of newly authorized construction to private shipyards and a consequent determination of the best allocation of repair load to maintain efficient operation of the inhouse activities.

Admiral James pointed out earlier this year in hearings before the Department of Defense Subcommittee of the Committee on Appropriations that an intensive study is being made in this area.

As I mentioned before, for brevity I have submitted for the record a more detailed review of the Bureau of the Budget Bulletin 60–2.

(The material submitted for inclusion in the record is as follows:)

STATEMENT SUBMITTED FOR THE RECORD IN CONJUNCTION WITH A STATEMENT BY THE HONORABLE KENNETH E. BELIEU, ASSISTANT SECRETARY OF THE NAVY (INSTALLATIONS AND LOGISTICS) BEFORE THE SUBCOMMITTEE FOR SPECIAL INVESTIGATIONS OF THE COMMITTEE ON ARMED SERVICES, HOUSE OF REPRESENTATIVES

Mr. Chairman and members of the committee, I appreciate the opportunity to appear before your committee today to report on the "contracting out" policies and practices of the Department of the Navy. First, I have given you a history of contracting out as it has been practiced by the Navy, which for brevity omitted some of the detailed descriptions of the different types of establishments that are concerned in this presentation, as well as historical details of the relationship of Bureau of the Budget Bulletin 60–2 to Navy's past and present policy and performance.

These additional background details are submitted for the record.

Over a period of many years the Military Establishment has frequently found it efficient and desirable, and often essential to the operation of the military mission, to engage in activities of a purely commercial nature which today are considered as being in competition with private industry. Such activities were usually begun during an emergency when commercial facilities were inadequate or not available.

By the time the periods of emergency had ended, these activities had often become such an integral part of the overall mission that the Government continued their operation despite the fact that commercial sources had by then become available.

Recognizing this situation, in 1953, the President directed that the following policy be issued:

"It is the general policy of the administration that the Federal Government will not start or carry on any commercial activity to provide a service or product for its own use if such product or service can be procured from pivate enteprise through ordinary business channels. Exceptions to this policy shall be made by the head of an agency only where it is clearly demonstrated in each case that it is not in the public interest to procure such product or service from private enterprise."

Consonant with the above, the basic Department of Defense policy concerning the ownership and operation of commercial- and industrial-type facilities was defined in DOD Directive 4100.15 of November 24, 1953. This document referenced the "basic regulations for the military supply system" and set forth the policy, criteria, and authority under which commercial- and industrial-type facilities would be operated.

This was followed by DOD Directive 4100.16 of March 8, 1954, which implemented the policy contained in the earlier directive, and provided that the Secretary of each military department initiate a continuing review program. It also prescribed guidance for the continuance or establishment of commercial- and industrial-type facilities. The latter directive was implemented within the Department of the Navy on April 7, 1954.

This implementation established the commercial- and industrial-type facilities review program, now referred to as the commercial-industrial activities survey program, and provided the first increment of facilities to be reviewed under this program. The objectives of this initial review program were:

(1) To foster private enterprise by eliminating unjust Government competition;

(2) To justify operations which warranted continuance;

(3) To provide more effective utilization of Department of Defense owned and operated commercial- and industrial-type facilities through cross-servicing; and

(4) To achieve maximum economy through minimum facility manpower expenditures for commercial and industrial operations without impairing military effectiveness.

Formal guidelines were issued by the Bureau of the Budget in 1955 (Bulletin No. 55–4 dated January 14, 1955), 1957 (Bulletin No. 57–7, dated February 5, 1957), and 1959 (Bulletin No. 60–2 dated September 21, 1959).

Bureau of the Budget Bulletin No. 60–2 of September 21, 1959, issued as a result of a Cabinet decision of April 24, 1959, represents the current policy with respect to the review of those commercial-industrial activities conducted by the Government, that provide services or products for its own use which could be procured from private enterprise through ordinary business channels. This bulletin restated the general policy expressed in the two earlier bulletins, established reporting procedures, expanded the coverage of the program, provided for the evaluation of all commercial-type enterprises not previously reviewed, and prescribed those exemptions which would permit Government operations of commercial-industrial activities.

Although BOB Bulletin 60–2 encourages the use of commercial procurement sources, it does not prevent the continued operation by the Government of commercial-industrial activities in the following instances:

(1) National security: This exception to the general policy recognizes that the protection of the national defense is paramount to any other consideration. The program does not intend that contract services shall be employed in the procurement of the Department's product or service requirements to the detriment of the effective accomplishment of its mission or the reduction of its combat efficiency or capability. This exception, therefore, covers those functions which

must be performed by Government personnel in order to preserve the national security.

(2) Costs: When it is determined that commercial procurement of products or services would facilitate the effectiveness of the Navy organization, such procurement must not result in costs that are substantially or disproportionately greater than the costs of Government production of the same items or furnishing of the same services. In such cases, however, the costs of both Government operation and private procurement must be impartially computed and complete.

(3) Clear unfeasibility: The third exemption to procurement from commercial sources may be due to the fact that the product or service is (*a*) an integral function of the basic mission of the Department, (*b*) not available nor likely to become available commercially in the foreseeable future, or (*c*) it is administratively impractical to contract for commercially.

Under the policy guidance set forth, the Navy maintains an effective inhouse capability to perform combat and combat-support functions. Justifiable amounts of contract services, however, are used for combat-support functions. Within this policy environment the Navy maintains a level of contractual effort consistent with the need for maintaining an appropriate balance and relationship in the use of military, civilian, and contract service resources to achieve maximum effectiveness and economy in performing workloads and missions.

(*a*) Appendix I is a summary of the Navy ordnance plants which indicates mission and gives a brief description of each.

(*b*) Appendix II is a similar summary of the ammunition and missile depots. These ammunition depots possess a capability for assembling and modernizing noncurrent ammunitions if required, but all have a capability for handling current weapons and ammunitions.

(*c*) Three charts, appendixes III, IV, and V, deal with the Bureau of Naval Weapons depot maintenance activities: naval aeronautic overhaul and repair activities, naval ammunition plants, and ordnance plants, respectively, each shows personnel strength assigned the inhouse workload versus the amount contracted out.

(*d*) Appendix VI outlines the missions of the Bureau of Ships managed industrial complex comprised of 11 naval shipyards and the U.S. naval repair facility, San Diego.

(*e*) Appendix VII shows the geographical distribution of new construction and conversion underway in private and U.S. Navy shipyards as of January 1, 1961. The Navy shipyards also have a capacity for additional personnel.

(*f*) Appendix VIII shows, in personnel strength, the inhouse workload versus the amount contracted out.

(*g*) Appendix IX shows personnel strength associated with the inhouse workload of three construction battalion centers (at Davisville, R.I., Gulfport, Miss., and Port Hueneme, Calif.) which accomplish depot-type maintenance of facilities, automotive and construction equipment used by mobile construction battalions in the Atlantic and Pacific.

(*h*) Appendix X indicates the personnel employment at two activities engaged in overhaul and repair of Marine Corps equipment such as tanks, automotive components, weapons. There has been no contracting out for work that these activities do.

The provisions of BOB Bulletin No. 60–2 were directed to the attention of the military departments by Secretary of Defense memorandum of November 30, 1959, and Assistant Secretary of Defense (Supply and Logistics) memorandum of November 30, 1959.

The Secretary of the Navy provided implementation instructions by SECNAV notices 4860 of December 9, 1959, and January 4, 1960, subject: "Commercial-Industrial Activities Survey Program, Bureau of the Budget Bulletin 60–2."

The bureaus and offices of the Navy Department implemented those instructions to the field by individual bureau and office instructions.

In accordance with these requirements a total of 1,115 activities within the Navy Department were resubmitted and reviewed or newly submitted and reviewed. The final summary report showing the results of this review is submitted as appendix XI.

The reporting procedures established by BOB Bulletin 60–2 required that the reviews be submitted under two general categories:

(1) 60–2A: Those commercial-industrial activities or services having an annual estimated cost or value of product or service of less than $250,000.

(2) 60–2B: Those commercial-industrial activities having an annual estimated cost or value of product or service of $250,000 or over.

In order to evaluate the results of BOB Bulletin 60–2, it was further required that the reporting procedures distinguish between those activities, in each of the two categories, that were newly submitted and reviewed and those that had previously been reviewed and acted upon.

Accordingly, the listing in appendix XI of those activities less than $250,000 (60–A) is further broken down as follows:

Activities less than $250,000—60–2A

	Total evaluated	Discontinued	Curtailed	Continued	Other
Previously reviewed (pt. I)	614	237	28	349	0
Reviewed since June 30, 1959 (pt. II)	236	2	2	220	12
Total	850	239	30	569	12

Of those activities less than $250,000 reviewed since June 30, 1959, two have been listed under discontinued and two under curtailed. The effect of these four actions on contracting out is discussed hereinafter (appendix XII).

The listing of those activities, $250,000 or over (60–2B) is broken down as follows:

Activities of $250,000 or over—60–2B

	Total evaluated	Discontinued	Curtailed	Continued	Other
Previously reviewed (pt. I)	101	18	2	79	2
Reviewed since June 30, 1959 (pt. II)	164	0	8	149	7
Total	265	18	10	228	9

Of those activities of $250,000 or over, eight are listed for curtailment. The effect on contracting out of these eight actions to curtail since June 30, 1959, is discussed in appendix XII.

Of the total 400 activities and services reviewed since June 30, 1959, 369 were continued by the Government and 10 were curtailed. Of the remaining 21 activities only two represent actual discontinuances and the remaining 19 adjustments reported to DOD involving consolidations, inventory deletions updating of evaluations within the meaning of the 60–2 program, et cetera.

The Navy Department has over the years maintained a searching and aggressive policy to discontinue activities not needed in its mission, to curtail as promptly as possible those activities and services whose full operation is not necessary when changing concepts of defense or offensive tactics so dictate, and to consolidate and maintain those facilities actually needed in the most efficient manner possible within the budgets provided.

In pursuance of that policy, continuous inspections of naval activities are carried out and the curtailments and discontinuances noted in the final summary report are the result. It is true that the guidance provided by earlier bulletins and now BOB Bulletin 60–2 has strengthened the policy of the Navy Department and provided additional support for enforcement of a policy that in its final result does avoid competition with private industry in the furnishing of those services and in the operation of those activities that can be obtained from normal commercial sources without detriment to military capability.

APPENDIX I

BRIEF OF U.S. NAVAL ORDNANCE PLANT, LOUISVILLE, KY.

I. MISSION

NOP Louisville mission is consistent with the standard board mission concept assigned to all naval ordnance plants by SECNAVINST 5450.4 of September 29, 1958, which reads as follows: Manufacture ordnance material and/or equipment or components, with specific responsibility in designated areas as promulgated by the Bureau of Naval Weapons.

II. DESCRIPTION

The Naval Ordnance Plant, Louisville, comprising 388 acres is located in Jefferson County, Ky., and is in the southern section of the city of Louisville. There are 57 buildings and a total of 1,212,812 square feet of floor area. The plant is bounded on the north, south, and west by residential areas, and on the east by the main line and freight yards of the L. & H. Railroad. The Naval Ordnance Proving Ground, Knob Creek, is located in Bullitt County, approximately 18 miles south of Louisville. The east and south boundaries border on Fort Knox Military Reservation.

III. WORKLOAD BY PROGRAMS

Handling equipment.
Tartar rocket motors.
Missile containers.
Miscellaneous.
Overhaul (including Map).
Warheads.
Jato units and gas generators.
Torpedo tubes MK 25, 32, and 37.
Simulators.
Manufacturing 5''/54 mounts.
Talos trays.
R. & D.

BRIEF OF U.S. NAVAL ORDNANCE PLANT, YORK, PA.

I. MISSION

The mission of NOP York is consistent with the standard broad mission concept assigned to all naval ordnance plants by SECNAVINST 5450.4 of September 29, 1958, which reads as follows: Manufacture ordnance material and/or equipment or components, with specific responsibility in designated areas as promulgated by the Bureau of Naval Weapons.

II. DESCRIPTION

The plant, consisting of 232.26 acres of land, is located 1 mile north of the city of York, Pa., along the tracks of the Pennsylvania Railroad—Baltimore-Harrisburg Division. There are 41 buildings containing a total of 777,500 square feet of floor area. The city of York is located in a rich farming area 25 miles south of Harrisburg, and approximately 90 miles northeast of Washington, D.C.

III. WORKLOAD BY PROGRAMS

Manufacturing ASROC launching systems Mark 16 and Mods miscellaneous missile handling equipment (TALOS, TARTAR, guns (40 millimeter saluting 3 inch/70 material, etc.).
Manufacturing practice bombs, Mk 106 (includes AF MIPR).
Manufacturing missile components.
Manufacturing underwater ordnance.
Manufacturing fire control equipment.
Research projects.
Drawings and publications.

BRIEF OF U.S. NAVAL ORDNANCE PLANT, MACON, GA.

I. MISSION

NOP, Macon mission, is consistent with the standard broad mission concept assigned to all naval ordnance plants by SECNAVINST 5450.4 of September 29, 1958, which reads as follows: "Manufacture ordnance material and/or equipment or components, with specific responsibility in designated areas as promulgated by the Bureau of Naval Weapons."

II. DESCRIPTION

The plant is located in the central part of the State of Georgia and is approximately 4.5 miles from downtown Macon. It is bound on the east and west by the Southern Railway and the Central of Georgia Railway, respectively. It is bounded on the north by an excellent paved roadway. The south side of the plant is bounded by thickets and swampland. Principal production buildings include three converted warehouses of 20,000 square feet each used as inert manufacturing buildings and five explosive loading buildings. There are 27 small magazines used for storing bulk explosives and finished components prior to shipment.

III. WORKLOAD BY PROGRAMS

ASW components.
Mark 37 torpedo components.
BULLPUP components.
Aircraft ejection seat catapult charges.
Bomb ejector cartridges.
SIDEWINDER components.
Primers, mark 15–3.
5/54 ammunition components.
SPARROW and TARTAR components.
TERRIER components.
TALOS components.
R.D.T. & E.

BRIEF OF U.S. NAVAL ORDNANCE PLANT, FOREST PARK, ILL.

I. MISSION

Naval Ordnance Plant, Forest Park, mission, is consistent with the standard broad mission concept assigned to all naval ordnance plants by SECNAVINST 5450.4 of September 29, 1958, which reads as follows: "Manufacture ordnance material and/or equipment or components, with specific responsibility in designated areas as promulgated by the Bureau of Naval Weapons."

II. DESCRIPTION

This plant is situated 10 miles directly west of downtown Chicago, on a 117-acre site containing 40 structures including administration, manufacturing, maintenance, and living quarters. Additional facilities include trailer parking spaces, large parking lots, and a railroad spur.

III. WORKLOAD BY PROGRAMS

Manufacture torpedoes, warheads, exercise heads, exploders, batteries, containers, and repair parts:

Torpedo, mark 37.
Torpedo, mark 44.
Torpedo, mark 16.
Mine, mark 57.
R. & D.
Gage laboratory and calibration.

BRIEF OF U.S. NAVAL PROPELLANT PLANT, INDIAN HEAD, MD.

I. MISSION

Manufacture, reprocess, rework, inspect, and test propellants and high explosives, together with intermediate products used therein; conduct research and development in the field of propellants, propellant components, and explosives.

II. DESCRIPTION

The naval propellant plant is located on the east bank of the Potomac River approximately 25 miles south of Washington, D.C. The 3,257-acre site consists of rolling and hilly terrain that lies rather high above the waters of the Potomac. The "stump neck" area is separated from the main area of the activity by a broad, shallow creek, which in effect, places the two areas 12 miles apart by land routes. Facilities of the plant, in addition to extensive manufacturing and processing buildings and structures, include research and development facilities, a modern powerplant (producing both electric power and process steam), and a large number of housing units. The majority of the improvements are of permanent construction.

III. WORKLOAD BY PROGRAMS

TERRIER
SIDEWINDER
ZUNI
TALOS
BULLPUP
Weapon A.
POLARIS
JATO
ASROC
R.D.T. & E.
Quality control.

BRIEF OF U.S. NAVAL AVIONICS FACILITY, INDIANAPOLIS, IND.

I. GENERAL

The U.S. Naval Avionics Facility, more generally recognized and referred to as "NAFI," was acquired and designated as a Bureau of Aeronautics establishment via transfer of managerial responsibilties and custody from the Bureau of Ordnance on July 1, 1956.

Construction of the plant was commenced in May 1941 and upon completion, was commissioned as a U.S. naval ordnance plant on May 22, 1942. Operation of the activity was managed by the Lukas-Harold Corp., a subsidiary of the Carl L. Norden Co. On September 24, 1945, the plant was transferred to a full-time Navy operation under the management control of the Bureau of Ordnance and identified as Naval Ordnance Plant, Indianapolis, generally referred to as "NOPI."

During World War II, the productive effort of the plant was directed toward building precision mechanical, electrical, and optical instruments, including the Norden bombsight, flight stabilizers, flight gyros, torpedo directors, and gunsights. Since World War II, it has built mechanical, optical, electrical, and electronic equipment including bomb directors, gunsights, aircraft fire control systems, radar equipment, navigation instruments, and communication equipment.

The Bureau of Ordnance operated the plant until 1956 when management control was transferred to the Bureau of Aeronautics. Upon transfer of responsibility the name of the plant was changed to the naval avionics facility.

II. MISSION

The general mission of the naval avionics facility, Indianapolis, as approved by the Secretary of the Navy is as follows:

"Conduct research, design, development, engineering, production, overhaul, repair, and modernization of avionics equipment."

More specifically "NAFI" mission includes the following tasks:

(*a*) Conduct product improvement programs for functional performance, productibility and reliability of electronic, electrical, and mechanical equipment used in both the navigation and control of aircraft and their weapons and in missile guidance.

(*b*) Provide contractual service assistance to the Bureau of Naval Weapons as required for research and development and production contracts for avionics equipment; and provide direction and monitoring, and advisory services and assistance to contractors, as directed by the Bureau of Naval Weapons.

(*c*) Serve as a Bureau of Naval Weapons facility for the support of avionics equipment in use by the operating forces and the Shore Establishment.

(*d*) Serve as a Bureau of Naval Weapons establishment for advancing the state of the art of electronic, electrical, and mechanical equipment in the field

of airborne electronic countermeasures, missile guidance, aircraft fire control, aircraft navigation and direction, and airborne aircraft detection, tracking, and mapping devices.

(*e*) Serve as a secondary stock point in accordance with the manual of the Bureau of Supplies and Accounts.

(*f*) Serve as a noncentralized buying activity.

(*g*) Provide supply and disbursing services for assigned activities.

(*h*) Develop and maintain a program for the accomplishment of a specified mobilization plan.

(*i*) Perform administrative, communications, comptrollership (including fiscal and disbursing), equipment repair, fire protection, industrial relations, berthing, messing, medical, postal, security, station maintenance, supply, telephone, transportation, and utilities functions in support of the facility's mission.

III. DESCRIPTION

(*a*) The Naval Avionics Facility is located adjacent to the city limits, about 5 miles from downtown Indianapolis. The plant comprises 164 acres of Government-owned land. There are 36 buildings other than quarters, containing a floor area of 787,485 square feet. The principal design, test, manufacturing, and assembly facilities are housed in one major building comprising over one-half million square feet of floorspace. This building has complete climatic control and fluorescent lighting throughout.

IV. WORKLOAD BY PROGRAMS

Aircraft armament, and support.
Aircraft rework (O. & R.).
Electronics, support, and modernization.
Bomb director program.
Research, development, test, and evaluation.
Radar test sets and equipment.
POLARIS and POLARIS systems.
Avionics evaluation and support equipment.
Airborne armament and support.
Production projects.
Testing, displays, contractor assistance, limited production, and related items.
Classified projects.
Component pilot line and manufacturing of components.
Aerology.
Industrial preparedness measures.
Test, checkout and telephone equipment for TERRIER, TARTAR, and TALOS.
Manufacturing hydraulic checkout equipment.
Couplers, controls, adapters and interlock.
Spare parts.
Armament modernization.
Quality control and inspection.
Miscellaneous manufacture, overhaul, etc.
Work for other Navy:
ASO (pilot and limited production, test evaluation, and quality control).
Miscellaneous.
Work for other agencies: Grumman Aircraft engineering.

APPENDIX II

BRIEF OF U.S. NAVAL AMMUNITION DEPOT, EARLE, N.J.

I. MISSION

The U.S. Naval Ammunition Depot, Earle's mission, as revised by SECNAVNATE 5450 of September 4, 1959, is to receive, renovate, maintain, store, and issue ammunition, explosives, expendable ordnance items and/or weapons and technical ordnance material and to perform additional tasks as directed by the Bureau of Naval Weapons.

II. DESCRIPTION

The Naval Ammunition Depot, Earle, is located in Monmouth County, N.J., approximately 48 miles south of New York City. Covering an area of about 17 square miles, it is the largest naval ammunition depot on the Atlantic coast. The depot is divided into two main areas: the inland area, and the pier area.

The inland area comprises more than 10,000 acres equidistantly located about 9 miles from Freehold, Red Bank, and Asbury Park, N.J. In this area are the magazines, the industrial facilities, and the administrative headquarters.

The transhipment area, referred to as the pier area, is located near Leonardo, N.J., on the south shore of New York Harbor about 1½ miles west of Atlantic Highlands, N.J., and comprises about 1,000 acres. Other than the piers, this area contains only those industrial and administrative facilities needed to support loading and unloading operations.

The primary reason for the existence of the depot is its three piers, connected with the shore by a trestle, over 2 miles long. The two outer piers can berth combatant ships with a limiting draft of 33 feet, or six Victory ships. The inner pier can berth combatant ships with a limiting draft of 15 feet, or seven barges.

III. WORKLOAD BY PROGRAMS

Segregation of ammunition.
Maintenance and modification of ammunition.
Receipt, stowage, and issue of ammunition.
Other maintenance and overhaul.
Ordnance handling studies.
Material disposal.
Aircraft and ship ammunition loading.
Mine assembly.
Research.

BRIEF OF U.S. NAVAL WEAPONS STATION, YORKTOWN, VA.

I. MISSION

The mission of the Naval Weapons Station, Yorktown, Va., is as follows: To receive, store, overhaul, test, modify, explosive load and accomplish such other related work as necessary to maintenance, production, and issue of mines, torpedoes, depth charges, other underwater weapons, bomb type munitions, rockets, guided missiles, and other expendable ordnance; conduct high explosive research and development applying to production, loading assembly, and test procedures; perform weapons engineering tasks as assigned by the Bureau of Naval Weapons.

In accomplishing its mission, the Naval Weapons Station exercises management and military control over the Skiffes Creek Annex, the Guided Missile Service Unit No. 211, and the Naval Mine Engineering Facility. The Naval Mine Engineering Facility includes a quality evaluation laboratory. The station serves as a reserve stock point for bureau controlled mines and depth charges, distribution point for bureau controlled torpedoes, and for Ordnance stock office controlled repair parts for guided missiles, and as a secondary stock point for other supply demand control points. It is charged with disposal of unserviceable and/or dangerous ammunition and explosives.

II. DESCRIPTION

The Naval Weapons Station, Yorktown, is located on the York River 10 miles southeast of Williamsburg, Va. It comprises a total of 13,423 acres, about 20 square miles, fourth largest among the 10 ammunition activities in active status.

The dock facility consists of 1,023 linear feet of dock with single track rail access. Of eight activities with dock facilities, Naval Weapons Station, Yorktown, ranks seventh statistically, and is considered the least modern facility. Carriers are serviced at an anchorage in Norfolk harbor by barge. Since NWS, Yorktown, has no gun-type ammunition, carriers are handled simultaneously with Naval Ammunition Depot, St. Juliens Creek. This operation takes approximately 3½ days. The length of time required to service combatant ships at the dock varies greatly depending upon the cargo and other dock activity. The handling of advanced weapons is a major factor. There is a moderate amount of traffic with cargo-type vessels, including the AE (ammunition ship) category.

Other physical characteristics are as follows:

Number of permanent buildings, 298.
Number of magazines, 203.
Covered storage, 1,252,000 square feet.
Miles of road, 86.
Miles of railroad track, 44.

III. OTHER SERVICE SUPPORT ACTIVITIES

(a) Guided Missile Service Unit No. 211

U.S. Naval Guided Missile Service Unit No. 211 processing facilities are physically located adjacent to and northwest of the Naval Weapons Station, Yorktown, industrial area. The activity, operationally speaking, is under an officer in charge, subject to the military and management control of the commanding officer, U.S. naval weapons station, and the technical control of the Bureau of Naval Weapons.

The service unit is organized along functional lines with each division being responsible for a particular missile or support service.

The mission of GMSU No. 211 as established by the Secretary of the Navy is to operate guided missile processing facilities performing assembly, checkout, maintenance, and alteration of assigned guided missile material in support of the related receipt storage and issue function of the naval ordnance establishments at which the unit is located. Only military personnel are assigned to the activity. The officers primarily serve in technical billets except for the officer in charge, assistant officer in charge and the administrative officer. The enlisted personnel assigned to the missile division are basically technical rated personnel including guided missileman and aviation guided missileman ratings.

The service unit has under its cognizance eight buildings. Six of the buildings are utilized for explosive and/or inert component processing, one for a transshipment shed for segregation of fleet return material and one serving as a magazine for storage purposes. Total plant area of all buildings covers approximately 135,000 square feet.

(b) Skiffes Creek Annex

Skiffes Creek Annex is a special weapons ordnance activity whose mission is to receive, inspect, monitor, assemble, alter, modify, and issue specialized explosive ordnance and associated equipment.

It was established as a component activity of the Naval Weapons Station, Yorktown, on July 1, 1953, for two basic reasons; first, the fact the NWS, Yorktown, provided a convenient location for servicing the Atlantic Fleet, and second, it was feasible to provide general type service and logistic support from an established organization thereby avoiding the cost of duplicating such expensive facilities required by an activity of its category.

The annex occupies approximately 800 acres on the north side of the naval weapons station. It is operated under an officer in charge with an appropriate complement of 380 military personnel. In addition, private contractor support have a permanent staff of approximately 25 civilians physically located in the area.

IV. WORKLOAD BY PROGRAMS

Segregation.
Maintenance and modification.
Receipt, stowage, and issue.
Other maintenance and overhaul.
Material disposal.
Aircraft ship ammunition loading.
Mine assembly.
Missile maintenance and rework.
Polaris and Polaris systems.

BRIEF OF U.S. NAVAL AMMUNITION DEPOT, HASTINGS, NEBR.

I. MISSION

The U.S. Naval Ammunition Depot, Hastings, mission as established by SECNAVNOTE 5450 of November 5, 1959, reads as follows: "To continue implementation of planned program of disestablishment effective on or about June 30, 966."

II. DESCRIPTION

The depot is located approximately in the geographical center of the United States equidistant by air from both the Atlantic and Pacific coasts, in Adams and Clay Counties, Nebr. (latitude 40°35'04" N., longitude 98°21'07" W.), approximately 4 miles east of the city of Hastings, Nebr. (population 22,000) and 99 miles southwest of the city of Lincoln, Nebr. (population 100,200). It has as its northern boundary the transcontinental U.S. Highway No. 6. It is served by three major railroads, Union Pacific, Burlington, and Missouri Pacific, the first two of which has transcontinental connections. The land is flat and well suited for economical construction. Elevation is 1,901 feet.

The area of the site is 48,753 acres (approximately 76 square miles) and is entirely Government-owned, being purchased at a cost of approximately $2,800,000. Construction of depot facilities cost approximately $62,495,000.

Of the 48,753 acres of land occupied by the depot, approximately 97 percent of the land is leased for agricultural use. The rent paid by lesses during fiscal year 1959 was $260,000, and the value of the services rendered by lessees, i.e., maintenance of roads, firebreaks, etc. was valued at $300,000.

At the present time, Detachment 10, 10th Radar Bomb Scoring Group, U.S. Air Force, occupies three buildings and a surrounding area of 40,000 square feet. This area is leased to the Air Force until December 1, 1961.

The jurisdiction over the Naval Ammunition Depot, Hastings, Nebr., was assumed on March 17, 1943, and acknowledged by the government of Nebraska, March 20, 1943. Jurisdiction is exclusive with the exception of a reservation of concurrent jurisdiction in the State for civil and criminal process. However, this right to serve civil and criminal process, which is the sole exception to the exclusive jurisdiction of the United States conferred by the Nebraska statute, is itself limited by the words: "* * * except so far as such process may affect the real and personal property of the United States."

Most of the buildings on the depot are of brick, tile, or reinforced concrete construction. The facilities of this station include approximately 1,800 buildings and magazines. The estimated total floor space is 6,700,000 square feet.

III. WORKLOAD BY PROGRAMS

Segregation.
Maintenance and modification.
Receipt, stowage, and issue.
Material disposal.

BRIEF OF U.S. NAVAL AMMUNITION DEPOT, ST. JULIENS CREEK, VA.

I. MISSION

The mission of the station is to receive, renovate, maintain, store, and issue ammunition, explosives, expendable ordnance items and/or weapons and technical ordnance material and to perform additional tasks as directed by the Bureau of Naval Weapons.

In accomplishing its mission the station is concerned almost exclusively with gun type ammunition and pyrotechnics. It provides berthing and security for district craft assigned by commandant, Fifth Naval District for ammunition services. A quality evaluation laboratory is established at the activity. The station also is charged with disposal of unserviceable and/or dangerous ammunition and explosives.

II. DESCRIPTION

The Naval Ammunition Depot, St. Juliens Creek, is located in Norfolk County on the west bank of the Elizabeth River and borders on St. Juliens Creek on the south and southwest. It comprises 490 acres adjacent to the naval shipyard. The area immediately adjacent is moderately populated. From the standpoint of combined physical characteristics, it is the smallest of the 10 ammunition type activities now in active status.

The station has a 1,520-foot pier capable of accepting and servicing modern LST's, Coast Guard ships, and various small vessels. It does not receive destroyers nor larger combatant ships. Servicing of these ships is accomplished by barges which are under the control of the Naval Operating Base, Norfolk. Ammunition is barged to and from an anchorage in the area harbor. A destroyer offload can normally be done within a single workday. A carrier, which is

handled simultaneously by Naval Ammunition Depot, St. Juliens Creek, and Naval Weapons Station, Yorktown, normally takes about 3½ workdays.

III. WORKLOAD BY PROGRAMS

Segregation.
Maintenance and modification.
Receipt, stowage, and issue.
Quality control.
Material disposal.
Aircraft and ship ammunition loading.

BRIEF OF U.S. NAVAL AMMUNITION DEPOT, CHARLESTON, S.C.

I. MISSION

The mission of the activity is to receive, renovate, maintain, store, and issue ammunition, explosives, expendable ordnance items and/or weapons and technical ordnance material and to perform additional tasks as directed by the Bureau. The major tasks of the activity include the following:

(*a*) Receive, store, issue, segregate, and renovate ammunition, including mines and guided missiles.

(*b*) Exercise management control of the Naval Weapons Annex and the Naval Guided Missile Service Unit No. 213, Naval Ammunition Depot, Charleston, S.C.

(*c*) Receive and reissue ammunition allowances for vessels undergoing availability at the Charleston Naval Shipyard and for operating forces in the Charleston area.

(*d*) Maintain basic stocks.

(*e*) Maintain mine assembly facilities in readiness.

(*f*) Maintain under proper surveillance the ammunition and explosives in store.

(*g*) Dispose of unserviceable and/or dangerous ammunition and explosives from whatever sources received, in accordance with current directives.

II. DESCRIPTION

The depot is located in the tidewater section of southeastern South Carolina on the banks of the Cooper River. The site lies approximately 23 miles north of Charleston, S.C., and 17 miles north of the Charleston Naval Base. The depot includes land areas which range from 2 to 24 feet above mean sea level and tidal marshland and water areas. There are 3 public quarters and 30 Government housing apartments located within the confines of the depot. Under construction are 40 Capehart housing units.

III. U.S. NAVAL GUIDED MISSILE SERVICE UNIT NO. 213

This unit was established on July 1, 1956. Military and management control is exercised through the commanding officer of the depot. The mission of this unit is to operate a guided missile processing facility performing assembly, checkout, maintenance, and alteration of assigned guided missile material in support of related storage and issue functions of the depot. Currently, this unit is processing TERRIER, TARTAR, and HAWK missiles.

(*c*) *U.S. Naval Mine Engineering Facility*

The primary mission of this facility is to improve and maintain operational readiness of in-service mine and depth charge weapons on a worldwide basis. The facility exercises design cognizance over in-service mine and depth charge weapons on a worldwide basis. The facility exercises design cognizance over in-service mine and depth charge weapons, and performs tests and evaluations of other weapons (i.e., special weapons and guided missiles) as directed.

It is functionally organized to assimilate data on the operating status of mine and depth charge weapon material; to conduct eningeering studies on this data; and produce technical engineering data, reports, and design disclosure documentation to maintain the operational readiness of weapons assigned.

The facility is staffed primarily with engineering personnel supported by specialists, technicians, staff, administrative and skilled labor personnel to accomplish the mission assigned.

The U.S. naval mine engineering facility has facilities for the accomplishment of physical science testing, fabrication of specialized prototype hardware, and, the preparation of design documentation. Field activities included an operational test area in the York River.

IV. WORKLOAD BY PROGRAMS

Ammunition segregation.
Ammunition maintenance and modification.
Ammunition receipt, stowage, and issue.
Missiles and missile maintenance and rework.
Research.
Torpedo maintenance and overhaul.
Other underwater maintenance and overhaul.
Other underwater proof and test.
Other underwater technical material.
Torpedo Mk 37.
Torpedo Mk 44.
Torpedo loading.
Aircraft and ship ammunition loading.
Surveillance and quality control.
Ordnance in-house inspection.
Calibration services.
Disposal.
Mine assembly, loading, and overhaul.
Special weapons maintenance and overhaul.
SPARROW, TERRIER, TARTAR, TALOS, and BULLPUP.
Special load orders.
Standardization.
Military assistance.
POLARIS and POLARIS systems.

BRIEF OF U.S. NAVAL AMMUNITION DEPOT, MCALESTER, OKLA.

I. MISSION

Receive, renovate, maintain, store, and issue ammunition, explosives and technical ordnance material; perform additional tasks as directed by the Bureau of Naval Weapons.

II. DESCRIPTION

The 44,964-acre site of the naval ammunition depot lies 9 miles south of the city of McAlester, Okla. It is located approximately 115 miles south of Tulsa, and 130 miles southeast of Oklahoma City.

The area is topographically characterized by broad, rolling hills covered with grass and scrub timber. The native soils are highly susceptible to erosion, which poses a real problem in maintaining an adequate earth cover on underground magazines.

Facilities include over 300 buildings, 194 miles of railroad trackage, and approximately 400 miles of roads, of which 80 miles are paved. The majority of buildings and structures are of permanent type construction.

A unique feature of the depot is its 625-acre artificial lake, which serves as the activity's water supply.

III. WORKLOAD BY PROGRAMS

Segregation.
Maintenance and modification.
Receipt, stowage and issue.
Material disposal.
Aircraft and ship ammunition loading.
Tooling and equipment to load and assemble SIDEWINDER rocket motors.
Special weapons maintenance and overhaul.
Research.
Technical publications.
ASW ammunition loading.
Miscellaneous demolition material.

BRIEF OF U.S. NAVAL AMMUNITION DEPOT, CRANE, IND.

I. MISSION

Receive, renovate, maintain, store, and issue ammunition, explosives and technical ordnance material; perform additional tasks as directed by the Bureau of Naval Weapons.

Special tasks

Special tasks assigned to the command include the following:

(*a*) Administering the central ammunition supply and control office.
(*b*) Operating the ammunition loading production engineering center (ALPEC).
(*c*) Conducting research and development of pyrotechnics.
(*d*) Storing and maintaining national stockpile critical materials.

The central ammunition supply and control office, a department of the depot, was created in 1958 to procure, distribute, and perform associated tasks in connection with various designated items of conventional ammunition. Previously, these broad functions were discharged directly by the Bureau of Ordnance.

The ammunition loading production engineering center (currently a department of the depot) provides, within the family of ordnance activities concerned with the loading, assembly, and renovation of ammunition, central direction for:

(*a*) Development of improved production methods.
(*b*) Standardization and efficiency in production operations.
(*c*) Prompt and broad dissemination of technical information.
(*d*) Expeditious handling of technical problems.

II. DESCRIPTION

The depot is located in the south central section of Indiana, 85 miles southeast of Indianapolis and 95 miles northwest of Louisville, Ky.

The area of the activity comprises 62,767 acres, 800 of which form an artificial lake constructed by the Civil Conservation Corps. The rough, hilly, and wooded terrain of the isolated site is well suited to the location of high explosive magazines.

Depot buildings and structures are, with minor exceptions, of modern design and permanent construction. Transportation facilities include 168 miles of railroad trackage and about 350 miles of roads.

III. U.S. GUIDED MISSILE SERVICE UNIT

This unit has an allowance of 3 officers and 19 enlisted personnel. The primary effort of the unit is currently being expended in the maintenance processing of surface-to-air guided missiles which serve as backup stocks for the east and west coast outloading activities.

IV. WORKLOAD BY PROGRAMS

Segregation.
Maintenance and modification.
Receipt, stowage, and issue.
Material disposal.
Aircraft and ship ammuition loading.
Research.
Polaris and Polaris systems.
Marine markers and modification kits.
Surveillance and quality control.
Target flares.
In-house inspection.
Fire control maintenance and overhaul.
Missile maintenance and rework.
ASW ammunition loading.
Central ammunition supply and control office (CASCO).
Ammunition loading production engineering center (ALPEC).
Service and submarine pyrotechnics.
TALOS, TERRIER, BULLPUP, and SPARROW.
Gun preservation.
Synchros.

Production improvements.
Ordnance supply office material.
Standardization.
Sub. Float and U/W sound signals.
Calibration services.
Special load orders.
Maintenance industry reserve equipment.
Military assistance program.
Drill mine and demolition material.

BRIEF OF U.S. NAVAL AMMUNITION DEPOT, HAWTHORNE, NEV.

I. MISSION

Receive, renovate, maintain, store, and issue ammunition, explosives, and technical ordnance material; perform additional tasks as directed by the Bureau of Naval Weapons.

II. PHYSICAL CHARACTERISTICS

NAD, Hawthorne, lies near the western boundary of the State, 72 miles southeast of Reno (130 by road) and about 40 miles east of the Sierra Nevada range. The depot reservation comprises 327 square miles of desert plateau, rugged mountains, and the south portion of Walker Lake. It almost covers the floor of a gently sloping desert valley formed by Walker Lake on the north, the Gillis and Excelsior ranges to the east and south and Wasauk range to the west. The latter range rises abruptly from the 4,300-foot plateau to a height of 11,300 feet above sea level, and forms the depot's watershed. Wholly enclosed within the depot area is the small city of Hawthorne, occupying 1 square mile. A main highway, U.S. 95, passes through the depot and Hawthorne.

III. WORKLOAD BY PROGRAMS

Segregation of ammunition.
Maintenance and modification of ammunition.
Receipt, stowage, and issue of ammunition.
Material disposal.
Warhead, rocket head, projectiles, and miscellaneous loading.
Mine assembly and mine case loading.
Aircraft and ship ammunition loading.
Other technical material.
Other maintenance and overhaul.

BRIEF OF U.S. NAVAL AMMUNITION AND NET DEPOT, SEAL BEACH, CALIF.

I. MISSION

The mission of NAND, Seal Beach, as approved and revised by the Secretary of the Navy on September 4, 1959, is, "To receive, renovate, maintain, store, and issue ammunition, explosives, expendable ordnance items, and/or weapons and technical ordnance material and to perform additional tasks as directed by the Bureau of Naval Weapons."

II. PHYSICAL CHARACTERISTICS

NAND, Seal Beach, including Fallbrook Annex, consists of approximately 14,206 acres of land. NAND Seal Beach proper encompasses approximately 5,069 acres of land of which an estimated 500 acres are marshland or tidal flats that could be reclaimed by fill if ever required. Fallbrook Annex encompasses approximately 9,137 acres of land of which 7,760 acres are leased for farming purposes.

Fallbrook Annex has a total of 181 magazines that are utilized in support of demands placed upon NAND, Seal Beach. The total activity railroad trackage owned and utilized is approximately 80.26 miles long. There are 119.8 miles of paved road and 65 miles of unimproved road maintained by the activity in support of its mission requirements.

NAND, Seal Beach, is located entirely in Orange County, Calif. The main gate of the depot is approximately 1½ miles from the city of Seal Beach. Fallbrook Annex is located in San Diego County, approximately 60 miles from Seal Beach.

III. WORKLOAD BY PROGRAMS

Segregation of ammunition
Maintenance and modification of ammunition
Receipt, stowage, and issue of ammunition
Missile components and fuzes
Material disposal
Calibration
Miscellaneous loading
Surveillance and quality control
Mine assembly and mine case loading
Depth charge maintenance
Aircraft and ship ammunition loading
Harbor defense
Other technical material
Torpedo technical material
Special weapons maintenance and overhaul
Guided missile maintenance and overhaul
Ordnance in-house inspection

BRIEF OF U.S. NAVAL AMMUNITION DEPOT, CONCORD, CALIF.

I. MISSION

Receive, renovate, maintain, store, and issue ammunition, explosives, and technical ordnance material; perform additional tasks as directed by the Bureau of Naval Weapons.

II. PHYSICAL CHARACTERISTICS

The Naval Ammunition Depot, Concord, is located on the Suisum Bay, approximately 35 miles northeast of San Francisco, Calif. The depot proper, covering 6,594 acres, consists of two separate areas linked together only by a Government-owned highway and railroad. The tidal area lies just to the north of Port Chicago, Calif., while the inland area is located approximately 3 miles to the south and in the vicinity of Concord, Calif.

Facilities in the tidal area include several ship piers (32-foot water depth), barge piers, inert ordnance storage structures, and numerous barricaded rail sidings.

The inland area which for the most part is gently rolling terrain, serves as the site for the command's administrative and support facilities. The primary function of this area, however, is the storage of ordnance items (high explosives, ammunition, inert material, projectiles, and related items). Over 270 permanent type magazines are utilized for the storage of these items.

Transportation facilities of the depot proper include 59 miles of paved roads and approximately 96 miles of railroad trackage.

The Mare Island Annex, comprising 441 acres of Navy owned land, is located on San Pablo Bay adjacent to the Mare Island Naval Shipyard and approximately 20 miles distant by highway and ferry across the Sacramento River from NAD, Concord. Facilities include magazines (ammunition, inert, ordnance, and high explosives) dockside berths (30-foot water depth) for ships and barges, and approximately 23 miles of railroad trackage.

III. GUIDED MISSILE SERVICE UNIT

The Guided Missile Service Unit No. 212 under an officer in charge was established at NAD, Concord, on October 1, 1959. The GMSU was activated January 1, 1960, and is under the military command of the commanding officer, U.S. Naval Ammunition Depot, Concord, Calif., unless otherwise directly by the Chief of Naval Operations and under the management control of the Chief, Bureau of Naval Weapons. It is estimated the construction of this facility will be completed during fiscal year 1961.

IV. WORKLOAD BY PROGRAMS

Segregation of ammunition.
Maintenance and modification of ammunition.
Receipt, stowage, and issue of ammunition.
Material disposal.
Polaris and Polaris systems.
Aircraft and ship ammunition loading.
Calibration.
Other technical material.
Other maintenance and overhaul.
Missile maintenance and rework.
Advanced weapons, maintenance, and overhaul.
Surveillance and quality control.

BRIEF OF U.S. NAVAL AMMUNITION DEPOT, BANGOR, WASH.

I. MISSION

The mission of the Naval Ammunition Depot, Bangor, as approved and revised by the Secretary of the Navy on September 4, 1959, is as follows: "To receive, renovate, maintain, store, and issue ammunition, explosives, expendable ordnance items and/or weapons and technical ordnance material, and to perform additional tasks as directed by the Bureau of Naval Weapons."

II. DESCRIPTION

The depot proper, which encompases 8,517 acres of land, is located on the east bank of the Hood Canal, about 13 miles north of the Naval Shipyard, Bremerton, Wash., and 15 miles west of Seattle. A marginal wharf, capable of berthing two major vessels, plus good railroad facilities, provide the depot with an excellent capability for the transshipment of ammunition. Over 265 magazines and inert storage buildings are available on the depot proper for the storage of ordnance material. Transportation facilities include 83 miles of roads and over 99 miles of railroad trackage. The marginal wharf and the majority of other structures and buildings are of permanent type construction.

The Indian Island Annex is located across the Hood Canal and approximately 20 miles due north of the depot proper. The annex includes about 2,700 acres of land.

III. OUTSTANDING ON AND OFF LOADING FEATURES

All shiploading is accomplished by civil service employees at minimum cost because no portal-to-portal pay is involved (as with union stevedores). Ships are berthed alongside the marignal wharf that has a capability of accommodating the largest U.S. ships afloat as well as any planned for the future. With present personnel, one cruiser and one carrier can be worked at dockside simultaneously, or four holds of a cargo ship can be worked.

IV. WORKLOAD BY PROGRAMS

Receipt, stowage, and issue of ammunition.
Maintenance and modification of ammunition.
Segregation of ammunition.
Miscellaneous ammunition assembly.
Cabling low-drag bombs.
Depth charges and mine maintenance.
Demilitarization.
Army ammunition outloading.

BRIEF OF U.S. NAVAL AMMUNITION REPOT, HINGHAM, MASS.

I. MISSION

The U.S. Naval Ammunition Depot, Hingham, mission as established by SECNAVNOTE 5450 of November 5, 1959, reads as follows: "To continue implementation of planned program of disestablishment effective on or about June 30, 1962."

II. DESCRIPTION

The Naval Ammunition Depot, Hingham, is located on the south shore of Boston Harbor, eastward of the Weymouth Back River. It is approximately 10 miles by water from the Boston Naval Shipyard and 19 miles by highway. It adjoins the town of Hingham, Mass., on the northeast boundary. Land areas are irregular and heavily wooded with a maximum elevation of 120 feet. Government property includes a considerable acreage on the west bank of the Weymouth Back River extending from Highway 3A to Fresh River. This land is for safety distance only and is completely undeveloped. There are good highway connections to all routes, a direct rail spur to the New York, New Haven & Hartford Old Colony Branch and waterfront facilities for handling lighters.

The Cohasset Annex has a very rough terrain, being largely composed of small, rocky hills between large, deep swamps. The swamps are at an elevation varying from 40 feet to 140 feet. The annex area is approximately 3 miles southeast of the main depot with both rail and highway connections.

There are 357 buildings and structures almost equally divided between the main depot and the annex. These buildings provide for explosive operations, magazines, storehouses, guided missile service, mainteance shops, administration buildings, barracks, and public quarters. All of these facilities are served by electricity, steam, water, fire alarm and telephone distribution system. They are connected by extensive roads and railroad systems.

III. WORKLOAD BY PROGRAMS

Segregation.
Maintenance and modification.
Receipts, stowage, and issue.
Other maintenance and overhaul.
Material disposal.

BRIEF OF U.S. NAVAL TORPEDO STATION, KEYPORT, WASH.

I. MISSION

The mission of the Naval Torpedo Station, Keyport, as approved and revised by the Secretary of the Navy on February 13, 1959, is as follows: "To proof, test, evaluate, manufacture, and issue underwater weapons and components. Provide research and devleopment services to naval and commercial activities as directed by the Bureau of Naval Weapons. Exercise design cognizance of underwater acoustic ranges and of range equipment."

II. DESCRIPTION

The U.S. Naval Torpedo Station at Keyport is located on the western shore of Puget Sound, the largest natural deep water harbor in the world. Keyport is 12 miles north of Bremerton and approximately 15 miles by air west of Seattle.

The property on which the activity is located is Navy owned. The original acquisition of 149.45 acres of hard land for $86,000 was accomplished by condemnation proceedings.

Keyport was selected as the site for a west coast torpedo station because of the availability of Port Orchard Inlet, an ideal shallow water torpedo range. This range varies in depth from 50 to 90 feet providing a relatively easy recovery operation. With the advent of acoustic weapons, deeper water was necessary to avoid acoustic interference. Water of 200 to 300 feet in depth was found in Hood Canal adjacent to the ammunition depot at Bangor, and another body of water in nearby Dabob Bay of 600 feet in depth. This combination of features is large enough to permit submarine and destroyer operations of variable degrees and is developing into one of the most important range facilities for testing underwater weapons in the country.

The industrial facilities of the activity are concentrated in a relatively small area on a peninsula located on the eastern side of the station. In this area are the torpedo shops, a modern machine shop, a plating plant, a foundry, a sheet metal shop, electrical and electronic shops as well as several others which afford the station a comprehensive industrial capability. In 1957, a new large quality evaluation laboratory was completed and placed into operation. The latest addition to the activity's industrial capability is the naval passivating building. In this plant, bulk navol (concentrated hydrogen peroxide) is stored and loaded into individual torpedo flasks for convenience and safety purposes.

By far the most significant facilities in the proofing effort are the range themselves. The shallow water range (50 feet deep) in Port Orchard Inlet is instrumented with a series of passive directional hydrophone arrays which are so located as to give time of transit, depth, and deflection from the range centerline for each array.

At Bangor, on the shoreline of Hood Canal, the torpedo station maintains a firing pier for use on the medium depth range (300 feet). This pier is also the retriever boat center and the loading pier for all weapons to be ranged in Dabob Bay.

Dabob Bay is a protected inlet about 7 miles long with a bottom of almost uniform depth of 600 feet. This area has been in use since 1950 as a deepwater proofing range for all active acoustic homing torpedoes. In 1957 the only accurate 3-dimensional underwater tracking range in existence was installed in Dabob Bay. This range was developed by the Applied Physics Laboratory of the University of Washington under contract to the Bureau of Ordnance and is capable of tracking underwater vehicles with far more continuity and precision than has ever been achieved before.

III. WORKLOAD BY PROGRAMS

Proof and test of torpedoes (MK's 37–0, 44–0, and 16–6).
Manufacture of torpedo workshop equipment.
Manufacture torpedo exercise heads, containers, repair parts, mine test sets, etc.
Maintenance and overhaul of torpedoes.
Research projects.
Surveillance, quality control, and calibration.
Polaris and Polaris systems.

BRIEF OF U.S. NAVAL AMMUNITION DEPOT, SHUMAKER, ARK.

I. MISSION

The U.S. Naval Ammunition Depot, Shumaker, mission as established by SECNAVNOTE 5450 of November 5, 1959, reads as follows:

"To continue implementation of planned program of disestablishment effective on or about June 30, 1962."

Of recent date, the facilities for expediting the disposal of stocks on hand has accelerated the disestablishment date from June 30, 1964, to June 30, 1962.

II. DESCRIPTION

The depot is located 4 miles northeast of Camden, Ark., on the east side of U.S. Highway Route 79 and north of State Highway Route 4. The area is 68,640.2 acres of dry land and 250 acres of marshland, and is roughly 16 miles in length and 9 miles in width at the extremities. The area was strictly rural in character and sparsely populated, used for farming purposes. It has been declining for the past 30 years and return to forest use was underway. Consequently the Government was able to acquire the land for the nominal sum of $1,909,197. The area is located in a region which is known as the Coastal Plain, and is commonly referred to as "Swampy." The depot covers land in two counties, Calhoun and Ouachita.

A rocket motor loading area, located approximately 1½ miles east of the administration area, has facilities for assembling and packaging minor, medium, and large caliber rocket motors. This area consists of five building groups, each independent of the other, and each group housing two assembly lines. This area is designed to be capable of assembling all types of air to air, air to ground, and surface rocket motors currently being used by the Navy and Air Force. These assembly lines in addition have facilities for processing the propellant and other component parts prior to assembly. Each line is conveyerized and equipped to assemble rocket motors in mass production, and a conversion to meet loading requirements of numerous type rockets can easily be accomplished.

A high explosive rocket head loading area is located approximatly 4 miles northeast of the administrative area. This area is laid out on a general north and south line with two rocket head loading and assembly lines, both originating at a central building and each line extending in opposite directions. Each line has facilities for melting, pouring, and fusing rocket heads of all calibers. In addition, each line has associated buildings for the stowage, processing, and

delivery of the high explosive to the assembly line. All buildings of this area are designed for maximum safety to personnel and heavily barricaded to reduce property damage in the event of explosion.

Facilities are also present for the inert loading of rocket heads for use as target and test rounds.

The flight testing, to determine satisfactory performance, of rockets is conducted in a cleared area approximately 8 miles long and 1 mile wide in the northern section of the depot. This flight test range is equipped with various types of test launchers and numerous observation towers are located along the sides of the range to permit visual spotting of fired rounds and transmission of data to main control tower for plotting. Temperature control equipment installed at the flight test range permits rocket motors to be fired at temperatures equal to the most rigorous service conditions encountered under combat. Photographic coverage through the use of synchronized high speed motion picture cameras is used to determine and assist in analysis of any malfunctions.

A fuse test range is located adjacent to the flight test range. This test facility is employed to determine the acceptability of rocket fuses. Rockets equipped with test fuses are fired through vertical plate targets to determine their functioning characteristics. Spotting from control towers and photographic coverage is used to determine serviceability of fuses.

The naval ordnance plant is serviced transportationwise by the Chicago Rock Island & Pacific (freight), Missouri Pacific (freight and passenger), St. Louis-Southwestern (freight and passenger). In addition, the Southwestern Transportation Co., Arkansas Motor Freight, Herrin Transportation Co., Tri-State Warehouse & Distribution Co., Texarkana-Nashville Motor Freight Lines, also provide plant transportation facilities.

III. WORKLOAD BY PROGRAMS

Maintenance and modification.
Receipts, stowage, and issue.
Material disposal.
Aircraft rockets.
Aircraft ammunition loading.

BRIEF OF U.S. NAVAL AMMUNITION DEPOT, OAHU, HAWAII

I. MISSION

The mission of the depot, as approved by SECNAVNOTE 5450 of September 4, 1959, is as follows:

"To receive, renovate, maintain, store, and issue ammunition, explosives, expendable ordnance items and/or weapons and technical ordnance material and to perform additional tasks as directed by the Bureau of Naval Weapons."

II. DESCRIPTION

The naval ammunition depot headquarters at Lualualei is located approximately 35 miles from the city of Honolulu in a valley that is ringed by the Waianae Range except toward the southwest where the valley opens to the Pacific Ocean. It occupies 8,184 acres of land.

West Loch branch consists of 1,088 acres of land bounded on the north and northeast by waters of the West Loch of Pearl Harbor, on the south and southwest by Pearl Harbor Reservation and on the west by fields on the Ewa Plantation Co. West Loch is 20 miles from Honolulu and about 18 miles from Lualualei.

Waikele branch consists of 528 acres and is in and borders on a juncture of three large gulches. Opening into the gulches are tunnel magazines originally constructed by the U.S. Army in 1942. This branch is 19 miles from Honolulu, 18 miles from headquarters and 10 miles from West Loch.

There are 1,000 buildings on the three branches of the depot. A total of 407 magazines are located at the Lualualei, West Loch, and Waikele branches capable of storing approximately 100,000 tons of all types of ammunition and explosives. Provisions for storing approximately 40,000 tons of bomb type ammunition in open storage areas, should the need arise, are available within the areas of the three branches.

The depot owns and operates the only railroad on the island Oahu. It serves the Lualualei and West Loch branches with 29 miles of interconnecting track between the two branches. Waterfront facilities at West Loch branch consist of two concrete wharves totaling 2,500 lineal feet. The berths are capable of working five cargo vessels of AE's simultaneously. The depot is capable of handling 1,000 tons per day per ship on a 24-hour basis. The docks are serviced by rail and truck facilities.

III. WORKLOAD BY PROGRAMS

Segregation of ammunition.
Maintenance and modification of ammunition.
Receipt, stowage, and issue of ammunition.
Material disposal.
Surveillance and quality control.
Rockets, projectiles, and miscellaneous loading.
Calibration.
Mine assembly and mine case loading.
Torpedo maintenance and overhaul.
Aircraft and ship ammunition loading.
Other technical material.
Other maintenance and overhaul.
Polaris and Polaris systems.

MISSIONS OF NAVAL SHIPYARDS AND NAVAL REPAIR FACILITY

The Bureau of Ships manages the 11 U.S. naval shipyards and the naval repair facility, San Diego. The 11 naval shipyards, which all have the same basic mission, are:

(*a*) Portsmouth Naval Shipyard, Portsmouth, N.H.
(*b*) Boston Naval Shipyard, Boston, Mass.
(*c*) New York Naval Shipyard, Brooklyn, N.Y.
(*d*) Philadelphia Naval Shipyard, Philadelphia, Pa.
(*e*) Norfolk Naval Shipyard, Portsmouth, Va.
(*f*) Charleston Naval Shipyard, Charleston, S.C.
(*g*) Long Beach Naval Shipyard, Long Beach, Calif.
(*h*) San Francisco Naval Shipyard, San Francisco, Calif.
(*i*) Mare Island Naval Shipyard, Vallejo, Calif.
(*j*) Puget Sound Naval Shipyard, Bremerton, Wash.
(*k*) Pearl Harbor Naval Shipyard, Pearl Harbor, Hawaii

Mission.—To provide logistic support for assigned ships and surface craft; to perform authorized work in connection with construction, conversion, overhaul, repair, alteration, drydocking and outfitting of ships and craft, as assigned; to perform manufacturing, research, development and test work, as assigned; and to provide services and material to other activities and units, as directed by competent authority.

The U.S. naval repair facility, San Diego, Calif., has the following mission: To provide logistic support for ships and surface craft, including repair, alteration, and maintenance work, as assigned; to provide services to other activities and units, as directed by competent authority; and to provide facilities for the limited training of artificers, as requested.

Actually, these 12 activities operate as a closely coordinated complex supporting the full range of shipbuilding, conversion, modernization, repair, alteration and overhaul support required by the operating forces. While each of these activities is capable, because of its facilities and staff, of rendering a wide range

of industrial support services to naval facilities they are used in broadly specialized areas and, thus, no one activity provides the full range of support services required. Certain of the activities, because of long experience and particular capability, specialize in submarine construction. Others operate almost purely as overhaul activities with the types of overhauls assigned being limited only by consideration involving facilities, skills or hydrography. The principal uses to which the naval shipyards and the naval repair facility are put are as follows:

(*a*) Portsmouth Naval Shipyard—Construction of Polaris and other nuclear submarines; overhaul of all types of submarines.

(*b*) Boston Naval Shipyard—Conversion, modernization and overhaul of surface vessels up to but not including *Forrestal* carriers.

(*c*) New York Naval Shipyard—Construction and modernization of all types of surface vessels.

(*d*) Philadelphia Naval Shipyard—Construction, conversion, modernization and overhaul of all types of surface vessels except aircraft carriers and overhaul of fleet submarines.

(*e*) Norfolk Naval Shipyard—Modernization and overhaul of all types of surface vessels including nuclear and overhaul of nuclear and fleet submarines; serves as major fleet repair base.

(*f*) Charleston Naval Shipyard—Conversion, modernization and overhaul of surface vessels up to and including cruiser types and overhaul of fleet and nuclear submarines including Polaris submarines; serves as Polaris submarine operating base.

(*g*) Long Beach Naval Shipyard—Overhaul, modernization, and repair of all surface vessels up to but not including *Forrestal* type carriers; serves as major fleet repair base.

(*h*) San Francisco Naval Shipyard—Conversion, modernization and overhaul of all types of surface vessels and overhaul of fleet submarines.

(*i*) Mare Island Naval Shipyard—Construction of Polaris and other nuclear submarines; overhaul of all types of submarines.

(*j*) Puget Sound Naval Shipyard—Conversion, construction, modernization overhaul of all types of surface vessels.

(*k*) Pearl Harbor Naval Shipyard—Modernization and overhaul of all types of surface vessels and overhaul of fleet and nuclear submarines.

(*l*) Naval repair facility, San Diego—Overhaul of surface vessels up to but not including cruisers and emergency repair of all types of surface vessels.

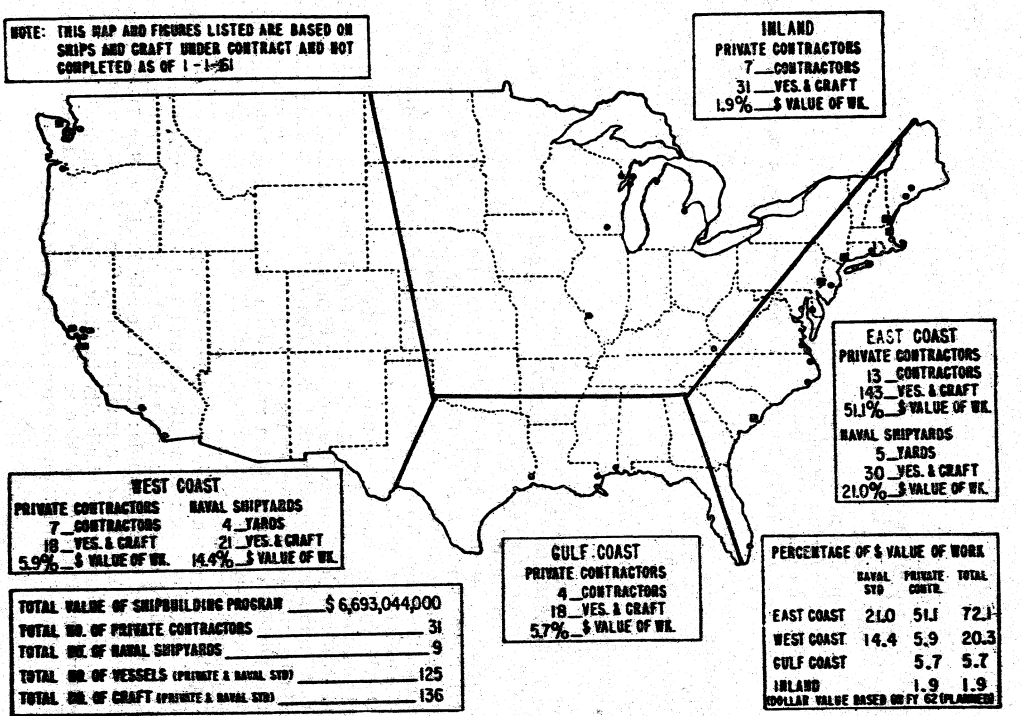
From the above, it can be readily seen that there is little duplication, by coast, in the uses to which shipyards are put.

On the east coast, Portsmouth is unique in that it builds Polaris submarines; Charleston in that it is being developed as a Polaris submarine base; Norfolk in that it is a major center of fleet operations and must meet a much greater than normal number of unscheduled fleet demands. New York has been, and may again be, unique because of its *Forrestal* class carrier construction capability and experience. Philadelphia and Boston do have broad elements of similarity in their workload but both are well loaded because of the volume of work required under current appropriations.

On the west coast, Mare Island is unique because of its part in the Polaris shipbuilding program; Long Beach and Pearl Harbor in that they are major centers of fleet operations and must meet a much greater than normal number of unscheduled fleet demands; Naval Repair Facility, San Diego also serves as a fleet repair base but on a smaller scale; San Francisco and Puget Sound do have broad elements of similarity in their workload, including aircraft carrier overhaul and major conversion work, but both are well loaded because of the volume of work required under current appropriations.

APPENDIX VII

DISTRIBUTION OF CURRENT CONSTRUCTION AND CONVERSION PROGRAMS

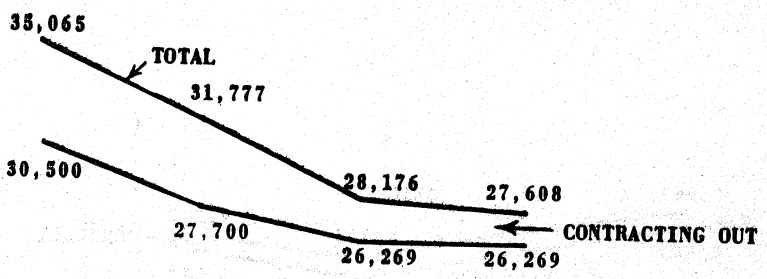


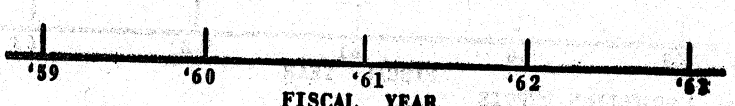
APPENDIX III

AIRCRAFT MAINTENANCE AND OVERHAUL

IN HOUSE vs CONTRACTING OUT

(IN MAN YEARS)



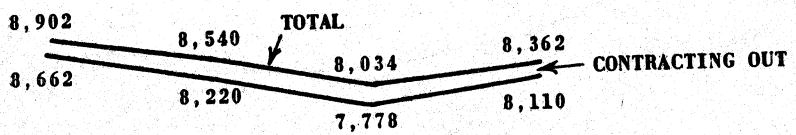


APPENDIX IV

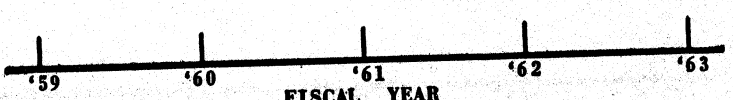
ORDNANCE MAINTENANCE AND OVERHAUL

IN HOUSE vs CONTRACTING OUT

(IN MAN YEARS)



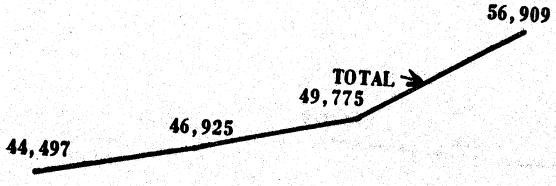
IN HOUSE



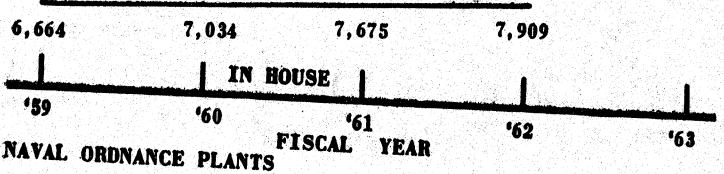
NAVAL AMMUNITION DEPOTS
NAVAL WEAPON STATIONS
NAVAL TORPEDO STATION

APPENDIX V

MANUFACTURE OF ORDNANCE/PROPELLANT AND FIRE CONTROL EQUIPMENT IN HOUSE vs CONTRACTING OUT
(IN MAN YEARS)



CONTRACTING OUT



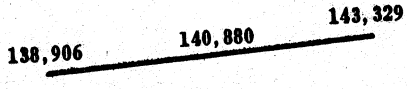
NAVAL ORDNANCE PLANTS

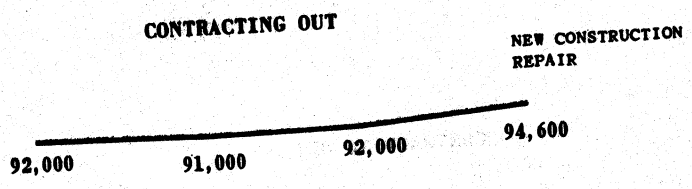
APPENDIX VIII

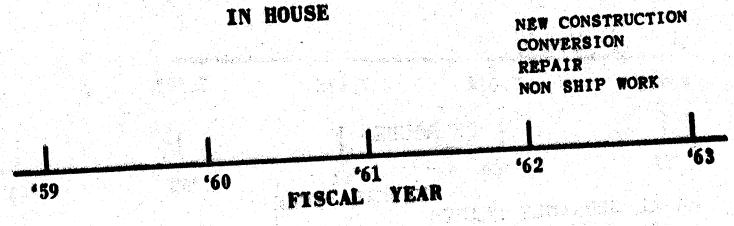
SHIPS-NEW CONSTRUCTION, REPAIR AND CONVERSION

IN HOUSE vs CONTRACTING OUT

(IN MAN YEARS)

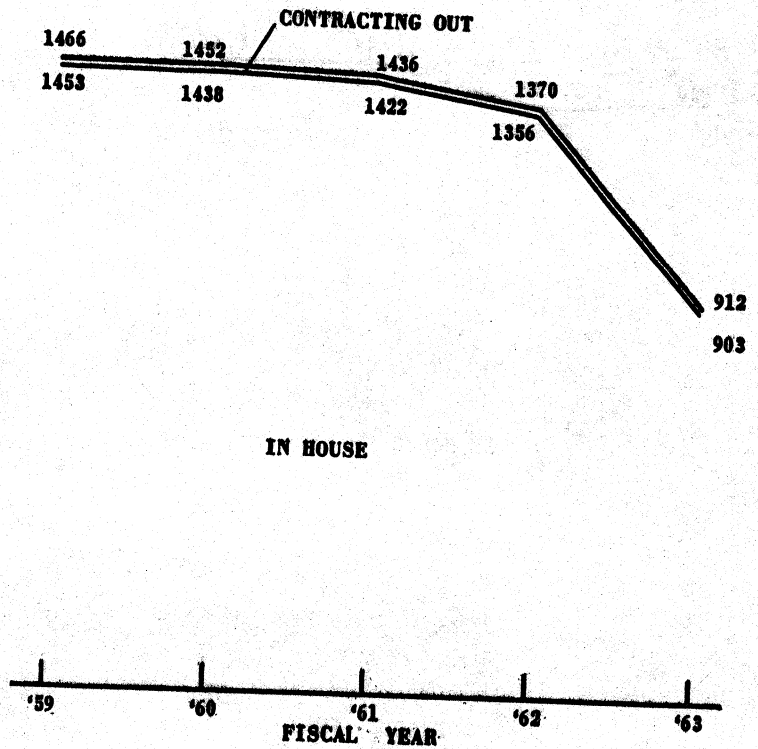






APPENDIX IX

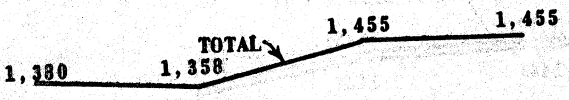
MAINTENANCE OF FACILITIES, AUTOMOTIVE AND CONSTRUCTION EQUIPMENT AT CONSTRUCTION BATTALION CENTERS
IN HOUSE vs CONTRACTING OUT
(IN MAN YEARS)



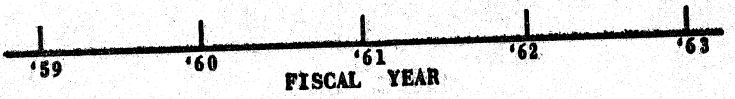
APPENDIX X

USMC REPAIR, REWORK, RENOVATION AND PRESERVATION OF MATERIEL

(IN MAN YEARS)



IN HOUSE



Final summary report, commercial-industrial activities program, Bureau of the Budget Bulletin 60–2, U.S. Navy

Total inventory	Total evaluated	Discontinued	Curtailed	Continued	Other
1,115	1,115	257	40	[1] 797	[2] 21
LESS THAN $250,000					
850	850	239	30	[1] 560	[2] 12
Pt. I	614	237	28	349	0
Pt. II	236	2	2	[1] 220	[2] 12
$250,000 AND OVER					
265	265	18	10	[1] 228	[1] 9
Pt. I	101	18	2	79	2
Pt. II	164	0	8	[1] 149	[2] 7

[1] Activities awaiting clearance for sale or other disposition included in this column
[2] Adjustments reported to DOD involving consolidations, inventory deletions, updating of evaluations within the meaning of the 60–2 program, etc.

New starts (not included above)

Total	9
Approved	9
Disapproved	0

Of the activities indicated under "Curtailed" and "Continued" in the above columns, the indicated reasons given are:

	Less than $250,000	$250,000 and over
A. National security	88	147
B. Costs	11	1
C. Clear unfeasibility [1]	500	
(1) Basic mission [1]		56
(2) Unavailable commercially [1]		5
(3) Administratively impractical [1]		29
Total	[2] 599	238

[1] Detailed breakdown in those categories undergoing review and check.
[2] In cases where more than one reason was given, the first stated has been recorded in the summary.

Discontinuances and curtailments reported for 60–2A (pt. II) commercial-industrial activities

Item	Bureau	SIC code	Description	Location	Action
1	CNO	2051	Bread and bakery products.	Naval Station, Newport, R.I.	Discontinued.
2	BUSHIPS	4953	Refuse collection system	U.S. Naval Shipyard, Long Beach, Calif.	Do.
3	BUSHIPS	3861	Photographic equipment	U.S. Naval Shipyard, Philadelphia, Pa.	Curtailed.
4	BUSHIPS	7330	Duplicating, blueprinting, addressing, etc.	U.S. Naval Shipyard, New York, N.Y.	Do.

The effect of the above discontinuances and curtailments on contracting out is noted as follows:

Item 1: This activity has been reported discontinued by the facility and these products obtained from commercial sources. The value of the contracts let and the number of persons, civilian and military, decreased as a result has not been required to be furnished in the reporting under this program for activities under $250,000 and time available has not permitted a report to be obtained from the activity.

Item 2: Discontinued by the activity. Contract awarded to G. B. Ottonello, 5258 Marlborough Drive, San Diego, for collection and disposal of refuse in the shipyard and the Naval Station, Long Beach. Contract price: $114,000. Personnel action: Eight civilian employees of the shipyard were released. Costs before and after action: A total annual savings of about $51,000 will be realized by the shipyard and the naval station.

Item 3: Contract awarded: On January 24, 1961, Charles P. Mills & Son, Photography, Inc., 708 South Washington Square, Philadelphia, Pa., was awarded a $10,312.49 contract for photographic work. This contract expires on June 30, 1961, at which time new bids will be solicited from photographic firms in the Philadelphia area. Personnel action: One shipyard photographer was released as a result of the contracting out. Costs before and after: This information is not available in the time permitted as it must be obtained from the activity.

Item 4: This service has been curtailed. Contract awarded: (1) In February 1961, Keuffel & Esser Co., 127 Fulton Street, New York, was awarded an annual contract for blueprinting operations. The contract form does not state an established amount, but is estimated to range from $20 to $700 per month and possibly higher during peak periods.

(2) In February 1961, Columbia Blue & Photo Print Co., 267 Madison Avenue, New York, N.Y., was also awarded a blueprinting contract. No job orders have as yet been issued to this firm.

Personnel action: No shipyard employees were released as a result of these contracts.

Costs before and after: This information is not available, and time did not permit obtaining it from the activity.

Curtailments reported for 60–2B (pt. II) commercial-industrial activities

Item	Bureau	SIC code	Description	Location	Value (in thousands)	Action
1	USMC	1511	General building contractors.	Marine Corps Supply Forwarding Annex, San Francisco, Calif.	$374	Curtail.
2	BuShips	7330	Duplicating, addressing, etc.	Mare Island Naval Shipyard, Vallejo, Calif.	345	Do.
3	do	8921	Nonprofit educational and scientific research agencies.	Naval Engineering Experiment Station, Annapolis, Md.	8,202	Do.
4	do	4225	General warehousing and storage.	New York Naval Shipyard	1,153	Do.
5	do	4454	Towing and tugboat service.	Philadelphia Naval Shipyard, Philadelphia, Pa.	387	Do.
6	do	7330	Duplicating, addressing, etc.	do	326	Do.
7	do	8921	Nonprofit educational and scientific research agencies.	do	5.098	Do.
8	do	7330	Duplicating, addressing, etc.	Portsmouth Naval Shipyard, N.H.	372	Do.

EFFECT OF CURTAILMENTS OF 60–2B COMMERCIAL-INDUSTRIAL ACTIVITIES

Item 1: Marine Corps Supply Forwarding Annex (MCSFA), San Francisco, Calif.:

The repair and maintenance operations were transferred to the Marine Corps Supply Center, Barstow, Calif., on June 30, 1960. As a result of this consolidation, maintenance operations were materially curtailed. Of the 57 civilian employees (total annual salary of $334,000) and 3 military (total annual salary of $12,000), only 12 maintenance personnel remain. All civilian employees affected were given the opportunity to transfer to Barstow.

Item 2: Mare Island Naval Shipyard, Vallejo, Calif.:

The blueprinting operations at this shipyard were reported as a curtailment. On March 10, 1961, the Pacific Coast Blue Print Co., of San Francisco, was awarded a blueprinting work contract not to exceed $9,775. No shipyard personnel were released because of this contract. Commercial procurement represents 3 percent of annual blueprinting requirements.

Item 3: Naval Engineering Experiment Station, Annapolis, Md.:

Decreased emphasis in several fields of endeavor at the engineering experiment station dictated a realinement of personnel. Specifically, there was less work forecast in all four departments of the station. Employees in the following departments are affected: (*a*) Technical: chemical, mechanical engineering, applied physics, and metallurgy; (*b*) nontechnical: primarily shop personnel such as sheet metalworkers, machinists, welders, and electricians.

Also, the Bureau determined that certain inspection functions were not relevant to the basic mission of the engineering experiment station. The Bureau considered that these functions were inherent in the manufacturer's performance of work and should be accomplished within the provisions of the cognizant contract. Thus, the performance of inspections by the appropriate manufacturer would enable the station to direct its efforts to the accomplishment of its basic missions. It is estimated that approximately 20 technical and 80 nontechnical employees (30 on direct nontechnical work and 50 on overhead) will be released by July 1, 1961. This represents an 11-percent reduction in civilian billets at the station, from a civilian allowance of 880 to 780. The salaries of these 100 people approximate $600,000 annually. It is not known at this time what cost increases in contracts will result from the manufacturers' performance of inspection functions.

Item 4: General warehousing and storage, New York Naval Shipyard, Brooklyn, N.Y.:

The shipyard is constantly endeavoring to reduce its available storage capacity to the minimum requirements necessary to sustain satisfactory and economical performance of its supply mission. To this end, the following actions were undertaken:

In October 1959, the Maspeth Annex was sold to private industry for over $6 million, and 122 civilians ($605,000 annual salary) were released from the shipyard's allowance.

In February 1960, the Queens Annex was sold to private industry for $1,255,000 and eight civilians ($38,000 annual salary) were released from the shipyard's allowance.

During 1960, the storage, pickling, and painting of structural steel was transferred from the Naval Industrial Reserve Shipyard, Kearney, N.J., to the shipyard proper. This resulted in the release of 35 civilians ($196,000 annual salary) from the shipyard's allowance. In March 1960, the NIRS was turned over to GSA for disposition.

In May 1960, the Naval Industrial Reserve Shipyard, Port Newark, N.J., was turned over to GSA for disposition. This action resulted in the release of 20 civilians ($106,000 annual salary) from the shipyard allowance.

Action is underway to vacate supply functions from the Jay Street Annex of the shipyard. Information on personnel reductions is not available at this time.

Item 5: Towing and tugboat service, Philadelphia Naval Shipyard, Pa.:

On January 13, 1961, Taylor & Anderson Towing & Lighterage Co., 15 Lombard Street, Philadelphia, Pa., was awarded a 1-year contract, not to exceed $14,719.50, for towing and tug operations. Similar contracts, approximating $15,000, will be issued annually, but not necessarily to the same commercial firm. As a result of this contracting, one civilian has retired and 19 military billets are being deleted from the shipyard's allowance. Amount contracted out to commercial sources, 6 percent annually.

Item 6: Duplicating, addressing, and so forth, Philadelphia Naval Shipyard, Pa.:

On March 22, 1961, a 1-year contract, totaling $1,400, was awarded to Campion Co., Inc., 34 South 16th Street, Philadelphia, Pa., for blueprinting work. No personnel were released because of this contract. Amount contracted out to commercial sources, one-half percent annually.

Item 7: Nonprofit educational and scientific research agencies, Philadelphia Naval Shipyard, Pa.:

R.D.T. & E. work on boilers, turbines, engines, and reduction gears was transferred to the Philadelphia Naval Shipyard when the U.S. Naval Boiler

and Turbine Laboratory was disestablished as a separate naval activity on June 30, 1960. This work is now performed within the boiler and turbine laboratory department of the shipyard. The disestablishment of the activity and the deemphasis of various programs resulted in savings of 82 civilian and 5 military billets. The June 30, 1960, laboratory personnel on-board figure was 267 civilians and 5 military. The current on-board total (February 1, 1961) is 255 civilians and 5 military.

Item 8: Duplicating, addressing, blueprinting, etc., Portsmouth Naval Shipyard, N.H.:

On February 1, 1961, the Charles Bruning Co., Inc., Boston, Mass., was awarded a contract estimated at $28,200 for blueprinting work. This contract expires on October 31, 1961. No shipyard personnel were released because of this contract. Amount contracted out to commercial sources, 12 percent for 8 months.

Secretary BELIEU. I am happy to attempt to answer questions or to have the gentlemen who are with me answer questions.

The committee kindly furnished us a list of specific contracts in the so-called effort-type area, 15 in number, to which it wished to direct questions and on which it wished to have specific answers, and witnesses who are acquainted with the contracts.

There are eight coming under the cognizance, basically, I guess—at least, the witnesses representing these are from the Office of Naval Research.

The next five are from BuShips. And the last two from the Bureau of Weapons.

I have gone over most of these. I know the committee will want to hear directly from the individuals involved, and I will be happy to introduce them.

I could not help but think last night when I was going over these, the foreword I read by Albert Einstein from the book entitled "The Universe and Dr. Einstein," by Lincoln Barnett. Einstein in his foreword said:

> Anyone who has ever tried to present a rather abstract scientific subject in a popular manner knows the great difficulties of such an attempt. Either he succeeds in being intelligible by concealing the core of the problem and by offering to the reader only superficial aspects or vague allusions, thus deceiving the reader by arousing in him the deceptive illusion of comprehension; or else he gives an expert account of the problem, but in such a fashion that the untrained reader is unable to follow the exposition and becomes discouraged from reading any further.

Mr. HARDY. It would take me a half hour to absorb that. [Laughter.]

Secretary BELIEU. I am not sure I have the answer.

Mr. HÉBERT. That was the idea. [Laughter.]

Mr. KITCHIN. Exactly what he is saying.

Mr. HÉBERT. Exactly what he said.

Mr. COURTNEY. That is as clear an exposition on the subject as we have heard.

Secretary BELIEU. Out of Einstein's mathematical theories came his theory of relativity and a few other things.

Mr. HÉBERT. Which I am sure you understand as well as we do. [Laughter.]

Secretary BELIEU. Just about as much as this paragraph, Mr. Chairman. [Laughter.] So I am not going to say that I understand all the contracts here, although there is a reason for them, as I understand.

If the Chairman wishes—with his permission, I would like to introduce Dr. F. D. Rigby now, who will speak to the first eight on the list.

Mr. HÉBERT. Now, before we get into that, Mr. Secretary, I think the committee members may like to question you on your general statement.

Secretary BELIEU. All right, sir.

Mr. HÉBERT. And in that connection let me say that I congratulate you on the statement, even if it had no Einsteinian theory as of now. [Laughter.]

I don't know what the future holds. I am not predicting. But certainly your statement has been responsive and I congratulate you on it.

Don't puff up on that. I always warn everybody. [Laughter.]

Mr. COURTNEY. No levitation.

Mr. HÉBERT. No. This is as of now. [Laughter.]

Secretary BELIEU. Yes, sir.

Mr. HÉBERT. The doctor says—you know, you see the doctor and he says "You are in good health but you may drop dead the next minute." He always protects himself. And I am trying to protect myself in my statement.

But seriously, your statement has been most responsive and I think most helpful for part of the questioning on the part of the committee now.

I just want to ask one question now, or two questions. In your evaluation—and recognizing the fact that much of this has been left on your doorstep and you can take it to the orphanage if you want—but the time that you have spent in the Navy department as Assistant Secretary, and your grasp of the situation, and in the figures presented to you, what conclusion do you come to as to the desirability of contracting out in whole or in part, or not at all?

Secretary BELIEU. I suppose each man brings to a job the background of his own nature.

I spent many years in military service. I am normally inclined to in my opinion make certain that our Military Establishment has as much in-house capability that it needs to judge the job that it must do. Basically this is the fundamental reason.

Mr. HÉBERT. That is the paramount consideration.

Secretary BELIEU. I think so, yes.

Mr. HÉBERT. Now has the contracting-out procedure injured in any way that in-house capability, in your opinion?

Secretary BELIEU. I have not had a chance to visit the entire Navy and I can't answer that completely.

Mr. HÉBERT. From the books——

Secretary BELIEU. From my questioning of the staff and the people that I have had the opportunity to rub elbows with, I don't think it has now. Although it could if we do not maintain the naval art alive within the Naval Establishment in this country.

Mr. HÉBERT. Then, what you are saying to the committee is that an expansion of contracting out must be approached with caution.

Secretary BELIEU. Yes, sir; I think so.

We have a two-horned dilemma in this country. We obviously support private enterprise and must. It is a great percentage of our strength. It is 98 percent of our strength.

The other 2 percent is the warmaking potential that exists in the active military forces. And we must maintain within those forces this know-how.

Now I think perhaps, as a matter of philosophy, had the country decided to give the military forces larger budgets over the past years, it would have been possible of course to keep a greater in-house capability.

Obviously, sometimes the matter of costs should go out, because you want to get the weapon. This is the thing the man fiights with.

Mr. HÉBERT. Now I don't know whether you can answer this. You should, from the books.

Have you come to a definte conclusion as to the economical aspect, in an overall approach to the subject matter, as to whether or not contracting out is cheaper dollarwise than inhouse performance?

Now you mentioned two places—in Guam, where contracting out was cheaper dollarwise. Does this reflect the entire picture, or are these exceptions?

Secretary BELIEU. I have tried to answer this question, sir, and I don't think I know the answer to it. I don't think anybody really does, because it shifts from time to time.

Now I mentioned Guantanamo awhile ago. I am certain there is no reason to expect that labor costs would be cheaper if we contracted out there. But from the military necessity, it is obvious now that we can't do this in the future, as much as perhaps we could under other conditions.

Mr. HÉBERT. What you are saying is that the local market, the local labor market would quite control the cost in a particular area.

Secretary BELIEU. It would have a certain impact on it. Also, there is no real economy in the military machine. It is an insurance policy. And sometimes we have to pay for the thing to make sure our strength remains constant. So there is a balance between cost and mobilization requirement and operational readiness.

Mr. HÉBERT. Now, what would be your recommendation now, Mr. Secretary? That you continue as we are proceeding, or cut back, or an expansion of contracting out as related to the Navy, and under directive 60–2?

Secretary BELIEU. Directive 60–2 has exceptions in it which are designed to cover military requirements in their generic sense. They include training, mobilization, and I guess most anything else that you can properly justify.

I think I would—there is no hesitancy—the difference between contracting out-house and in-house business is a matter of necessity based on the consideration you have to make perhaps at the time. Money, perhaps, being a consideration.

But going back to the philosophy that I say was my personal philosophy, I would not give up any in-house capability until I was certain it would not do damage to our military posture. Now, if it doesn't do that, that is fine.

Mr. HÉBERT. Let's be specific. For instance—in probably a minor area, but certainly an illustrative area—laundry now is contracted out at all Navy bases.

I think that is correct, isn't it?

Admiral BEARDSLEY. I don't know.

Secretary BELIEU. I am not too certain on that, sir.

Mr. HÉBERT. It affects the daily life of the individual. This is a morale factor.

Admiral Beardsley (nods).

Mr. HÉBERT. Now, if you are in doubt, probably I shouldn't pursue it, because you can't answer that question.

I just wondered in that particular area, has it shown that it is cheaper to contract out for laundry than to have it done in-house?

You don't know the answer, so we can't pursue it. But there is an example.

Now, these are some of the things that have an impact on the local community.

How about bakeries? What does the Navy do about bakeries? Is that contracted out?

Admiral BEARDSLEY. I think so—most of it.

Mr. HÉBERT. It is or it isn't.

Secretary BELIEU. I think most of it it, sir. But then, obviously, you need bakers aboard ship, too.

Mr. HÉBERT. That is right.

You see, these are the areas that we discuss. Then we talk in generalities and the overall picture as to the effect on the local economy, when in reality a close analysis, an intelligent analysis, would reveal that the cost in the ultimate is more to the Government in letting out because you don't have your trained personnel to keep up your own in-house capability.

Now, I admit that these things are things that are rather difficult to define. And yet, on the other hand, it spreads the question all over——

Secretary BELIEU. Yes. Take laundries, for example.

In the States, the costs being equal, I don't see any reason not to go out, because it doesn't in my mind impair our military effectiveness, as long as you get the service properly done.

Overseas, I have been in positions where you had to take your clothes right down to the creek near you and beat them out yourself if you wanted to get them washed. And it would have been fine to have a laundry unit there, after a period of 10 or 12 days in combat.

Aboard ship this is not necessarily the same problem, as it would be with the marines.

(The following was supplied by the Navy in reply to subcommittee inquiry:)

CODE 7211: POWER LAUNDRIES AND DRYCLEANING PLANTS

A total of 47 laundries and drycleaning activities were reported during the 60–2 survey program. While there are undoubtedly other activities of this nature, this total represents those functions which were reported as separate functions, rather than a component unit within a larger activity. For example, the survey made of the Naval Supply Center, Oakland, Calif., and the MARCORPS Supply Center, Barstow, Calif., included this type of activity as a component of the larger activity.

Of the 47 laundries and drycleaning activities evaluated, 32 were approved for continuance and 15 were discontinued. Continued operation by the Navy was justified on the basis of clear unfeasibility.

CODE 2051: BREAD AND BAKERY PRODUCTS

As defined in DOD instruction 4100.16 dated March 8, 1954, a bakery is "a centrally located bakeshop, not a part of the galley or kitchen of a genera' mess, which supplies bread and pastries to—

"(a) Messes for consumption, or

"(b) Commissaries for distribution to mess, or

"(c) For resale to services personnel as individuals."

A total of 16 bakery activities have been reported under the commercial-industrial activities survey program (BoB 60-2). Of this total eight were continued in operation by the Navy and eight were discontinued. One of the eight continuances was actually a bakeshop which was included as a function within the MARCORPS Supply Center, Barstow, Calif.

Seven of the continuances were justified on the basis of national security and one on the basis of clear unfeasibility (adm. imp.).

The justifications for continuance based on national security take into consideration the necessity for providing essential training to bakers for eventual duty in the field and with the fleet, and the need for providing refresher training in advanced techniques to bakers who are rotated from sea duty and overseas shore billets. Baking is a trade which requires constant attention to changing methods and techniques. Sufficient billets must be maintained, therefore, to adequately support the training and rotation needs of the Navy and to provide for the absolute minimum requirements of mobilization capacity.

In addition to providing training and rotation billets, these bakers also supply troop mess bread requirements at the activities of which they are a part.

It is the policy of the Department to restrict the baking of bread in general messes of the Continental Naval Shore Establishment to baker's schools, naval training centers, and to a minimum of the other continental shore activities where it will serve a necessary training purpose. The baking of cakes, pies, and other pastries are restricted to all general messes for immediate consumption of military personnel. With these exceptions the general messes of the Continental Naval Shore Establishment procure bread from available local commercial sources.

Mr. HÉBERT. Now, to bring it into definite and sharp focus. Under 60-2, the discretion is allowed the local commander of the area as to the application of the directive.

Secretary BELIEU. I would have to look that up again, sir. I believe you are correct.

Mr. HÉBERT. That is important here.

Secretary BELIEU. Yes.

Mr. HÉBERT. Because while in one community or one area the laundry or the bakery deal may be cheaper to the Government, in another area it would be prohibitive.

Secretary BELIEU. This is the way it should be.

Mr. HÉBERT. So as I say, it is up to the commander locally to apply the conditions.

Secretary BELIEU. Again, going back—we discussed bakeries and laundries.

Mr. HÉBERT. I am using those examples.

Secretary BELIEU. Well, they are good examples.

If you have to go overseas and perform the mission and you can't take this contracting out facility with you, you better have it in house, so you can go with it, or it can go with you.

Mr. HÉBERT. Well, that is the thing I am trying to develop, Mr. Secretary.

Secretary BELIEU. Yes, sir.

Mr. HÉBERT. Is to show that while the general principle and the expression of free enterprise on the local community, and all that sort of thing—it sounds pretty. It sounds well. It is put to music,

and the melody is wonderful. But really when you get down to it, you find it is not so practical.

Secretary BELIEU. Not in all cases, no, sir.

Mr. HÉBERT. That is what I mean.

So where is the line of discretion? Is it the local commander, under 60–2, or is it directed from a central headquarters?

Secretary BELIEU. I can't answer specifically as to laundries on the thing. It should be on the basis——

Mr. HÉBERT. Well, the overall directive: Is it elastic enough?

Secretary BELIEU. I believe it is now. I have not had any case come to my mind where it hasn't been, as I indicated.

Mr. HARDY. If the chairman would permit.

Mr. HÉBERT. Yes.

Mr. HARDY. This is an observation in connection with it. I have had a good bit of experience in times past on matters of this nature, and I never have been able to find out that any local commander had the authority to make any change unless he got the approval of the chief of the bureau. And I think they have generally had to get it from the Secretary's office.

Secretary BELIEU. I am informed it is all the way, to the top, sir. I wasn't familiar with that particular.

Admiral BEARDSLEY. All these reviews, Mr. Chairman—they all have to come up and be reviewed all the way up.

So it isn't within the discretion of the local commander, you are correct.

Mr. HÉBERT. We are not being critical. And we don't want you to respond beyond your knowledge. We merely want to find out what the facts are.

It does have to go topside?

Admiral BEARDSLEY. Yes.

Mr. HÉBERT. Now, Mr. Hardy, any questions?

Mr. HARDY. Yes.

Mr. Secretary, I am interested in your general interpretation of 60–2.

In times past I have encountered interpretations which seem to say that we will not maintain any in-house capability for the performance of a service which can be procured from outside.

Now, that, it seems to me, is a little bit of the reverse of the position which you have taken. I hope I am properly interpreting your position.

Secretary BELIEU. I think you are sir. I have also had people approach me with this interpretation of it, sir.

Mr. HARDY. I have found that interpretation in some quarters in the Navy in times past. And I wanted to be sure that we have a general interpretation over there now, and just what it is.

Mr. HÉBERT. That is very important, I think.

Mr. HARDY. Just let us pin this right down a little bit.

Secretary BELIEU. Right.

Mr. HARDY. Even in your own policy statement, beginning at the bottom of page 1 and at the top of page 2, you list three categories there, which you say are not in conflict with Bureau of the Budget Bulletin 60–2.

Your statement, however, does not treat with the converse of those situations and say that you will procure, or will not contract out for other items, or that you will maintain in-house capability for the other items.

You say you will contract out for these, but you don't say that you are going to perform as an in-house capability all of the others, not by a jugfull. Now let's clarify that.

Secretary BELIEU. Well, again my policy would be, unless I am directed otherwise that—as I have said here: "Nonmission essential weapons and components when military control and performance is not required."

You could reverse this and just say the opposite. "That for all mission essential weapons we should have an in-house capability."

We should have an in-house capability where it meets training requirements or mobilization requirements or other requirements for rotation overseas. Now in many instances in new weapons it would be desirable if we had an in-house capability, because in-house capability gives you the better ability to inspect and to review and to know what you are doing and to plan your program better.

Unfortunately in this case technology expands so fast and the cost of building plants and of doing these things has prohibited all the inhouse capability that I think probably is essential to a military establishment in this country.

Now, where these things do not affect the military mission or we do not have to take them overseas in a rapid expansion, do not have to take the art with us, and where the cost is cheaper, I see no reason not to contract out.

Mr. HARDY. But now, can that be determined? Can determinations of that nature be made with respect to your installations generally, or do they have to be made on an individual installation basis as the chairman was discussing a moment ago?

Secretary BELIEU. I think the policy obviously has to come all the way to the top on the thing, pretty much.

Mr. HÉBERT. You didn't ask that question——

Mr. HARDY. No.

Secretary BELIEU. That is the way I understood it.

Mr. HARDY. The policy with respect—if it is of general application. But what might apply in one area might be directly inapplicable in another area.

Secretary BELIEU. That is completely correct, sir.

Mr. KITCHIN. On practically everything.

Secretary BELIEU. This would happen certainly in the case of laundries and other facilities of that nature.

I have not had enough experience with this to talk as precisely as I should for the committee's sake. I would assume—take two laundries, one in one part of the country and one in another, where the local commander says "I can do this cheaper here." He should come in and make his recommendation for it.

I think there is no question that the 60–2 says "You will go outhouse wherever you can."

Mr. HARDY. It says "wherever you can."

Secretary BELIEU. Yes.

Mr. HARDY. Does it mean wherever you can and maintain military capability, or does it say you must contract out if there is anybody on the outside that can produce it?

Admiral BEARDSLEY. No.

Mr. KITCHIN. There is an escape clause in there.

Secretary BELIEU. No, I don't think it goes that far. I don't interpret it that way.

I interpret it so you should go out-house—you should contract out, where you do no damage to your military posture.

Mr. HARDY. Well, let me get a little more specific.

I can recall—now, for instance, in here you made reference to non-combat aircraft maintenance.

(Secretary BeLieu nods.)

Mr. HARDY. You also—the Navy also got involved in proposals to contract out for the maintenance of combat aircraft. Now I don't know how far they got actually with putting that into effect, but I do know that a good many aspects of it were under consideration, and a lot of time and money was wasted in considering it.

I know that certain capability related to combat aircraft maintenance were under scrutiny and under study, and a lot of money was spent on them, and I recall one little item—and this is the kind of thing that would involve overall top policy, I think.

I recall one specific proposal to discontinue the operation of an electroplating facility required in connection with the maintenance of naval aircraft, and to procure that service under contract. I know that in one locality it was determined that there was no local contractor capable of performing, so distant contractors were invited to bid on that proposition.

I know that finally, after a long period of time, somebody topside was prevailed on to understand that the quality requirements could not be maintained by such a procurement at a far distant point.

But the reason I am bringing this up is, here is something that—an awful lot of money was spent on something that was absolutely foolish from the beginning, when you couldn't maintain your quality requirements, and if you made a topside policy determination with respect to the contracting out for this service, generally you would be getting in one "gosh-awful" situation, plus an expensive one, plus the possibility that you would have a lot of aircraft going bad because of inadequate inspection.

Now, I am trying to understand how your top policy decision up in the Bureau on a blanket basis can result in meeting the need for a proper determination on these specifics. Now haven't we got to handle each on its individual basis, instead of trying——

Secretary BELIEU. That is correct, sir. Certainly you can make the overall statement that I did on page 1 and 2 there.

Admiral BEARDSLEY. That is right.

Secretary BELIEU. Then you have to apply this as a yardstick to most individuals and the particular example you speak of I don't know precisely. They may well have to take these aircraft overseas and maintain them, and you have to take this capability with you.

If you lose it here, how are you going to take it with you when you go? Now in my mind, this is almost a direct clamp on keeping it in, of refusing to let it get out.

Mr. HARDY. Well, let me give you one other little silly one that the Navy did. This was a real silly one. The Navy issued an order—and this hasn't been so very long ago—that they would maintain no ladders, fire ladders in a shipyard if there was a ladder company maintained by the local governmental installation within a certain distance of it, of the shipyard.

Now on the surface that might sound like it was fine thing to do, but it can result in an awful stupid situation, and it did in one with which I have a personal familiarity. But the decision was made at the top that we are going to abolish all these things, and it took an awful lot of head cracking, by golly, to keep from dissipating a capability in the shipyard of essential firefighting service which couldn't be met elsewhere.

Now if you are going to—that is the thing the chairman was talking about.

(Mr. Hébert nods.)

Mr. HARDY. Where is the decision made? And this was a complete overriding of the local commander.

Secretary BELIEU. This is part of the difficult responsibility of leadership in this town, and all these decisions presuppose understanding of what you need to do and actual factual information of what the local situation requires. If you don't have these two conditions, decisions are going to be bad.

Mr. HARDY. Let's talk about one other one, if I might, because I want to try to see if we can have an understanding that we are approaching this thing on a commonsense basis, and that is the way I read your general statement.

Secretary BELIEU. I hope so, sir.

Mr. HARDY. But is hasn't always been done, and I hope to goodness that we are getting this policy squared away.

Let's talk about another one. Now you mentioned the maintenance of automotive equipment. For a considerable period of time there was a program underway of trying to contract out for the maintenance of all the automotive equipment in the Norfolk Naval Shipyard.

And to show you how silly it was, they found they couldn't contract for it on any reasonable basis without knowing exacty what was going to have to be done to the vehicles. So you had the shops in the shipyard tearing the vehicle down to find out what was wrong with it, putting it back together, and then sending it outside to be repaired.

Secretary BELIEU. This is precisely what I meant a while ago when I said if you do not keep an in-house capability, you don't know what you are doing sometimes. How can I let a contract to buy something if I do not know what I want to buy? You just can't do it.

Mr. HARDY. Now there is one other facet to this that I wonder about, and this has to do with your ancillary activities, and one which you mentioned, and this one has been talked about a good many times—gas manufacture.

Now I don't know, but it seems to me there are some functions that have to be maintained as a matter of good business operations. I was talking to a private shipyard one time about the question of gas manufacture. I said "Do you manufacture your own gas?"

He said, "Yes."

And I said, "Why?"

He said, "Because I have to maintain my supply. I don't want to have to depend on somebody else to furnish me with gas when I need it."

I said, "Do you consider that any shipyard ought to do that?"

He said, "Well, I wouldn't operate one without making my own gas," he said, "because I can't be dependent on somebody else to do it."

Now, the question that was involved here—and I think the same thing goes back to the automotive maintenance. There may be situations under which it can be contracted out on a reasonable basis, but as a farm operator, I had to keep a shop that could maintain or perform some maintenance on my farm tractor. And how in the world anybody can operate an industrial establishment like a shipyard and not perform any maintenance on its own equipment and not manufacture its gas, is a question for prudent management, it seems to me, to determine.

Secretary BELIEU. It certainly is, sir, because you must maintain—you must get these services from somewhere. You must have them available at the time you need them.

Mr. HARDY. Now, Mr. Chairman, there was one other point that I wanted to explore, and then I will be through with this.

I am glad to hear you make these observations.

Mr. HÉBERT. I think, Mr. Hardy—we can well say to you, Mr. Secretary—that this is an area, and which the colloquy has developed, is the key to the whole situation in which we are concerning ourselves at this time.

Of course it will be incumbent upon the committee to make every effort to have the Defense Department issue a complete and distinctive and commonsense interpretation of what 60–2 means, so it can apply it to all services, and that is a responsibility of this committee in its report.

Mr. COURTNEY. Yes.

Mr. HÉBERT. This is the heart of the whole thing, as to its commonsense application.

Mr. HARDY. Let me ask you this, Mr. Secretary: Are you aware of the extent to which the imposing of arbitrary personnel ceilings may be actually increasing your operating costs in Navy installations?

Secretary BELIEU. I am probably not aware of the whole thing, sir. I could only give you a general answer.

I have been in command of activities in the past. Obviously, the diminishing of your personnel resources beyond a certain point does either of two things. It inhibits your ability to do your job properly, and by that adds costs, because if the job has to be done sometime, you have to pick up and catch up with it.

I am not familiar—maybe I do not understand the question properly, sir.

Mr. HARDY. Well, the thing I was getting at is this: Haven't there been times when the Navy has itself imposed personnel ceilings on its industrial-type activities or commercial-type activities which have resulted in a requirement that the performance of certain services be secured under contract and be done at a much increased cost?

I will give you an illustration, one that I know of. I know an occasion under which you had a breakdown in a cold storage plant and because you didn't have the personnel ceiling to permit your own

maintenance employees to go in and perform that maintenance, you had to do it under contract. And I know it was the kind of a job that nobody could put in a bid on, on a contract basis, because of expanding the thing out of all proportion in order to protect himself. And the thing cost the Navy in that particular instance two or three times what it should have cost. But you had a personnel ceiling—and I don't know who imposed the ceiling.

Admiral BEARDSLEY. Pretty generally, Mr. Hardy—as I recall during the last 4 or 5 years our overall ceilings have been more than adequate. The tighter control has the money within the ceiling, that is the total money within the ceiling.

There may be isolated cases where this did happen.

Mr. HARDY. This was some little time ago. You had to have the money, because you had to maintain the cold storage plant. You had to repair a breakdown.

Admiral BEARDSLEY. Well, in the overall we have had more ceiling than we have had the money to support people. So I don't think in the overall we have been hurt very much.

Mr. HARDY. This occurred some little while ago, and shortly thereafter you had a situation under which the Public Works Department had a ceiling put on it, where it had to lay off people, and the Supply Department, located right on the same base, was employing the people that they laid off, because they had work that had to be done.

Secretary BELIEU. This comes from two different reasons. One from the allocation of personnel trying to make a proper decision between the whole list of priorities and the jobs to be done, and also as a result of budgetary limitations—the allocation of funds from one department to the other—I mean one entity to the other.

Mr. HARDY. That would, in that particular situation. But when you increase your requirement for procuring a service under contract which is more economical to perform in-house because of a lack of personnel ceiling, then it is not a budgetary matter, because it is costing you more money.

Secretary BELIEU. It is not even an economical matter, sir.

Mr. HARDY. That is it.

Mr. HÉBERT. Mr. Kitchin?

Mr. KITCHIN. I have no questions of this general nature. I will reserve mine until we get to the specification contracts.

Mr. COURTNEY. I would like to ask a question at this point on this subject.

Mr. HÉBERT. Mr. Courtney.

Mr. COURTNEY. On this subject, Mr. Secretary, would it be a fair interpretation of your conclusions as expressed here to summarize them about in this way: That your experience in the Navy to this date in the operations that it is required to perform has not so far as your examination shows been impeded or curtailed or interfered with by the conditions that are prescribed in 60–2 and 4151.1?

Secretary BELIEU. That is correct, sir.

Mr. COURTNEY. Now the second question. Do you interpret 4151.1 and 60–2 as directory of mandatory upon the Navy?

This would be the heart of the matter, in the questions, or the hypothetical cases that have been put to you here by the subcommittee: If it were mandatory, would it be so restrictive that it should now

be altered or made abundantly clear that it would not interfere with your operation on a daily basis, or can you live with it in its present form?

Secretary BELIEU. Well, of course, any defensive directive that I receive through appropriate channels is a mandatory thing as far as I am concerned.

Mr. COURTNEY. Well, of course, I would understand that, yes.

So that you would feel that you would be completely obligated by 4151.1?

Secretary BELIEU. Yes. But I believe there is freedom of action within this.

Mr. COURTNEY. Well, this is the next question. Is there sufficient freedom of action so that you could accomplish the missions that you would be required to?

Secretary BELIEU. I think so.

As I indicated earlier, I have had no one breathing down my neck on this, saying, "You are doing something wrong."

If this were said to me, I would assume that among reasonable people I would have the opportunity of coming back and saying, "This is the impact it will have on the Navy and on the country's naval posture," and I would either concur with it or I don't concur with it.

I have not run into a situation of this nature yet.

Mr. COURTNEY. Well, that then would be the question.

If the subcommittee accepts, as I gather from the questioning they do, your philosophy of the application of the principle contracting out- or in-house capability, the question then ultimately would be whether you can carry out your philosophy with the restrictions, if any, that are contained in 4151.1.

Secretary BELIEU. I have reason to believe I can. I have no reason to believe otherwise.

Mr. HARDY. You mean thus far it hasn't run into conflict with somebody a little higher?

Secretary BELIEU. As the chairman mentioned earlier, as of now I am a whole man. [Laughter.]

Mr. COURTNEY. Those were the only questions I had.

Mr. HARDY. It was a very fine statement, Mr. Chairman.

Mr. HÉBERT. It was a very fine statement. "As of now," you said. [Laughter.]

Mr. HÉBERT. Now, I think, Mr. Secretary, we will proceed with the individual contracts, through Mr. Courtney.

Secretary BELIEU. All right, sir.

I have one suggestion, if I might—or whatever the committee wishes.

The first batch—I have broken down into three different groupings, for presentation.

The first eight, as I say, are from ONR.

The next five, in other words items 9 through 13, inclusive, represent BuShips.

And items 14 and 15, BuWeps.

Inasmuch as item No. 1, of the first 8, has general application to most of the others following, I would suggest as a matter of clarity it might be appropriate for the first witness to pick up with No. 2 and go

through No. 8 and then return to No. 1—if this meets the committee's approval?

Mr. SANDWEG. I wonder, Mr. Secretary, if we have them in the same order that you have.

Secretary BELIEU. I think they were taken from the list—they may not be.

I can call them off.

Mr. COURTNEY. We don't have them numbered, Mr. Secretary, in sequence. We have them bundled together, by the contract numbers.

Mr. HARDY. I don't see any page numbers on these——

Mr. SANDWEG. There is a contract number on top of each sheet.

Secretary BELIEU. Yes.

Mr. COURTNEY. I think they have been numbered out in the interval, Mr. Chairman. And the sequence is the same, although the numbers are not on your documents.

Mr. HÉBERT. How do you desire to proceed, Mr. Courtney?

Mr. COURTNEY. Well, that puts the monkey right on my back, doesn't it?

Mr. HÉBERT. That is correct.

Secretary BELIEU. If I may suggest, Mr. Courtney——

Mr. COURTNEY. That is what I would like to have——

Secretary BELIEU. [showing document]. You start right with this contract number, and go down to there, and come back and pick up this one and go right on through.

Mr. COURTNEY. All right.

Now, Mr. Chairman, we could have the titles of these contracts read in the record, so the committee could understand, as it has before in its briefings, the nature of the contracts that are being considered.

No. 1 is a $296,000 to the Cowles Commission.

Mr. HÉBERT. The who?

Mr. COURTNEY. Cowles—C-o-w-l-e-s—Commission for Research and Economics, at Yale University. The purpose and scope of the contract:

This contract is for research in the general area of decisionmaking under uncertainty.

Mr. HÉBERT. What is that again? [Laughter.]

Mr. COURTNEY (reading):

Decisionmaking under uncertainty.

Secretary BELIEU. This was the one I suggested we defer until No. 8 had gone through.

Mr. HÉBERT. I congratulate you again, Mr. Secretary.

I knew just what you had in mind. That is why I asked Mr. Courtney to proceed in the order that you wanted. [Laughter.]

Secretary BELIEU. The chairman runs his own committee.

Thank you, sir.

Mr. HÉBERT. It was a good try, a good college try. [Laughter.]

Mr. COURTNEY (reading):

Attention is to be directed primarily at decision situations characterized by the desire to optimize the value of some measure of accomplishment.

Mr. HARDY. Is that the thing you read awhile ago, Mr. Secretary, and attributed to Einstein?

Secretary BELIEU. No, sir. I think Einstein might have been talking about such activities as these. [Laughter.]

(The contract data not read is as follows:)

CONTRACT NONR-358(01)

IDENTITY OF CONTRACTOR

The Cowles Commission for Research in Economics, Box 2125, Yale Station, New Haven, Conn.

COST OF CONTRACT

Estimated cost: $296,000.

PURPOSE AND SCOPE OF CONTRACT

This contract is for research in the general area of decisionmaking under uncertainty. Attention is to be directed primarily at decision situations characterized by the desire to optimize the value of some measure of accomplishment.

SUMMARY OF RESULTS OR FINDINGS

The encolsed list and its supplement represent a summary by title of the work accomplished to date under Contract Nonr-358(01). In this list are a number of papers listed as "Discussion papers." These are papers which are distributed prior to their being formally published as reports or in some professional journal. They are circulated, e.g., to persons on the distribution list provided by this office, for comments which could be incorporated into the final version. In addition to discussion papers, Cowles Foundation papers, and papers published in professional journals, those working either full or part time on the contract have given a number of talks at meetings of professional societies, symposia, and for special lecture series.

The productivity and quality of the research on this contract has been very good, and upon this basis this branch has continued to renew the contract. Some of the outstanding people today in the area of decisionmaking in organizations have at one time been associated with this contract, e.g., Prof. J. Marschak and Prof. R. Radner.

ACTION TAKEN BASED UPON RESULTS OR FINDINGS

This contract is a contract to conduct basic research in normative decisionmaking theory appropriate to various circumstances. The primary contribution of such a contract is to provide basic background results to those working in more applied areas. To implement this contribution, the contractor is provided with a distribution list to which all papers and reports are to be sent. This distribution list includes other research people working in a similar area also having contracts with the Office of Naval Research, other research workers to whom the reports would be useful in their own research, various Government agencies concerned with planning and evaluating decision procedures (e.g., the Navy Management Office), naval laboratories (e.g., Naval Research Laboratory), Navy libraries, and directors of agencies which have members who might find the information useful (e.g., Director of National Security Agency), some industrial laboratories carrying on related research activities for the Department of Defense. As previously indicated, further dissemination is accomplished by presentation of six or seven papers a year at meetings of professional societies, symposia, and conferences.

Mr. COURTNEY. This is the second one, the Planning Research Corp. of Los Angeles, $283,310.

The scope of the contract is indicated as classified.

But the principal objectives are:

* * * to study, design, and develop data processing techniques.

1. Providing expeditious access to a wide variety of logistics data required by operating staff; and

2. To assist staff logistic planners in rapidly determining logistic feasibility of war plans.

(The contract data not read follow:)

CONTRACT NONR-3317(00)(X)

IDENTITY OF CONTRACTOR

Planning Research Corp., 1333 Westwood Boulevard, Los Angeles, Calif.

COST OF CONTRACT

Total estimated cost and fixed fee: $238,310.

PURPOSE AND SCOPE OF CONTRACT

[Classified.]

SUMMARY OF RESULTS OR FINDINGS

This project was originally estimated as requiring a minmium of 30 man-years of effort over a minimum period of 3 years. Subject contract however, covers only the initial 10-month period from August 28, 1960, to June 30, 1961. Results and findings at this date are thus limited since only about 25 percent of the estimated total effort has been applied.

The principal objective of the contract is to study, design, and develop data processing techniques for—

(1) Providing expeditious access to a wide variety of logistics data required by operating staff; and

(2) To assist staff logistic planners in rapidly determining logistic feasibility of war plans.

ACTION TAKEN BASED UPON RESULTS OR FINDINGS

Because of the early status of the developmental work involved in this project, no action of an operational nature has yet been taken. Testing of the feasibility of certain phases of the systems being developed will commence in June 1961. Future actions will be based on evaluation of these tests and the result of future research and development.

Mr. COURTNEY. No. 3, $113,000. Likewise classified.

Summary of results or findings:

This contract was supported to carry out a controlled experimental study of an operationally desirable submarine detection technique. The investigation gave some positive results but the percentage of success was small and the technique judged marginal with existing equipment.

(The further contract data not read follows:)

CONTRACT NONR-2784(00)

IDENTITY OF CONTRACTOR

U.S.I. Technical Center, Division of U.S. Industries, Inc., 3901 NE. 12th Avenue, Pompano Beach, Fla.

COST OF CONTRACT

Total estimated cost and fixed fee: $113,338.

PURPOSE AND SCOPE OF CONTRACT

[Classified.]

SUMMARY OF RESULTS OR FINDINGS

This contractor was supported to carry out a controlled experimental study of an operationally desirable submarine detection technique. The investigation gave some positive results but the percentage of success was small and the technique judged marginal with existing equipment.

ACTION TAKEN BASED UPON RESULTS OR FINDINGS

The Navy has undertaken a program of basic research in the technical area indicated in an effort to eventually make the technique operational.

Mr. COURTNEY. Next one is the Systems Research Group, Inc., of Mineola, Long Island.

Purpose and scope:

This contract is for the purpose of making available to the Naval Analysis Group an organization capable of providing quick response, general analysis services in the investigation of military and scientific problems. All problem areas to which the application of general scientific methodology is relevant are to be considered admissible, and investigations may include such areas as:

(1) Weapon systems evaluation, including the application of gaming procedures.

(2) Simulation on high-speed computers.

(3) Logistical analysis and costing.

(4) Feasibility, effectiveness and optimization studies concerning studies concerning contemplated, proposed, and existent equipment, together with related systems.

(5) Mathematical research in behalf of subsidiary developments—

and the rest is in the same general framework.

There is quite a lot of discussion of this contract.

(The contract data not read is as follows:)

CONTRACT NONR–2936(00)

IDENTITY OF CONTRACTOR

Systems Research Group, Inc., 244 Mineola Boulevard, Mineola, Long Island, N.Y.

COST OF CONTRACT

Total estimated cost and fixed fee: $268,982.

PURPOSE AND SCOPE OF CONTRACT

This contract is for the purpose of making available to the Naval Analysis Group, an organization capable of providing quick response, general analysis services in the investigation of military and scientific problems. All problem areas to which the application of general scientific methodology is relevant are to be considered admissible, and investigations may include such areas as:

(1) Weapon systems evaluation, including the application of gaming procedures.

(2) Simulation on high-speed computers.

(3) Logistical analysis and costing.

(4) Feasibility, effectiveness, and optimization studies concerning contemplated, proposed, and existent equipment, together with related systems.

(5) Mathematical research in behalf of subsidiary developments necessitated by the above.

(6) Develop and report Militran I to the extent of providing:

(*a*) A complete reporting six copies of the background of the Militran concept.

(*b*) A prototype version of the Militran precoding manual (six copies) providing instructions for the preparation of data concerning the objective system (i.e., the system to be simulated) preliminary to coding and debugging.

(*c*) A complete description (six copies) of coding and operating procedures. Included in the report will be instructions for the assembly of the machine program from the written code and examples of several military problems provided on ONR which Militran I has compiled. As a standard reference machine the IBM 709 will be used.

(*d*) A complete description (six copies) of all technical aspects of the Militran compiler.

(7) Develop and report Militran II to the extent of providing:

(*a*) System requirements (12 copies) based on a comprehensive study of current and projected military needs for computer simulation of military operations. This will include review of recent military literature and of current military programs and extensive field trips to military and contractor groups working the area of military operations research.

(*b*) Initiate a detailed design of the compiler which will be informally described at the completion date of this amendment to a designated ONR representative.

(*c*) Study outlines and monthly progress reports (3 copies).

SUMMARY OF RESULTS OR FINDINGS

The contract to date has established the feasibility of an automatic compiler system for rapidly constructing high-speed electronic computers programs to simulate a variety of military operations. It is expected that such a compiler system will reduce programing time, and consequent cost, to from one-fourth to one-eighth of that presently required by conventional means (including present compiler techniques) to solve complex military problems in the areas of systems analysis and operations research. In additon, this compiler concept can be applied to the rapid development and modification of operational simulation programs for use in command post exercises, developing and testing operational plans in operations control centers and in analytical intelligence studies.

Time and cost of preparing computer programs has inhibited the use of simulation techniques. Shortening programing time and increasing the flexibility of such simulations will not only save time and money, but improve the output of studies involving the use of operational simulations.

At this time a requirements survey phase to establish the scope and versatility needs of the compiler has been completed and the engineering design phase is nearing completion. This will be followed by a programing phase, a test phase, and implementation of the system by instruction manuals, forms, prepared card formats, etc.

ACTION TAKEN BASED UPON RESULTS OR FINDINGS

On the basis of successful completion of the feasibility study, the concept has been given wide publicity in the military and in industry and has received a very favorable response. Ultimately, if the compiler system successfully lives up to anticipated expectations, it will be made available to Department of Defense Computational Centers, to other Government activities and to educational and industrial concerns in defense work. The concept, principles, and techniques will also be available to universities and industry for industrial applications.

Mr. COURTNEY. Now the next in order is to the Vitro Laboratories of West Orange, N.J., $522,000.

This contract is for:

* * * analytical studies in connection with the Naval Research Laboratory research and development program for the fleet ballistic missile which shall have as their objective the establishment of strategic and tactical modes of the fleet ballistic missile's employment which will maximize its effectiveness as a weapons system. This effort shall be made to the the extent of approximately 50,030 man-hours of technical, supervisory, and supporting personnel.

(The contract data not read is as follows:)

CONTRACT NONR-2380(00) (X)

IDENTITY OF CONTRACTOR

Vitro Laboratories, Division of Vitro Corp. of America, 200 Pleasant Valley Way, West Orange, N.J.

COST OF CONTRACT

Total estimated cost and fixed fee. $522,000.

PURPOSE AND SCOPE OF CONTRACT

This contract is for analytical studies in connection with the Naval Research Laboratory research and development program for the fleet ballistic missile which shall have as their objective the establishment of strategic and tactical modes of the fleet ballistic missile's employment which will maximize its effectiveness as a weapons system. This effort shall be made to the extent of approximately 50,030 man-hours of technical, supervisory and supporting personnel.

SUMMARY OF RESULTS OR FINDINGS

The findings of this work are principally of the following types:

(*a*) Analyses of VLF signal and noise data supplied from NRL listening and recording stations located in areas of Navy interest.

(*b*) Determination of the probability of detection, identification and localization of Polaris submarines in operational areas as a function of postulated and observed situations.

(*c*) Extension of Polaris communictions effort to update and expand capability to predict VLF signal strength in areas of interest, to further assess and physically define extremely low-frequency techniques and to establish and compare cost-risk relationships of specified closed-loop communications systems.

(*d*) The generation and exercise of models directed toward definition and relative assessment of sea-based deterrent weapons systems of the 1965–1975 era.

ACTION TAKEN BASED UPON RESULTS OR FINDINGS

Actions resulting from findings of the Vitro effort include those affecting tactical and communications operations of Polaris submarines; research and development for improved fleet communications speed; reliability, and security; and definition of post-Polaris Navy deterrent weapons systems. Some action examples are:

(*a*) Vitro VLF signal and noise data analysis findings were used by NRL to generate geographic charts defining for Polaris submarines predicted VLF signal usability in patrol areas as a function of confidence level, submarine depth, etc.

(*b*) The Vitro cost versus effectiveness study findings for advanced communications techniques such as the extremely low-frequency (ELF) system are applied by the Navy in the assessment of and selection between competing programs for further research and development. Vitro ELF findings have been incorporated in a recent (May 1961) NRL technical study of ELF potential for submarine communications. As a result of this cooperative endeavor, serious consideration is now being given by the Navy (Special Projects Office and the Bureau of Ships) to a development program in this area.

(*c*) The findings of Vitro Polaris submarine risk studies have been incorporated into NRL reports to Polaris submarine operators. These affect decisions regarding submarine operations and tactics while on patrol.

(*d*) The Vitro study of possible post-Polaris Navy deterrence systems is an integrated part of a larger Navy planning effort directed and funded through the Polaries ad hoc group on long-range research and development. Its findings are and will be incorporated into the total study program on a continuing basis.

Mr. COURTNEY. The next in order is to Arthur D. Little, Inc., of Cambridge, Massachusetts. $181,279.

To:

Perform a study to determine a basis for decision—

Mr. HÉBERT. Another decision——

Mr. COURTNEY (continuing):

as to the proper level of support of fundamental research by the Department of the Navy. Such study to be conducted through interviews, data collection, case histories, and other appropriate means.

(2) Prepare a report describing in detail the results of said study, and also prepare a monograph setting forth as briefly and clearly as possible the principal conclusions and recommendations resulting from the study.

Now, then, summary of results:

Phase 1 was completed and reported in a two-volume report entitled "Basic Research in the Navy, Report to Secretary of the Navy by the Naval Research Advisory Committee." The principal findings included the following—

well, I will pass that.

(The contract data not read is as follows:)

CONTRACT NONR-2516(00)

IDENTITY OF CONTRACTOR

Arthur D. Little, Inc., 30 Memorial Drive, Cambridge 42, Mass.

COST OF CONTRACT

Estimated cost: $181,279.

PURPOSE AND SCOPE OF CONTRACT

Phase I: On the recommendation of the Naval Research Advisory Committee, this task was established to:

(1) "Perform a study to determine a basis for decision as to the proper level of support of fundamental research by the Department of the Navy. Such study to be conducted through interviews, data collection, case histories, and other appropriate means."

(2) "Prepare a report describing in detail the results of said study, and also prepare a monograph setting forth as briefly and clearly as possible the principal conclusions and recommendations resulting from the study."

Phase II: Pursuant to this work, the task was extended to encompass:

(1) Extension of a preliminary mathematical model of relationships between segments of the research process. The present model, based on a modification of the simple kinetic model, will be developed into a more adequate Boolean model.

(2) Development of measures of effectiveness and of completion of projects, and the extent to which these two quantities are different. The measures previously used, e.g., total number of man-hours and span of the project, are inadequate, and a major effort is required for estimating the above measures in meaningful terms.

(3) Gather meaningful data. The model developed will be tested with meaningful data collected from existing research projects.

SUMMARY OF RESULTS OR FINDINGS

Phase I was completed and reported in a two-volume report entitled "Basic Research in the Navy, Report to Secretary of the Navy by the Naval Research Advisory Committee." The principal findings included the following:

(1) "Careful study has shown that participation by the Navy in basic research in many fields of science is essential to the furtherance of its missions * * *. The vital role of basic research in accelerating progress is clearly demonstrated by a study of actual case histories, presented herein in the form of schematic models, and by an analysis of the research practices of leading corporations similarly faced with the problem of survival in this age of technology."

(2) "A dominant requirement of the Navy today is that of leadership in the development of new weapons systems and techniques of warfare in this period when rapid technological advance and international competition combine to reder obsolete many weapons even before the production stage can be initiated. Such leadership can be maintained only by means of an aggressive, wisely conceived, properly balanced, and skillfully managed research and development program involving many fields of science."

(3) "During the decade 1947 to 1957 leading corporations in high technological obsolescence rate industries have been far more aggressive in their participation in basic research than has the Navy. * * * In 1947 the Navy allocated 10 percent of its research and development expenditures to basic research. This compared very favorably with the policies of many leading industrial corporations. However, a distinct divergence of policy occurred over the next 10 years. Data from two of the most successful corporations in each of five technically

based industries (chemical, petroleum, communications-electronic, pharmaceuticals, materials) showed these two corporations in 1957 devoted 10 to 20 percent of their own research and development expenditures to basic research. The average allocation of 16 percent is in marked contrast to the Navy which currently allocates only 6 to 8 percent of its research and development budget to basic research."

(4) "A group of industrial directors of research familiar with the problems of the Navy were unanimous in their judgment that the Navy should increase the percentage of its research and development budget devoted to basic research."

(5) "In general, the greater the technological strength of the competition and the less immediate the probability of conflict, the greater should be the emphasis on basis research."

(6) "At this moment it appears from a study of meritorius proposals turned down, or discouraged prior to submission, that sufficient manpower exists to expand the Department of Defense basic research effort in outside contracts by approximately 70 percent (omitting certain large capital equipment proposals). In addition, a rough approximation indicates an increase of about 10 percent is currently possible in the Navy in-house basic research effort."

(7) "* * * serious manpower shortage may well develop in the near future as national research and development activities are currently expanding at the rate of 10 percent per year, whereas the number of scientists and engineers is increasing at the rate of 5 percent per year."

(8) "Because of the length of time required to evolve results, Federal budgeting for basic research presents special, and as yet not completely resolved, problems."

(9) "A program to develop a mathematical model of the relationship between the segments of the research process has shown enough promise to warrant consideration for further development. Results obtained by trying to fit a few actual case histories into the model as it now stands have been encouraging. However, more time is needed to substantiate the basic assumptions of the model, and the relation between what it predicts with respect to a proper level of basic research and what is observed in the real world."

Phase II: Further development on a mathematical model for the support of basic research is still in progress.

ACTION TAKEN BASED UPON RESULTS OR FINDINGS

The report "Basic Research in the Navy" prepared by Arthur D. Little, Inc., was reviewed by the Naval Research Advisory Committee. The following resulted:

The Committee underlined certain of the findings and recommendations of the report.

(1) "Basic research has played a tremendous role in the past, transfiguring the Navy by findings in such fields as radar, inertial guidance, missile propulsion, and atomic propulsion, and the accelerated pace of scientific progress in the last decade emphasizes its importance."

(2) "In conducting basic research * * * the investigators within the Navy Department must be constantly alert to recognize the impact of any findings on the needs of the Navy Department. These may not necessarily be related to the immediate objective of a given project but may well bear on the potential overall position of the Navy."

(3) "The report sets forth the judgment of those engaged in the direction and application of basic research in industry with respect to the level of basic research appropriate to the total Navy effort. Essentially this judgment is to the effect that the basic research effort in the Navy be approximately doubled in order to restore the former relationship of basic research to the total research and development effort. This would also bring the proportionate Navy basic research effort closer to that now current in those progressive industries operating in the areas of science and engineering."

The overall conclusion of the Committee was: "The Committee concurs with the findings Arthur D. Little Study Group. It believes that this study lays the basis for detailed consideration of the basic research program required to fulfill the Navy's needs."

The Committee recommended a second step. "The next step comprises the detailing of the program proper. Study of such detailing can be done well only by those who have a close working relationship in the Navy and with the scientific community, namely, the Office of Naval Research. It is recommended

that this group prepare detailed programs in each of the fields of science related to the missions of the Navy. * * *"

To prevent recommendations beyond any plausible budgetary ceiling, the Committee recommended a third step. There must be another critical review still following the area distribution to bring the total cost within the augmented budget. If the budget augmentation is sufficient, i.e., double that of fiscal 1959, as herein recommended, the overall program should approach the fulfillment of the needs herein set forth. Experience with the augmented program will show the success of the proposed approach and additional steps may be taken in future years, as necessary."

Finally, the Committee recommended the following: "It is the Committee's recommendation that ONR proceed immediately with the studies outlined above and that a program corresponding to a doubled budget be prepared by the Office of Naval Research and be endorsed by the Secretary of the Navy."

The Secretary of the Navy (W. B. Franke) replied in a letter stating that: "This analysis will be an important management aid in the proper administration of naval research programs" and furthermore that "The recommendations contained in the report will be very seriously considered and will be invaluable in our budgetary deliberations."

The Committee later also agreed that ONR should sponsor the development of a mathematical model of the research process. The development of a mathematical model has been supported and this work is currently in progress.

Mr. COURTNEY. Now what is the next one?

United Research, Inc., Cambridge, Mass., $248,339.

* * * For research on new decisions and rules, integrate new decisions on the use of air transportation for material and decisions on inventory levels.

(The contract data not read are as follows:)

CONTRACT NONR–2904(00)

IDENTITY OF CONTRACTOR

United Research Inc., 808 Memorial Drive, Cambridge, Mass.

COST OF CONTRACT

Total estimated cost and fixed fee: $248,339.

PURPOSE AND SCOPE OF CONTRACT

This contract is for research on new decisions and rules, integrate new decisions on the use of air transportation for material and decisions on inventory levels.

SUMMARY OF RESULTS OR FINDINGS

An analysis of aircraft engine logistics, in the first phase, produced a model for making inventory decisions given certain assumptions about demand distributions, fleet requirements, shipping and repair times, and mobilization or war readiness position calculations. The second phase produced the most comprehensive analytical examination ever made of alternative ways of controlling inventory levels and use of air and routine transportation simultaneously and optimally.

The problem is to determine just how much and for which items the inventory levels should be lowered, with equivalent fleet service achieved by air transportation when situations of need occur. A wide variety of opinions and practices on this matter can be found in private business and military operations, because the right decision is a complex of interacting factors. Work is continuing on this line, emphasizing the demand distributions and the speed of adaption to changing conditions which alternative policies may achieve.

ACTION TAKEN BASED UPON RESULTS OR FINDINGS

This research is one of a number of interrelated inventory-transportation models. Although identification of specific actions resulting is therefore difficult and sometimes misleading, the extension of carrying-point concepts and the series

of Bureau instructions and inventory control point programs to install mathematical decision rules are based upon these continuing research efforts.

Mr. COURTNEY. Now is that nine?

Mr. SANDWEG. One more is eight.

Mr. COURTNEY. Dunlap & Associates, Inc., $154,000, Stamford, Conn.

A study of the costs of receipt, storage, and issue at naval supply depots. The receipt, storage, and issue functions at selected Navy stock points will be analyzed to provide those costs required as input to the programing decision rules used by inventory managers to adjust activity inventory levels by redistribution or procurement. Cost models (functions) will be developed which will enable the prediction of both total and marginal costs.

(The contract data not read are as follows:)

SUMMARY OF RESULTS OR FINDINGS

The first phase produced a complete analysis of the costs of shipping and receiving material at three representative naval activities. These cost functions are broken down into detailed elements, in a fashion suitable for determining fixed and variable cost inputs to mathematical rules governing the redistribution of material between depots. The second phase, to be completed in July 1961, has produced showing costs of ordering averaging $25 but with a spread from $20 to $100 for appropriately defined categories.

ACTION TAKEN BASED UPON RESULTS OR FINDINGS

These cost data, and the analytical methods used to obtain them, are being used in selecting input values for the parameters in the economic order quantity and variable safety level rules now widely used on the computers at major inventory control points such as the Ships Parts Control Center, Mechanicsburg, Pa.

Mr. COURTNEY. Now, these contracts all seem to fall within the realm—and I think they have properly been segregated—of decision-making.

So, Dr. Rigby——

Secretary BELIEU. If I may, for just a second, sir, go off the record?

Mr. HÉBERT. Yes.

(Secretary BeLieu confers with Mr. Courtney.)

Mr. COURTNEY (aside to Secretary BeLieu). The second one is planning research.

Admiral BEARDSLEY. O.K. Now we are all set.

Mr. HÉBERT. Are you all ready now?

Secretary BELIEU. That is right.

Mr. HÉBERT. Now, get to that first one, Mr. Secretary: How to make a decision when there is no decision to be made, or what. [Laughter.]

Secretary BELIEU. It sounds like that on the surface.

When I interrogated it, I found that is not necessarily the case.

These are designed to provide tools for management to make decisions. Even as though you buy a pair of calipers, or a calibrating machine and use that. It does not make the decision for you.

But Dr. Rigby is the director of our Mathematical Sciences Division, and his superior, Dr. Shirleigh Silverman, Director of Research, is here.

Dr. Rigby is prepared to discuss items 1 through 8, that Mr. Courtney just read off.

The reason I suggested the possibility of slipping out item 1 to the last: Because it is sort of a package, that can be applied to the rest of these, and might be more understandable.

Maybe we could have said our point better if it were done that way.

Whatever the committee wishes, of course.

Mr. HÉBERT. Well, don't you think we ought to establish the rules of the game when we start, instead of putting it at the bottom and then find out what the score is and find out how it should have been played. [Laughter.]

Mr. HÉBERT. Let's start with No. 1. I am going to insist on No. 1.

Secretary BELIEU. All right, sir.

Dr. RIGBY. If I may, I would like to make some remarks which apply to at least five of these eight, together, and then come to No. 1 directly.

Is this all right with the committee?

Mr. HÉBERT. Let's talk about No. 1.

Dr. RIGBY. All right, sir.

Mr. HÉBERT. And so we won't be arguing about it.

Dr. RIGBY. All right, sir. No. 1 is a contract for extremely basic abstract research, on the mathematical formulation of decision problems. It is intended to provide theory from which applied research can poduce practical decision rules, aids to decision by managers. This is the fundamental nature of the contract.

Mr. HÉBERT. Now why was it necessary to go outside of the Department—how much is that contract going to cost, to find out how to make a decision?

Mr. COURTNEY. $296,000.

Mr. HÉBERT. Why was it necessary to spend $296,000 with a private institute to direct the Navy how to make a decision?

Dr. RIGBY. Sir, they are not going to direct the Navy how to make a decision.

Mr. HÉBERT. I know. They may direct. It will be impossible to carry it out. But at least it is to spend $296,000 to give a plan to the Navy from an outside source.

Is is because the Navy did not have the capability within its inhouse capability?

Dr. RIGBY. The Navy does not, in fact, have inhouse capability for this type of work.

Mr. HÉBERT. Why?

Dr. RIGBY. It requires research specialists, of rather a high degree of specialization. And the kind of people that do this sort of work will not work for the Navy.

Mr. HÉBERT. Will not work for the Navy?

Dr. RIGBY. They will not work for the Navy.

Mr. HÉBERT. Why?

Dr. RIGBY. The Navy does not provide a working environment comparable to that of an academic institution, which is the place they like to work and the place where they do work.

Mr. HARDY. The Navy doesn't have any thinkers?

Dr. RIGBY. The Navy has has lots of thinkers, but not this kind.

Mr. HÉBERT. Not in that area.

Mr. KITCHIN. Does the Navy have an in-house capability of understanding with the report would say when they got through with the investigation.

Dr. RIGBY. Yes, sir, the Navy does have that capability.

Dr. SILVERMAN. May I interrupt?

Mr. Kitchin, I would like to say what Dr. Rigby can't say, that is without his being immodest.

The Navy does have that capability. And I believe the person in the Government who is most capable of understanding what these people are doing is Dr. Rigby, himself. This is why he is here testifying today.

Mr. KITCHIN. But has this decisionmaking apparatus that is going to come out of this study been directed to the sole benefit of Dr. Rigby?

Dr. SILVERMAN. Not at all. And I don't think that was implied in Dr. Rigby's statement.

I think what Dr. Rigby said was that these people are under contract to the Navy to develop the basic research which is required in a very important field of research.

They are not giving us rules. They are not giving us plans. These are the people who are doing in their field the same sort of basic research which Albert Einstein did, for example, in his own field.

Mr. KITCHIN. That is exactly what worries me.

And I think Dr. Rigby, in your shop, could understand it thoroughly. But the dissemination of the results of this $296,000 worth of information to the decisionmaking echelons of the Navy is what worries me.

Dr. SILVERMAN. Well, I believe that you will find out, as Dr. Rigby goes on, that the results of this contract, which has been in effect now for some years—that the results of this contract have been rather widely felt throughout the entire economy of our country.

Mr. KITCHIN. Mr. Chairman, I think we have gotten the broad scientific sense of this thing.

But I still don't know what the survey was to include and what they did.

Dr. RIGBY. They developed theory.

Mr. KITCHIN. I don't know that I would understand it if I was told.

Mr. HÉBERT. Perhaps the theory, Mr. Kitchin, would be the same as the Army contract which we had yesterday, for these war games, where they were to prepare—for how much?

Mr. SANDWEG. 1 million, 4.

Mr. HÉBERT. 1 million, 4.

In which the instructions were to "put it in the language so the soldiers will understand" what they are supposed to do.

Mr. KITCHIN. I am not being facetious about this. I am concerned.

Mr. KITCHIN. About the type of research and study that is being conducted, you say—over a period of several years I think that they have been in existence.

Dr. RIGBY. Right.

Mr. KITCHIN. And as the Secretary kicked it off, on the statement that there is an analogy to be drawn with a certain mathematical formula, or some other gadget upon which you can measure the decision making process—I don't think he meant that literally. Probably he did.

But what I would like to find out is what the study goes to, namely the practical aspects of it.

Tell me what they do.

Dr. RIGBY. Let me give the background which sets the need for this kind of research, as well as some of the others here.

Mr. KITCHIN. All right.

Dr. RIGBY. It has to do with the use of electronic computers.

An electric computer is a wonderful tool for management, for command, for analytic purposes, if you know what you want it to do and know it so thoroughly that you can spell it out in terms of instructions that a completely literal minded, completely unintelligent machine can follow.

Now, to use this tool you must have the necessary formulas and procedures worked out in full detail, with all contingencies covered. And the way of getting this is through applied research. Applied research produces specific methods for problems—not the solutions to problems themselves, but specific methods applicable to, for example, logistics, management science, statistics, information retrieval, in this context.

To do this, the applied researcher has to have available his tools. And his tools are in large part theories, principles, and general methods applicable to broad classes of abstracted problems.

In this context the product of basic research in such fields as mathematics, econometrics, probability, takes the form of research papers produced to be published in the scientific literature of this country.

In the case of work which we contract for, they also provide us copies a little bit quicker than the publication process permits.

It is part of our responsibility to evaluate this product as to whether its standards are as good as our standards are, to determine where and in what way this might feed into naval application through the channel of applied research done by others.

There are various techniques for doing this.

I have a sample of one of them. [Exhibiting booklet.] This is a journal in which we publish results of this kind—there are others—to draw the direct attention of the operators in the appropriate parts of the Navy to this work.

So it is part of my function, as an expert, as Dr. Silverman has characterized me, not only to judge the product of the research contract but also where it can be put to use and to draw it to the attention of those who might put it to use.

Mr. KITCHIN. Mr. Secretary, do you understand that? [Laughter.]

Secretary BELIEU. That is not quite a fair question, sir. [Further laughter.]

Secretary BELIEU. I think I do.

I am not a mathematician. But when the committee first asked these questions—and they are very appropriate questions—I took a look at the list and asked the people to come in and talk to me about it.

And I must draw from my own experience again, because I do not have the capability of dealing with these abstracts, or mathematical formulae.

But not too long back I was put in charge of mobilization planning in the Army, when I was in it. And I was told to write a mobilization plan, and also to cut all the POL requirements that this country would need—and this was back before the Air Force, in the old War Department days— that the Air Corps and the Army would need in accordance with the war plans.

They were highly classified things, and many thousands and millions of troops were involved.

The only way I could do it—we had no machines—was to sit down with a pencil and paper, on a table about this big, and start working. It took me 3 months. And all during this time the Joint Chiefs of Staff and everybody else—the top people were yelling "when are you going to get the results up?"

I had to take the planning factors that came as a result of World War II experience, that I knew and that I could get from books, and tabulate these and then try to figure out how many pounds of POL, related to how many men we would ship there, and there, and under what conditions. And if we lost so many people in combat type of an exercise, what impact did that have on us.

I have since learned that the art of mathematics has expanded to the point where you can resolve some of these things down to formula and put them in machines.

Now, since that time, I am told—I have not been in this business since then—that mobilization plans are now on machines. Logistics plans are, under given conditions.

As the doctor pointed out, though, you must know what you are doing. The practical guy must take a look at this and somewhere along the line say "Well, this won't work in combat." "This will."

But the result is: a collapse of time comes about.

It is like a calculator. A calculator helps you make decisions. It does not make decisions for you. But inside that calculator are all the wheels and all the accumulated knowledge of many people, who went together and put it into a package.

This is wht I think these types of contracts are designed to do.

Now, I could not tell this committee that they do produce this.

I asked the very same question you asked: "What practical results, what kind of a study do you get, what do you do with it, who gets it, how does he do something with it?"

I haven't found all these answers.

I do think it is fundamental to this country that we do a certain amount of basic research. We must explore avenues that look silly to us at times.

Now, if we did not, we would not now have the flying machine, and we would not have sputniks.

And had we done this earlier in the space age business, we would have been orbiting the world, rather than the Russian the other day.

Mr. KITCHIN. May I ask the good doctor: For the $296,000, do you think that from the practical aspects of this study that you have received commensurable results?

Dr. RIGBY. Yes, sir.

Mr. KITCHIN. In what fields has this particular study been of assistance to you in the applied sciences that you didn't know already?

Dr. RIGBY. Well, I am not sure that I can answer the question directly as you asked it.

The output of this is theory—it is generally mathematical theory, but with a great deal of economic tinge to it because of the professions of the people that do the work.

This theory from this contract, as well as other studies—some of them ours, some of them sponsored elsewhere, and some of them un-

sponsored—the product of this sort of research comes to bear in terms of methods tailored to particular problems.

For instance, a recent case of this brought the mathematical technique called linear programing to bear on the problem of selecting sources for procurement of petroleum by the Armed services. It is a selection process carried out up to now by experts bringing their know-how to bear on it, as human individuals.

A machine program has been produced which, when set to work in competition with the prevailing previous method, promises—it would have in one particular procurement period—to have saved $5 million over the procurement period of a year.

Mr. COURTNEY. Is that on purchasing or delivery, Doctor?

Dr. RIGBY. That was the selection of the sources, including the procurement and delivery to the military storage spaces.

Mr. COURTNEY. Well, scheduling and delivery, then, is what you are talking about.

Dr. RIGBY. That is right, sir.

It is a matter of receiving many bids of many kinds, and selecting them, taking into account the transportation costs as well as the procurement costs, and evaluating costs delivered to destination.

Mr. SANDWEG. Doctor, the Cowles Commission doesn't do that work for you, does it?

Dr. RIGBY. They do not. They provide basic theory on which that sort of work is based.

Mr. SANDWEG. Isn't the product of the Cowles Commission under this contract a sort of bibliography, or source material for your studies?

Dr. RIGBY. That is true.

But let me modify the statement a little bit. It is not a bibliography in the sense that they go around surveying libraries, to find out what books bear on the problem. They create those books, and the papers.

Mr. SANDWEG. Yes.

Isn't this—couldn't you get these books, or this material from sources on your own, rather than pay the Cowles Commission to supply them to you?

Dr. RIGBY. Those books and papers must be written.

In this particular instance it is the Cowles Foundation which did the thinking which is back of them and the writing of them.

Mr. SANDWEG. What portion of the production of the Cowles Commission in this context is directly responsible or is a direct output of your contract, and what portion of it is their usual work that is published in many books and publications throughout the world?

This is their regular job, isn't it? The Cowles Co. publishes material of this kind——

Dr. RIGBY. They do research in economics, of whatever kind, much of which is not of interest to us in any direct sense.

Mr. SANDWEG. Well, aren't you really paying them to ferret out these data for you?

Dr. RIGBY. We are paying them to create these theories.

The work they do is creative. It is not a search matter. It is a creation of new ideas—discovery.

Mr. KITCHIN. Do they create a system upon which you can formulate a formula that you operate on these machines, or do they prepare the formula for you under certain given situations?

Dr. RIGBY. They do not prepare the formula for us under any kind of situations.

I can—I am capable of using their work in this way.

In practice, it is not my job. Other persons employed by the Navy, and also through contract, do this sort of thing—making the formulas and spelling out the procedures based on theoretical background such as this, including this and others.

Admiral BEARDSLEY. Mr. Kitchin, as I see it from a semitechnical point of view is that we have had a tremendous explosion in the techniques of computers during the last 10 years.

The computers will only work on something that is given to them that they can handle. They can't program themselves. They can't think what problems should be attacked. Human beings have to do that.

Now, mathematicians and other people of similar disciplines are also used in the programing aspects on particular problems.

But in between, or in front of those programers—and I have some in my own family who are working on this—you need people who are advancing the state of the art in the pure theoretical, analytical, mathematical, and economic sense, too. There are new fields and new ways of using these machines for man's assistance.

Now, they are out on these fringes. And studies like this are on these fringes. Exactly what they are doing.

Now, if we don't do this, we are falling behind. Somebody has to do it.

This is out on the fringe, where you come up with new methods of attacking new problems, because what we are doing with machines couldn't be done in a man's lifetime.

If we are going to get ahead in scientific development on all fronts—not just in logistics, but in the mathematical fields and in the scientific fields, we have to find some way of creating a greater know-how and a greater use of these we have today.

And we will have a continuing need for this type of research, no matter who does it, or who finances it. The country does need it.

Dr. SILVERMAN. I think a perfectly good analogue, Mr. Kitchin, might be the relationship that exists, for example, between the theoretical man who works on the electrical circuit theory and the electronic engineer who builds new tubes to take advantage of the theories which have indicated to him new devices that could be made if one had those tubes available. This sort of symbiotic relationship I think exists throughout all of our scientific disciplines. And I think it is a thing that one can expect, and these people I believe play the role essentially of the circuit theory people.

Now every so often, somehow development comes along and there is a whole burst of activity. You see the physicists were the people who, working 20 or 25 years ago on rather fancy problems which are of interest to very few people, came up with the fundamental facts which made the development of the transistor and other devices possible.

Now the invention of the transistor in turn made the circuit people get back to work, because transistors don't behave the same as ordinary electronic tubes. And in turn, the developments in circuit theory, you see, have led now to a whole new variety of computers, and we now have a family of computers which are smaller and which take less power and which make modern aircraft possible, because the electronic systems can now be packaged into small enough space to get them aboard a crowded cockpit.

So the whole relationship goes from theory right on through application. I think it was expressed very well by Mr. Hitch himself, in a book that he wrote not very long ago, in which he says that it is basic research which has to occur before invention is possible, and that the invention in turn has to precede applied research, with the end product somehow or other being that the applied research which has to get into the lifestream of the economy, and of the country.

Now I believe that—we are hoping that these people are in a sense doing for us the sort of research which will lead to an invention which will make possible applications to military problems.

Now it has been our judgment—I mean ours, accumulated now over 15 years of experience at the Office of Naval Research—that contracts of this sort do pay off. Now as a byproduct of this, I would like to mention, you see, that ideas come from people. Now one of the principal products of research of this sort is people, and I believe that by now probably the first generation of matured scientists who have grown out of this particular contract are now participating in the scientific and technical life of our country.

Now the question as to whether one should contract this out or do it in-house is always a very difficult problem to decide. I mean clearly we are very proud of the in-house capability of the Navy. We have many very competent people.

I would like to think that within the Office of Naval Research we probably have the largest staff of competent technical administrative people anywhere in the Government. We have within the Chief of Naval Research's own establishment the laboratory down at Anacostia—the Naval Research Laboratory. So we face the decision: When do you decide to do this out of our operation and when do you decide to do it within the operation?

Well, the bulk of the research within the Navy, research and development, is done within-house. It is more than five times the amount that we contract out.

We contract out in those cases where we feel that we will get the best complement and the best supplement to the inhouse effort.

As Dr. Rigby pointed out, there are many people who perfer not to work in Government establishments. Many people prefer not to work in industry. Many people prefer to work for the Government. But there are different types, and you can't mold them.

I mean this is not a Soviet Russia, where people are assigned to jobs. Within his counry people have a great deal of freedom. Now I personally prefer working for the Government. I have worked for industry, and I have worked for universities. I like working for the Goverment. But there are lots of people who don't. And it is our job here in a sense to marshal the best brains of the country on problems of mutual interest—of interest to them intellectually

and of interest to us, because we think that ultimately, practically, the Navy and the country depend on the products of their brains. And this happens to be one of those particular cases.

Now incidentally, I understand very well how difficult it is for us who are specialists—even though I happen not to be a mathematician—it is extremely difficult for us to translate the technical language which is buried in here into terms that all of us want to and have to understand.

But I would like to conclude by giving a military problem that I am faced with now, and from which I know the results of this sort will have to be brought to bear. And this is the problem of the detection of submarines.

A submarine does not leave a clean signature behind it, such as a contrail of an airplane flying at high altitude. It leaves something behind it, but there are many other objects in the water, such as fish, whales, and other objects—all sorts of noises and all sorts of effects. And in all of this, one has to disentangle the information: Has there or hasn't there been a submarine in the neighborhood?

And clearly one now has the problem of this sort: How do you make a decision against uncertainty? The detecting system, whether it be an airplane or another submarine, has a limited armament. He has a certain number of things that he can fire at what he things is a submarine, is an enemy submarine. First of all he has to know—is it an enemy submarine?

Now it is this sort of what you might call a cluttered background out of which one tries to derive meaningful information. It is a problem of this sort to which mathematics of this kind can be applied.

Mr. KITCHIN. Are you telling me that this particular type research that is being done by this particular contract will assist you in determining that particular problem that you are faced with?

Dr. SILVERMAN. I am saying that the general classification of research which is done under this type of contracting does. Because it feeds into the data collecting system the sort of information which we have to have in order to make up our minds as to whether we are actually observing things in the real world, as to which things are real, whether or not they are real. But are they meaningful or are they not? And what is the cost of these things, if they are meaningful? And can we afford to do this?

Mr. KITCHIN. Mr. Chairman, the quicker we get off this one the better off we will be.

Mr. HÉBERT. No, we are not getting off it.

Pardon me right here, before you do.

Mr. KITCHIN. Yes.

Mr. HÉBERT. In keeping with Mr. Kitchin's question, and the testimony, I have a paper before me which I think is most important and should be in the record, which has just been handed up.

Did you hand it up, Mr. Secretary?

Secretary BELIEU. Yes, sir.

Mr. HÉBERT. I again congratulate you on your cooperation.

Secretary BELIEU. You are welcome, sir.

Mr. HÉBERT. Because this is a very important letter. I think it should be read into the record.

It was released as of Sunday, on the eve of the opening of these present investigations. It is a letter which was written by the President, President Kennedy, to the Honorable David E. Bell, the Director of the Bureau of the Budget.

"Dear Mr. Bell"—and I think this brings into sharp focus what we are discussing here now.

It also brings into sharp focus the concern of the committee and the reason it has addressed itself to this subject. It also demonstrates quite clearly that the question is running through the mind of the committee and the background for the origination of these hearings can be found, I think, in these several paragraphs written by Mr. Kennedy, by the President, to Mr. Bell. And I will read to the committee at this time:

DEAR MR. BELL: Since the end of World War II, the Federal Government has been making extensive use of contracts with private institutions and enterprises to provide for the operation and management of research and development facilities and programs, for analytical studies and advisory services, and for technical supervision of weapons systems and other programs administered on a systems basis. Through such contracts the Government has been able to accomplish scientific and technical work essential to urgent public purposes.

In part, the use of such contracts has been made necessary by the Government's entry into new fields, such as atomic energy, missile development and space exploration, and the need for talents and services not previously employed. In part, the use of contracts has also been induced by the recommendations of the second Hoover Commission and other groups that the Government terminate activities which could better be performed for it by private enterprise. Present Federal policies with respect to contracting-out Government activities are outlined generally in Bureau of the Budget Circular No. A–49, "Use of Management and Operating Contracts," and Bureau of the Budget Bulletin No. 60–2, "Commercial-Industrial Activities of the Government Providing Products or Services for Governmental Use * * *".

After a decade or more of experience with such contracts, I think it would be desirable to review the effectiveness of this means of accomplishing the Government's purposes.

Those are the words of the President of the United States.

Some of the questions that require review have been posed recently in studies and reports by several committees of Congress. I would like to have you undertake, with the assistance and cooperation of the other Federal officials most concerned, a review of the experience with respect to the types of contracts mentioned above. I am requesting the following officials to participate in the study: the Secretary of Defense, the Chairman of the Atomic Energy Commission, the Chairman of the U.S. Civil Service Commission, the Administrator of the National Aeronautics and Space Administration, and the Special Assistant to the President for Science and Technology.

The product of the review should be recommendations to guide future executive branch action. While there is a consensus that the use of contracts is essential and appropriate to carry on certain types of Federal operations, it also appears that use of the contract device has been made necessary in part by the limitations which exist with respect to direct Federal operations.

I would like to have you explore the circumstances and conditions under which contractor operations provide the most effective means for a accomplishing the Government's objectives in the areas under review. I would also like to have full consideration given to the limitations which make direct Federal operations difficult, and to the development of proposals for adjustments and new concepts in direct Federal operations which would provide the Government with greater flexibility in determining whether the public interest would best be served by the use of contractor or direct Government operations.

The review should focus on the following matters: (1) the effect of the use of contractors on direct Federal operations, the Federal personnel system, and the Government's own capabilities, including the capability to review contractor operations and carry on scientific and technical work in areas where

the contract device has not been used, and policies and actions needed to increase the Government's capabilities in these respects; (2) the policies, if any, that the Government should follow in controlling the salaries and fringe benefits of personnel working under a contract, and the appointment, management, and dismissal of such personnel; (3) the criteria to be used in determining whether to perform a service or function through a contractor or through direct Federal operations, including any special considerations to be given to the nature of the contractor and his relationship to production contractors; (4) the policies which should apply in selecting contractors, including the organization of institutions for the sole purpose of entering into contracts with the Government; (5) the means for reviewing and supervising contractor operations, and for achieving maximum efficiency in such operations; and (6) the policies which should apply with respect to contractor fees and cost reimbursement practices on items such as overhead, facilities and equipment, and advertising.

The results of the review should be available not later than December 1.

Sincerely,

JOHN F. KENNEDY.

I think the President has put his finger right on the situation.

And I hope that this committee will be in a position to be of some assistance to the gentlemen that he has named to make a study.

This is exactly what we are studying. It shows the concern of the President.

And it certainly does bring a renewed demand upon this committee to elicit as many facts as possible in these particular hearings.

I am grateful to you, Mr. Secretary, for having brought this letter to my attention and to the attention of the committee.

Now, the bells have rung. I think we can't proceed much longer now, because we have to be on the floor.

So the committee will stand in recess until tomorrow morning at 10 o'clock.

Thank you, gentlemen, very much.

Secretary BELIEU. Thank you, sir.

(Whereupon, at 11:47 a.m., the subcommittee adjourned, to reconvene at 10 a.m. Thursday, August 10, 1961.)

CONTRACTING-OUT PROCEDURES

THURSDAY, AUGUST 10, 1961

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE FOR SPECIAL INVESTIGATIONS,
Washington, D.C.

The subcommittee met at 10:12 a.m., the Hon. F. Edward Hébert (chairman of the subcommittee) presiding.

Mr. HÉBERT. The committee will be in order.

Members of the committee, we recessed yesterday while Secretary BeLieu and his staff from the Navy were testifying.

Mr. Courtney, will you continue.

Mr. COURTNEY. Now, Mr. Chairman, I had just a general question, since these eight contracts are in Dr. Rigby's sphere.

Who negotiates these contracts and how are the prices fixed, Doctor?

Dr. RIGBY. ONR has a contract negotiating staff, and these are the negotiators. The manner in which prices are fixed varies from one case to another.

The vast majority of our contracts are based on proposals which are volunteered to us from the institutions involved. As such, they are then proprietary and in many cases properly sole-source instances. Others, however—and this is true especially when we go looking for a service—are done on the basis of invited proposals—bids, then, in competition.

Mr. HARDY. Could I just inquire there? Then do I understand from that, that the purpose and scope of the contract, in this one we were talking about yesterday, this first one, was actually spelled out by the contractor and not by the Navy?

Dr. RIGBY. That is right.

Mr. HARDY. So that was not actually a Navy requirement. Somebody came in and said, "We are up in the clouds here now and we can give you all kinds of information and research on uncertainties." So it spelled this out, and the Navy bought it.

Dr. RIGBY. That isn't quite correct, sir. We had a requirement for research of this character, and this fact was known in the scientific community. But the particular proposal which they made to us was their idea. We had others——

Mr. HARDY. I think—I hope Mr. Courtney will explore this question of who negotiates these things, because I wonder whether you get the competence to negotiate this kind of a contract unless you accept it on faith from the proposers.

Mr. COURTNEY. Well, the next question, then—I would be interested to know what standards you employ to fix the values.

Dr. RIGBY. Are you talking specifically about money values?

Mr. COURTNEY. Money values. This is money.

Dr. RIGBY. They propose to us research which they describe, and attach thereto a statement of the prospective costs as they estimate them.

Mr. COURTNEY. Now, here, let's take the specific contract; $296,000. Is that a final fixed price? How was it set?

Dr. RIGBY. That is the total amount obligated to date over the history of the contract. It runs something in the neighborhood of $35,000 a year. It started at that rate. It probably is a little larger now.

Mr. COURTNEY. Then this is a cumulative total, $296,000?

Dr. RIGBY. That is right.

Mr. COURTNEY. Is that right?

Dr. RIGBY. Yes, sir.

Mr. COURTNEY. Well, are the prices—are these contracts determined on the basis of salaries paid, overhead, or what?

Dr. RIGBY. On the basis of salaries paid and overhead, and allowance for such things as secretarial help, preparation of reports, and some travel. The major expense in it is the salaries of the investigators who work on the research.

Mr. COURTNEY. Then would we understand that when you get a proposal from the Cowles Foundation—let's take one specifically. If the others differ, just indicate. But take this as typical of the eight. You will get a proposal which would contain a list of salaries proposed to be paid. Would that be right?

Dr. RIGBY. Yes.

Mr. COURTNEY. A suggested amount for travel, actual or prospective. And secretarial.

Dr. RIGBY. Yes.

Mr. COURTNEY. And what else would there be in it? Probably no material of any consequence.

Dr. RIGBY. In a case like this there would be no material, other than paper and pencils, you know, because it is that kind of work. There is no hardware involved in it. So that I really believe you have listed the things which are contained.

Mr. COURTNEY. Well, now, let me get to the second part of that. In the proposal that you receive—you mentioned the salaries. Are the individuals who are to perform the service given consideration?

Dr. RIGBY. The senior individuals are named. This is one of the main criteria we have for determining excellence.

There is frequently an allowance for junior research people who may not be named, not being necessarily known in advance. They are apt to be graduate students or junior faculty members, of this type.

Mr. KITCHIN. May I ask a question right there?

Mr. HÉBERT. Yes, Mr. Kitchin.

Mr. KITCHIN. When you get this proposal based upon these cost items that you have enumerated, is your proposal submitted then on a man-hour basis, that they will utilize in this research, or a project basis, or how is it?

Dr. RIGBY. In this type of research, like the Cowles Foundation, salaries are on an annual basis, and the proposal will suggest what

fraction of this man's work for the year is to be carried out under the contract.

Mr. KITCHIN. So it is in essence a man-hour proposition, involving the individuals whose salary has been prorated.

Dr. RIGBY. Right.

Mr. KITCHIN. In order to arrive at this particular pay schedule.

Dr. RIGBY. That is right.

Mr. KITCHIN. Then at the end of the year, is there a basis upon which they bill the Navy for the utilization of the services, or is it a flat contract per year?

Dr. RIGBY. For precision on this one, I would like to refer to Mr. Lincoln behind me.

Mr. LINCOLN. I am sorry, I wasn't——

Secretary BELIEU. This is Captain Ruble.

Captain RUBLE. These are all cost-type contracts, and at the end of the accounting period they submit their bill to the Navy on the basis of so many hours of scientific time in accordance with their proposal, and the Navy auditors review this and approve it for payment.

Mr. KITCHIN. Well, that is for work already performed during the year?

Captain RUBLE. Work already performed; yes, sir.

Now in the proposal which comes in, they list their estimated cost—the number of hours the principal investigator will spend on it, and the number of hours supporting investigators will spend, and clerical help. And that is the basis on which we negotiate the funds to be made available to carry the work through any particular time period, usually 1 year.

Mr. Kitchin. Is there any limitation on the proposal that is accepted for that particular year's proposed work? Is there a limitation in dollars as to what they can do?

Captain RUBLE. Yes, there is a limitation in dollars for that particular year.

Mr. KITCHIN. In that particular instance where you have negotiated and you have approved a contract for a certain number of man-hours, if we want to call them that, for the prospective workload, are there items of research delineated at that time as to what they will work on during that ensuing year?

(Dr. Rigby nods.)

Mr. KITCHIN. And who makes that determination?

Mr. COURTNEY. You will have to answer the question. The reporter don't take down nods.

Captain RUBLE. Yes. The annual objectives are laid out in the contract—the amount of work that they are predicting they will accomplish. They will either submit a report on certain phases or—then this is the basis on which we negotiate the contract.

Mr. KITCHIN. Now who delineates that? Do they, or does Dr. Rigby's shop?

Captain RUBLE. It is a combination. They come in with the proposal, and then Dr. Rigby's people work this over with them and come to agreements on what is reasonable to expect from this work during the time period.

Mr. KITCHIN. Now with reference to the contract that we are now discussing, the Cowles Commission, do they perform this identical service to anyone outside of the Government?

Captain RUBLE. I will refer that to Dr. Rigby. He is more familiar with the specific contract.

Dr. RIGBY. No, sir; they do not. But they are a reasearch group and perform related work internally, because this is their business. and on some occasions, under contract arrangements with others, related work. This particular work is for us only.

Dr. SILVERMAN. I think—if I may interrupt here.

I believe the implication of your question, Mr. Kitchin, is: Is the Government paying double for the same service which they may be performing for ONR?

Mr. KITCHIN. We will say more——

Dr. SILVERMAN. Right.

Mr. KITCHIN. Doubled or more.

Dr. SILVERMAN. Right.

It is our job in dealing with these people to make certain that this sort of redundancy does not occur.

I would like to go back and elaborate a little bit, if I may, the basis on which a proposal of this sort is evaluated by people such as ourselves.

Mr. KITCHIN. Let me interrupt right there.

Dr. SILVERMAN. Yes.

Mr. KITCHIN. If we talk of an evaluation in dollars, fine. But don't get me lost on an evaluation scientifically.

Dr. SILVERMAN. Well, I would get lost there sometimes myself. I will keep it in terms of dollars, too.

By now we have had a pretty fair amount of experience as to what it costs per scientific man-year in a given field of research.

For instance, it costs less to keep an astronomer gainfully employed at an observatory than it does to keep a nuclear physicist gainfully employed at a large accelerator, which has a tremendous industrial complex built up around it.

We also have accumulated a pretty good bit of experience. We know relatively what a university man costs in dollars per year to keep him gainfully employed, compared, let us say, to an industrial scientist.

In fact, this is one of the criteria that we use in trying to judge sometimes whether to do work at a university or at an industry.

The things that one compares are the cost per man against the productivity per man. For example, a man in industry with a big industrial complex behind him must be expected to do more research than a man in a university who is at the same time carrying out teaching duties, working on university committees that keep the university going, and so forth.

So when a proposal comes in from a place like Cowles, here is a statement. And we could submit one of these things as an exhibit for you if you so desire. This is a statement that such a fraction, a given fraction of a senior investigator's time will be devoted to this project, that there will be a certain amount of assistance time, and so forth.

Now Dr. Rigby and his staff have two jobs to perform. One: Is the workload that they are proposing consistent with what he estimates the magnitude of the job is to be?

Now we have accumulated a lot of experience in this sort of thing, so we have a pretty good feeling for it.

The next thing is: Are the salaries that these people are proposing to charge in the ball park, or are they exorbitant?

Now here the marketplace plays a pretty important role. I mean Cowles knows that there are other people who are in this business, too. And it is our job to see to it that we feel that (*a*) these people are technically competent, and (*b*) the price they are charging is a fair price.

Mr. KITCHIN. Now that brings up another question I would like to ask.

You say there are other people—not literally—but concerned, such as organizations, et cetera?

Dr. SILVERMAN. Yes.

Mr. KITCHIN. That are in the same business as Cowles.

Is there a selection under some provision here to utilize this particular negotiation on a sole source basis, or do you go to other engineering concerns and ask for the same type of information?

Dr. SILVERMAN. You see, it is a combination of both.

In this particular case experience has indicated to us over a period of some years now with Cowles that they do have an exceptional capability in this field of research. This is why we have stayed with them.

Mr. KITCHIN. So the situation of whether it is in the best interests of the United States is utilized to take a professional group that you had experience with previously.

Now that gets back to the sole source proposition, and because you have had contracts with them previously and had the satisfactory experience with them previously, it automatically eliminates possibly the consideration of others in this same area of business, doesn't it?

Dr. SILVERMAN. No, it does not. These people have a reputation——

Mr. KITCHIN. I am not critical of that procedure.

Dr. SILVERMAN. No, no.

Mr. KITCHIN. If we are getting good results.

Dr. SILVERMAN. No, I am not defending Cowles.

Mr. KITCHIN. Yes.

Dr. SILVERMAN. I am simply saying that because they have—in a sense they have a favored position because they have established a good working relationship with a Government agency. This, however, does not guarantee that they can simply come to the Government year after year and automatically expect to get money. They have to produce.

They have a production record. Their production record is a number of sientific papers, plus an increasing competence in a field which is of interest to the Navy. I mean, they are adding to their scientific capital.

At such a time that we feel they are not, we will cease to do business with them.

Mr. KITCHIN. Now getting back to my first question: The so-called scientific papers that ultimately come to the good doctor's shop for evaluation would not be forthcoming or would not be available in other libraries or from their own research efforts within Dr. Rigby's shop, if it was not for this contract?

Dr. SILVERMAN. This is our feeling.

Mr. KITCHIN. Well, now, should it be a little more than a feeling? In other words, is the Government paying for something that if it just would sit tight they would get anyway?

Dr. SILVERMAN. Well, we can never guarantee—when you give money to a researcher, you can never guarantee that he will come up with the result that you want. All that you are doing is you are betting on people of competence whose record is good, and you are betting that these people will continue to be productive and that they will produce approximately what you want.

But no scientist or administrator in his right mind would ever guarantee that a given man will give him a given result at a given time.

Mr. KITCHIN. But I understood Dr. Rigby to say yesterday that he was satisfied that under this contract, that this Cowles Commission had been productive of information.

Dr. SILVERMAN. Oh, yes.

Mr. KITCHIN. Of commensurate value to the expense or moneys paid out on the contract.

Dr. SILVERMAN. Oh, indeed.

Dr. RIGBY. Yes.

Mr. KITCHIN. And how he could evaluate that and on what he bases his opinion, I won't go into.

But a satisfactory answer has been given here, that the Navy—at least Dr. Rigby and you— are satisfied that the expenditures over the period of years with the Cowles Commission has produced satisfactory results commensurate with the expense to the Navy?

Dr. SILVERMAN. That is a very good statement.

Mr. HARDY. Now, Mr. Chairman, let me explore just a little bit some of these same items.

What was the beginning date of this contract?

Dr. RIGBY. The 1st of July 1951.

Mr. HARDY. 1951?

Dr. RIGBY. That is right.

Mr. HARDY. It has been going for just a little over 10 years now?

Dr. RIGBY. In detailed fact, the original contract has terminated and has been succeeded by a replacement.

Mr. KITCHIN. If I may interrupt?

Mr. HARDY. Yes.

Mr. KITCHIN. Do you contract for a period of years in this proposal, or is it from year to year?

Dr. RIGBY. This particular contract is carried on a 3-year basis. That is to say, between 1 and 2 years advance planning time is permitted to them.

It is renewed, however, on a yearly basis, for 2 years in advance.

Mr. KITCHIN. So it is a perpetual continuation so long as you negotiate each year, with the extension of some 2 to 3 years planning time.

Dr. RIGBY. That is right.

Mr. HARDY. Now what is the significance of the phrase "estimated cost" as shown on this contract document?

Dr. RIGBY. That is an estimate, because the cost figure given there is the total obligation to date, which includes some funding for future from today. It is partly actual expenditure, of course, for the past.

Mr. HARDY. Well, I thought you said a while ago that it was a cumulative proposition.

Dr. RIGBY. It is.

Mr. HARDY. I don't understand why it was an estimate. You certainly must have known what it cost you to the end of this fiscal year. I don't know why we had an estimated cost on here, if it is a cumulative thing.

Dr. RIGBY. The information is precise up until the end of this past fiscal year. It is not known absolutely what the costs will be during the remainder of this current fiscal year or the following one. Money hasn't been spent yet. It isn't always a certainty that the people——

Mr. HARDY. The thing I am trying to understand is this: Now you got an open contract here that has been going on for over 10 years. What is the total amount that that contract is expected to cost? How much is the Navy committed for the future on the thing?

Captain RUBLE. We are not committed beyond this total amount that is in here, sir.

Mr. HARDY. Now wait a minute. You say you are not committed beyond this total of $296,000?

Captain RUBLE. Right.

Dr. SILVERMAN. Mr. Hardy, are you asking the question: How far in the future do we plan to contract with Cowles?

Mr. HARDY. I didn't ask you that question. I am talking about this contract.

Dr. SILVERMAN. We know the precise figures up until July 1, and if you would like to know how much money has been spent to date, we can give you this figure accurately.

Mr. HARDY. Well, I wasn't trying to get it that exactly. But so far as I am concerned, this figure of an estimated cost of $296,000 on here is totally meaningless, wasted on the information that has thus far been given. I wanted to see what it meant.

Dr. SILVERMAN. Well, that includes the accumulated costs to date through fiscal 1961, which can be given to you accurately.

Now in being there is the existing contract which carries forth for a period of 2 years. These costs can only be estimated at this time because the provision which allows for negotiation on overhead will throw a certain small uncertainty into the figure.

Mr. HARDY. So the recent extension of the contract has 2 more years to run, is that right?

Dr. RIGBY. I believe that is right.

Dr. SILVERMAN. Yes.

Mr. HARDY. And during that period of time you expect that the total costs will add up to this $296,000 estimate?

Dr. RIGBY. That is right.

Dr. SILVERMAN. Yes.

Mr. KITCHIN. You actually made a decision under uncertainty when you negotiated the contract?

Dr. RIGBY. We do.

Mr. HÉBERT. That is the purpose of the contract.

Mr. KITCHIN. You are presupposing the results?

Mr. HARDY. You had to have the results of this research before you could make this contract.

How can you make a decision on such an uncertainty when you haven't gotten the results of this research? It must have been a haphazard decision.

Dr. RIGBY. Not haphazard. It is based on the demonstrated competence of the research people.

Mr. HARDY. Then you didn't need the results then. You already had the competence to make a decision on uncertainty.

Dr. RIGBY. No. What I had is confidence that these people can produce research results which will be valuable. But of course I didn't have those results in advance, sir.

Mr. HÉBERT. I think you proved your point, Doctor, that you made the decision on uncertainties. [Laughter.]

Mr. HARDY. Now just one other question.

You have indicated your conviction that the results of this contract have been worth the costs. Do you have any specific, tangible uses of the product which has come out of this contract that you can identify, or is it all up in the realm of the theory of thinking?

Mr. KITCHIN. Now we are going to make a long record.

Mr. HARDY. No, we are not, because I am going to cut if off before we do that.

I want to know if you have anything specific.

Mr. HÉBERT. To show for the $286,000.

Mr. HARDY. Yes, to show for this thing, or whether this is in somebody's mind over there, whether you have a lot of formulas that very few people know how to use. Whether you can tie anything down to show any tangible return from this money?

Dr. RIGBY. I have to hesitate over the term "tangible." There exists a quite large number of scientific papers which have been written by the staff of this contract, something like 16 in the last year.

These papers have been made available very widely to applied research people in this field, some of whom have used these results in arriving at techniques which are actual practical aids to decision.

Mr. HARDY. They are stimulating the thoughts of your own thinkers, then?

Dr. RIGBY. That is right.

Now research of this kind—let me put it in one interpolated remark. It does happen that one of the sort of expected accidents of research took place in this case. A theory which was developed to deal with the communication within small organizations turned out to be applicable to the analysis of reliability of complex hardware systems.

This is the kind of thing which you can't expect in detail, but which you are never surprised at having happened.

Mr. HARDY. That is one tangible result that came out of this contract?

Dr. RIGBY. That is right.

Mr. HARDY. It wasn't what you intended, but you got it anyhow?

Dr. RIGBY. That is right.

Mr. HARDY. Thank you.

Mr. HÉBERT. Mr. Courtney.

Mr. COURTNEY. Now let me ask this question. I have prepared you for it, but it is a subject that is inquired about and is of interest: Whether any of the advisory groups to the Navy Department of which you are a member are composed or have on them the people who are employed under any of the contracts that we have been discussing this morning—in other words, whether they have jumped from one side of the fence to the other—advising the contract and then participating in its benefits?

Dr. RIGBY. The answer is "No." None of the people who are involved in any of these contracts are in any of the advisory groups which we use. We use advisory groups to a rather limited extent in any case, and then we seek one composed of people who are not included in our contracts.

Mr. COURTNEY. Are not identified with organizations with which you and the Navy are doing business?

Dr. RIGBY. I can't make it that strong.

Mr. COURTNEY. Well, make it as strong as you can.

Dr. RIGBY. He may be employed by the same university as someone who is on a contract.

Mr. COURTNEY. Well, now—we don't have any universities in this group.

Dr. RIGBY. The Cowles Foundation is so close to Yale University that they are part of the institution.

Mr. COURTNEY. I know, because I got stuck on that in Princeton one time, and I find it is an address and not a university, at this point. Now I don't know whether this is identified with Yale University, is it, this foundation?

Dr. RIGBY. Yale gives it its home and employs members of the Cowles Foundation as faculty members part time.

Mr. HÉBERT. Well, two part-time jobs, then.

Mr. COURTNEY. Is this moonlighting?

Dr. RIGBY. Well, it is fully characteristic for people of this kind to have in their intended job both teaching and research. They are hired to do both teaching and research.

Now we don't pay them to do teaching.

Mr. HÉBERT. I know. But Doctor, the thing that confuses me now: These very adequate people and very competent people are on the faculty and they are giving their full time to the teaching profession. Now how do they have time to give their time to this foundation.

Dr. RIGBY. The teaching profession for people of this caliber includes almost on a mandatory basis research as well.

Mr. HÉBERT. So then they find an outlet in the Government, to get paid a little extra from the Government?

Dr. RIGBY. No, sir.

Mr. HÉBERT. Isn't that correct?

Dr. RIGBY. No, sir, it is not.

Mr. HÉBERT. This is $296,000 of Government money——

Dr. RIGBY. The funds which they draw from the contract pays for time which is released by the university from their teaching responsibilities.

Mr. HARDY. How do you know—and I am not suggesting that these people aren't doing an awful lot of work in this business.

But how do you know they aren't doing this research for a good many other folks at the same time? Maybe it is a good idea.

Dr. RIGBY. A good many other folks will certainly benefit from it, because the results are freely published.

Mr. HARDY. How do you know Cowles doesn't have a contract with somebody else that involves this same basic research?

Dr. RIGBY. May I call on the contract specialist? The administrative machinery is set up to prevent this, but I don't know it in detail.

Mr. LINCOLN. My name is Lincoln.

Mr. Hardy, there is no assurance that they don't have contracts with commercial organizations. The fact can be verified that there are no other contracts with the Government for this same type of research. The time that the individuals that were previously mentioned spent both at Yale and at the Cowles Commission can be verified by our auditors.

Mr. HARDY. Yes, but you don't know who they are using it for. I don't know, it may be entirely proper. But I am just trying to explore what happens in this kind of a contract. When you are dealing with so many intangibles, I just don't know how you can really negotiate such a contract and be sure you know what you are doing.

As a matter of fact, you don't even know what you are doing in your researching anyway, do you?

Mr. LINCOLN. Mr. Hardy, you can account for 100 percent of a man's time through the amount of money he is reimbursed from his employers.

Mr. HARDY. Yes, but you don't pay the man directly. You pay the Cowles Foundation, isn't that right?

Mr. LINCOLN. That is right, sir.

Mr. HARDY. All right. And the Cowles Foundation then employs people, and you have certain specified people, as I understand it, as to whom it is indicating you are going to get a certain amount of their time, is that right?

Mr. LINCOLN. That is correct.

Mr. HARDY. Now it doesn't mean that the Cowles Foundation couldn't contract with somebody else for the same amount—for these people's time, does it?

Mr. LINCOLN. Well, yes, the auditors have access to their cost records for the Cowles Commission.

Mr. COURTNEY. How do the auditors know how to identify the end product of some of these contracts that are described here? What would an auditor know about a research undertaking that would produce a decision?

Mr. HARDY. An auditor in this field would sure be lost.

Admiral BEARDSLEY. His job is not to validate the scientific findings. That is the job of the people in the Office of Naval Research. The auditors' job is to validate the invoices, the time spent, the costs, the travel, and the other costs involved. These are cost-type contracts here and are all audited, and the contractor only gets paid for audited costs.

Mr. HARDY. He bills you for so many hours for so many people?

Admiral BEARDSLEY. That doesn't necessarily mean he gets paid that.

Mr. HARDY. Do you have any way to know whether those hours were spent specifically on this contract or not? It is certified by the company, and I am assuming they are going to send you a proper certification, but what I am trying to say is that actually this is the kind of a thing that you can't actually audit, isn't it?

Admiral BEARDSLEY. Well, it is difficult to audit the scientist's mind and determine how many hours he is working on this or that. We know how he spends his time in general.

It has been indicated here that—from the years of experience we have, we have a very good feeling for about the number of hours it takes to do a certain type of job.

Mr. HARDY. You expressed it right. You said you got a "good feeling."

Admiral BEARDSLEY. That is exactly right. I meant that, sir.

Mr. HARDY. I understand. And that is about all you have got to go on.

Admiral BEARDSLEY. Well, they have more than that. We have other similar studies, and other reports. We know about the scientific jump forward that it is going to take. We know how many hours it takes. We know if it takes special equipment and the costs involved in that.

Mr. HARDY. Again you are working on a feeling.

Admiral BEARDSLEY. The audit people do enter into very detailed analysis. I have been involved in several universities' discussion of this, involving overtime and overhead and things like that. So I know there is a very detailed audit of these costs.

Mr. HÉBERT. Admiral, we are in this position in connection with these contracts—rather, not contracts, but the foundations as related to universities.

Here we have the professors who are paid by the universities, who are allowed, and properly so, perhaps, to work for these foundations, which are supported in great measure by Government funds.

(Admiral Beardsley nods.)

Mr. HÉBERT. So to have the professor at a university—this is a fringe benefit. This is an attraction for him to go to that university, to go on its teaching staff, on its faculty. And he has the fringe benefit of working for a foundation like the Cowles Foundation, whose income is substantially supported by the Government. Isn't that correct?

Admiral BEARDSLEY. I would like to have the experts talk to that.

Mr. HÉBERT. There is no expert needed to talk. I am not an expert——

Dr. SILVERMAN. Mr. Hébert——

Admiral BEARDSLEY. Yes, I would like to have him proceed.

Dr. SILVERMAN. I think the question you raise here is a very good question. But before I answer it, I would like to answer the point that Mr. Hardy has raised here.

I think a certain amount of cheating can be done by an institution.

Mr. HARDY. I don't know that there is any, but I think the opportunity is bound to be there under the system.

Dr. SILVERMAN. But the scientific fraternity operates in such an open manner that I don't believe that any institution is able to get by with it for very long, because the scientific productivity versus the income of the institution very soon becomes apparent.

It is very hard to sequester funds in a nonprofit institution. And I don't think in our experience we have ever had any occasion to doubt the integrity of a nonprofit institution.

Mr. HÉBERT. We are not doubting the integrity.

Mr. HARDY. That is not the question——

Mr. HÉBERT. We are talking about what the facts are. And that is what I am trying to point out.

Here you have people on the faculty, and properly so. And their attraction to that particular university would be the fringe benefits, which would be reflected in working for an organization like the Cowles organization, to which the Government contributes X number of dollars.

The thing that runs through my mind now is that the people who are so inordinately in favor of Federal aid to education could find this back-door financing profitable, because this is really back-door financing, Federal aid to education, where you are paying the salaries of teachers, which the Congress objects to vigorously.

Dr. SILVERMAN. There is no question that the bulk of science in this country, in our universities and nonprofit institutions, is supported by Government funds.

Now the National Science Foundation has just issued a report, that has just come out within the last month or so, which spells this out in very great detail. The percentages are there.

Mr. HARDY. That wouldn't help it any.

Dr. SILVERMAN. No. But it tells you what the facts are.

Now in the case of a foundation such as the Cowles Foundation, the subvention to the researcher really comes about in this way. He is able to draw his full salary at something less than normal teaching load. And in a university that has a certain number of students to teach, the teaching load has to be distributed among its faculty. And this in the case of a large university for a very competent man may amount to something like 6 or 8 hours a week.

Actually, a 6-hour teaching load for a man in an active field is rather a heavy teaching load. Because from my own experience, each hour that is spent in a classroom requires about 4 hours of homework, because the questions which a good teacher gets from his classroom are as difficult to answer as the questions which you are giving me here this morning to answer. It takes a lot of homework.

Mr. HARDY. And just as difficult to understand as the answer you are giving us.

Dr. SILVERMAN. I am afraid so.

Mr. HÉBERT. How has that man the time to devote to something else?

Mind you, I don't object to the method now or the right of the individual to do it. I want to know how it is done.

Dr. SILVERMAN. The Cowles Foundation may make it possible for a man to cut his teaching load in half. This would mean that he would teach one graduate course instead of two, and that he would correspondingly have a great deal more time to devote to research.

Now undoubtedly the Government is supporting this. There is no question. There is no shadow of a doubt. And as a matter of fact, the contract system of research in this country is the one thing that permits university research to go forward at the level it now goes forward at.

Mr. HARDY. Now you have been talking about these nonprofit organizations. Do you have similar contracts with profitmaking organizations?

Dr. SILVERMAN. We have contracts with profitmaking organizations——

Mr. HARDY. "Think" contracts, I am talking about.

Mr. HÉBERT. "Effort" contracts.

Dr. SILVERMAN. Yes, we have.

We have the one here with the A. D. Little Co., which is one on the list that you have, on our books here.

Mr. HARDY. Well, some of the things we have been saying about the nonprofit organizations wouldn't necessarily apply to the profit organizations. But this is another subject.

Mr. HÉBERT. Yes.

Mr. Courtney, suppose we proceed. We could discuss thiss contract——

Mr. COURTNEY. Yes.

Mr. HÉBERT. This shows how difficult this problem is.

Mr. HARDY. Mr. Chairman, let me just make this observation: It is very stimulating to a country boy to be sitting here and engaging in this kind of a conversation with these people.

Mr. HÉBERT. Maybe the Congress likes these "think" contracts, too. I understand the Senate just employed the University of Michigan to make a study.

On the House side, perhaps we are in better position to be critical, because we haven't employed the outsiders yet.

All right, Mr. Courtney, continue.

Mr. COURTNEY. What we are trying to ascertain here in some reasonable way, Doctor, is the standards by which these values are determined. That at least was the purpose of most of the questions.

Now another question: Does the Navy have any grants which are made through your office or in your office to any of the organizations or universities with whom you have contracts?

Dr. RIGBY. The Office of Naval Research does have authority to give grants to educational institutions.

Mr. COURTNEY. But let us take the organization now with which you have contracts, such as the ones—the eight that we have under question.

Dr. RIGBY. I am sure that there are instances where grants go to universities which also have contracts.

(Dr. Rigby aside to Mr. Lincoln.)

Mr. LINCOLN. We do not have any for the eight.

Dr. RIGBY. Not with these, no.

Mr. COURTNEY. Not on any of these, of the contracts that have been on the list submitted to the subcommittee?

Mr. LINCOLN. No, sir.

Mr. COURTNEY. You are satisfied with that?

Dr. RIGBY. The original list?

Mr. COURTNEY. On the list submitted to the subcommittee, of which these eight are a part.

Mr. LINCOLN. Yes, we do have grants with educational institutions that are on that list.

Mr. COURTNEY. In addition to the contracts?

Mr. LINCOLN. In addition to the contracts.

Mr. COURTNEY. And could you supply for the record the total of those grants, or the amount of the grants?

Mr. LINCOLN. Yes, sir.

Mr. COURTNEY. So we would have some idea of the amount of money that is involved in this program.

Mr. LINCOLN. Yes, sir.

(The data to be furnished is as follows:)

DEPARTMENT OF THE NAVY,
OFFICE OF THE SECRETARY,
Washington, D.C., August 17, 1961.

Hon. F. EDWARD HÉBERT,
Chairman, Subcommittee on Special Investigations, Committee on Armed Services, House of Representatives, Washington, D.C.

MY DEAR MR. CHAIRMAN: The transcript of your subcommittee's hearings, dated August 10, 1961, has been reviewed and corrected by the Navy witnesses concerned and is returned herewith. In addition, the enclosure Nonr-2380(00) (X) pertaining to grants made by the Office of Naval Research, is forwarded as the supplemental information requested on page 333 of the transcript.

Please contact me if I can be of further assistance on this matter.

Sincerely yours,

E. C. OGLE,
Captain, U.S. Navy,
Acting Deputy Chief of Legislative Affairs.

CONTRACT NONR-2380(00) (X)

The Office of Naval Research issued 53 grants during the fiscal years 1960 and 1961 with the educational institutions listed on the IBM listing of study contracts furnished to the subcommittee by the Department of the Navy. The 53 grants obligated a total of $2,523,512.

Of the figure given in the preceding paragraph, $288,512 was obligated by the Office of Naval Research in support of its own basic research program; $2,235,000 was obligated by the Office of Naval Research in support of the research program of the Advanced Research Projects Agency of the Department of Defense.

Mr. COURTNEY. Mr. Chairman, that is, I think, about all we can understand about——

Mr. HÉBERT. Put "understand" in quotes, will you? [Laughter.]

Mr. COURTNEY. Well, the money is here, and I don't know how we are going to account for it.

Now the other branch of the contracts deal with management surveys. They take up, first, with the Cresap, McCormick & Paget contract, which is No. 78708. Who is to speak to that?

Admiral MOORE. I will speak to that contract.

Mr. COURTNEY. Now take the group. There are five in this group, Admiral. How do you fix the values in these instances?

(The contracts referred to are as follows:)

NOBS 78708

A. IDENTITY OF THE CONTRACTOR

Cresap, McCormick & Paget, 342 Madison Avenue, New York, N.Y.

B. COST OF THE CONTRACT

One hundred and thirty-six thousand dollars estimated, approximate one hundred and thirty-four thousand dollars actual.

C. PURPOSE AND SCOPE OF THE CONTRACT

(1) Evaluate the progress being made by the Bureau and by the shipyards in developing in detail, and in implementing, the recommendations contained in the Cresap, McCormick & Paget report of 1959, entitled "Audit of Production Planning and Control Program," hereinafter referred to as the CMP report (1959).
(2) Identify and evaluate deviations from these recommendations.
(3) Advise whether such deviations are in keeping with sound practices.
(4) Recommend actions based on these findings.

D. SUMMARY OF RESULTS OR FINDINGS

Cresap, McCormick & Paget found that considerable progress had been made in implementing the CMP report (1959) but that increased emphasis should be placed on:

(*a*) Improving methods and standards and performance analysis.
(*b*) Material planning and control.
(*c*) Coordination of planning, scheduling, and work performance.

E. ACTION TAKEN BASED ON RESULTS OR FINDINGS

An integrated effort to secure full implementation is underway and meetings with all shipyard commanders and shipyard production officers have been held to obtain complete understanding, support, and participation by the shipyards. More specifically:

(*a*) A new production control system manual is in the final stages of preparation and will be issued shortly.
(*b*) A coordinated effort by all shipyards for developing improved methods and standards will be directed by the Bureau of Ships.
(*c*) Emphasis is being placed on improved coordination of planning, scheduling, and work performance.
(*d*) Emphasis is being placed on improved material planning and control.
(*e*) Emphasis is being placed on the development of an integrated data-processing system incorporating the management reports required by the production control system.

1. CONTRACT NOBS 4201

A. IDENTITY OF THE CONTRACTOR

Reed Research, Inc., 1048 Potomac Street NW., Washington, D.C.

B. COST OF CONTRACT

Sixty-two thousand and twenty-four dollars.

C. PURPOSE AND SCOPE

Reclassification of weights for 10 ships into the current Navy system of weight classification.

D. SUMMARY OF RESULTS

Reclassified eight ships completely and two are in the process of being reclassified.

E. ACTION TAKEN ON RESULTS

These reclassified ship weights are used in the design of new ships and weight studies.

CONTRACT NOBS–65961

A. IDENTITY OF THE CONTRACTOR

Remsel Industries, Inc., 500 East 40th Street, Chicago, Ill.

B. COST OF THE CONTRACTOR

One hundred fifty thousand nine hundred and fifty-three dollars and twenty-two cents.

C. PURPOSE AND SCOPE OF CONTRACT

Develop a collective protector system for an LVTP5 vehicle to protect occupants against air contaminated with atomic, biological, or chemical agents.

D. SUMMARY OF RESULTS OR FINDINGS

Preliminary designs were cast up for components. Filters, blowers, pumps, etc. were constructed, components tested and assembled in vehicle mockup. Initial system tests were conducted. It was determined to be in the best interest of the Government to bring the project to a close since additional funds would have been required.

E. ACTION TAKEN BASED ON RESULTS OR FINDINGS

The development resulted in sufficient information to permit the Government to define the parometers of a system required to protect a group of up to 34 marines in a closed vehicle such as the LVTP5. It also pointed up the bulkiness of such a system and the necessity for rather extensive changes to the LVTP5 to accommodate a collective protector kit for the vehicle.

1. CONTRACT NOBS 4371

A. IDENTITY OF CONTRACTOR

Gibbs & Cox, Inc., 1 Broadway, New York, N.Y.

B. COST OF CONTRACT

Thirty-eight thousand two hundred and twenty dollars.

C. PURPOSE AND SCOPE OF CONTRACT

The contractor to provide at the Bureau of Ships, Washington, D.C., the design services of not fewer than 10 and not more than 14 contractor engineers to assist in the preparation of selected contract plans and specifications for the DLG–29, project 172A.

NOTE.—The designation of DLG–29 was changed to DLG–26 after contract was negotiated.

D. SUMMARY OF RESULTS AND FINDINGS

Contract plans and specifications were completed and signed on schedule due to the assistance received from the contractor.

E. ACTION TAKEN BASED ON RESULTS OR FINDINGS

Contract plans and specifications used to procure three DLG–26 class ships in the fiscal year 1961 shipbuilding program.

CONTRACT NOBS–4407

A. IDENTITY OF THE CONTRACTOR

Gibbs & Cox Inc., One Broadway, New York, N.Y.

B. COST OF THE CONTRACT

$5,765,400.

C. PURPOSE AND SCOPE OF CONTRACT

To prepare and distribute working plans and related data for the construction of DLG–26 and to make available, at cost of reproduction, the plans and data for the construction of later ships in the DLG–26 class.

D. SUMMARY OF RESULTS OR FINDINGS

Design is proceeding particularly in the area of order sheets and equipment specifications for the long leadtime items.

E. ACTION TAKEN BASED ON RESULTS OR FINDINGS

Upon award of the shipbuilding contract the Bureau will endeavor to negotiate the essence of this contract into the shipbuilding contract and then cancel this contract.

CONTRACT NOBS–78082

A. IDENTITY OF THE CONTRACTOR

Dr. H. M. Teager, 21 Middlesex Road, Watertown, Mass.

$23,500.

B. COAST OF THE CONTRACT

C. PURPOSE AND SCOPE OF CONTRACT

Conduct an extensive, 2-year feasibility study to develop a computer program for the optimization of scheduling of new construction shipwork at U.S. naval shipyards.

D. SUMMARY OF RESULTS OR FINDINGS

This contract is not scheduled to complete until December 1961. Intermediate reports have proved a clear picture of the magnitude an complexity of scheduling new construction shipwork by computer.

E. ACTION TAKEN BASED ON RESULTS OR FINDINGS

None will be taken until final report is received in December 1961.

Admiral MOORE. Well, of course the purpose of this contract initially—and we entered into the first contract with Cresap, McCormick & Paget back in 1949. They are a group of industrial engineers that are expert in management techniques in large establishments such as our shipyard.

And these people were brought in to help us with our management problems within the shipyard complex, with a view to seeing how we could do the work that we had to do more efficiently, more timely, and with better coordination all the way through. Particularly in light of the increased compexity of building of ships.

And I might mention here that the putting together of a large combatant warship of the type that we have now is perhaps one of the most complex jobs of putting things together that we have in this country. It requires many skills, many people, and as I told the Secretary once, it is almost like directing the coordinated efforts of 100 football teams all at one time with a view to making sure that you won the ball game.

So this contract was entered into in 1949. They went out and surveyed our yards in the light of the new increased technology that we have, the increased complexity of our job, and the state of the art in management engineering. And made cretain recommendations to us, which same were looked over carefully by the Bureau of Ships.

And these principles that they had recommended to us were accepted and implemented into the yards to a greater or lesser degree.

Mr. HARDY. And some of them, Admiral, if you will permit me—some of them that you put into effect: it took you 10 or 12 years to find out it wouldn't work.

Admiral MOORE. This is correct, sir.

And you would run into this, in a problem that is as complicated as the one we are facing here now.

The initial contract, as you say, was let in 1949.

Subsequently we let another contract, in 1959, to see how we are doing in this area.

It is my personal opinion, and those of many other people that are knowledgeable in this area, that we perhaps waited a little bit too long before we had them come take a look-see at our yards again.

Mr. HARDY. And that was the report that we had such a hard time getting a copy of.

Admiral MOORE. I am not knowledgeable how difficult it was for you to get a copy of that report, sir.

In any event, certain refinements were made in the procedures and practices that we had set up.

And in similar fashion, after the 1959 survey, we brought them in being again in 1960, to take another look-see at our operations.

We have just completed, within the last several months, the studying of the recommendations they have made, and have implemented these instructions so that it suits our purpose. We hope that we are getting a system together where the shipyard commander in our shipyards can in fact be the captain of these several hundred football teams that you have, to the end—and the overall end of this is that we bring together at the proper time and the proper place the manpower, the plans, the material, and the overall coordination that is necessary to build that ship properly and in an efficient manner.

Mr. HÉBERT. Well, this is a goal to have a maximum efficiency in management.

Admiral MOORE. That is correct, sir.

Mr. HÉBERT. The same as you conduct in a business organization.

Admiral MOORE. That is correct, sir.

Mr. HÉBERT. In any great company.

Admiral MOORE. I might mention, Mr. Chairman, while I was the supervisor of shipbuilding at a private concern, at Groton—and I was a supervisor there during the time we were building the *Nautilus*—the Electric Boat Division also brought in a firm of management engineers—not this particular group, but they went through precisely the same procedure.

There were many new problems because of the explosive state of the art—and believe me, shipbuilding now is not like it was a few years ago.

You can go back far enough to where you had a central fire control system aboard, a few guns—simple equipment. So that all that was necessary at that time was to have a man who knew his trade. He could go down on the dockside and he could do his work without much relationship to the coordination that had to take place with many shops and many other trades.

It is for this reason, with the great complexity and the interweaving between shops especially in the electronics area, in the fire control area, and in the missile area, that has added to the complication of shipbuilding to the extent that we have to be on top of this all the time if we are going to meet schedules and if we are going to do it in a timely fashion.

I would suggest that if we were using the same techniques that we had used 20 or 30 years ago, we would never be getting these ships out. Irrespective of costs, we would get them out, but—we would eventually get them out, in probably two or three times the time that it took before, which necessarily means money also.

Mr. HÉBERT. Now, these studies I presume lend themselves to a study of the individuals, that is, individuals in top management slots.

Admiral MOORE. That is correct, sir.

Mr. HÉBERT. Now, what I am going to ask you—I laid the foundation to ask you this question. And I assure you, before I ask you that, I am not being facetious. I am very serious with what I am going to ask now.

Do you have any contracts that employ psychiatrists or "head" doctors? [Laughter.]

Admiral MOORE. Not in my business, as far as I know.

Mr. HÉBERT. I am serious about it.

I know one great utility company had one of these management concerns that came in and the top executives had to lay on a couch and expose themselves to psychiatry and the head doctor, and it cost them a lot of money. And I am talking about a big, big utility company.

Admiral MOORE. There might be some——

Mr. HÉBERT. You all don't have any head doctors?

Admiral MOORE. There might be some profit that would come from that. [Laughter.]

Mr. HÉBERT. There is no doubt about that. Maybe we could use them, too.

I just wanted to know if you all have gone out to employ such people, or in these contracts.

Admiral MOORE. It is probably in the area of basic research.

I can say, though, that we have had certain contracts running in the human engineering aspects, which——

Mr. HÉBERT. Then you have employed psychiatrists, then?

Admiral MOORE. No, no.

This is mostly functional engineering, from the point of view of having people study how systems should be put together so that a man can man as many stations and do it as efficiently as possible.

This has been mostly with a view of seeing how we can reduce the number of enlisted personnel, and officer personnel, that we have on ships to do certain functions.

And you can do it by making studies on arrangements.

Mr. COURTNEY. How many levers can a man pull.

Admiral MOORE. Things of that kind. And colors. Particularly colors.

We found out some time back that yellow is the most attractive to the eye. And we found out that a combination of black and white on gage faces—it is better to have it one way than it is the other. And many things of this kind.

This is the only area that we get over into that is even second cousin to the couch boys.

Mr. HÉBERT. This was very interesting to me when I found this out. This great utility company employed expert management—maybe it is the same outfit that worked for you people, that you have a contract with.

They really had to go and have their turn every week, to find out exactly what they were thinking.

That is the most fantastic thing I ever heard in my life. And I wouldn't have repeated it if I didn't know it to be a fact.

All right, Mr. Courtney.

Mr. HARDY. Let me pursue, before you proceed.

Recognizing the eventuality of management analysis and manage-meet engineering, and that sort of thing, I wondered about the success of the evaluations of these recommendations when they are submitted by these firms.

I don't mind saying I have in mind actually one such program that was put into effect, and which stayed in for so long and was extremely expensive during that period of time and it didn't work.

I just wondered what happened in our evaluation and analysis that permitted that thing to be put into effect and continued for so long a time without a recognition that what you had before you even started was better, and that you have gone back to it.

Admiral MOORE. Mr. Hardy, this is an extremely complex problem, as I know you are well aware, and in getting into an area of this kind we do consider the results of CMP, or that Cresap, McCormick & Paget come in with. We do not accept those lock, stock, and barrel. We evaluate and try to tailor them to suit our particular cases.

We have to recognize that we are applying these techniques generally in 11 different yards and that the climate is quite different in one yard vis-a-vis another yard.

A lot of times the evaluation that we are putting on it when we get into a new area—maybe we should have some of the information in this uncertain area, previously discussed, so we could see what is a probability of success if we applied it. We didn't have this information at that time, so our best guess at the time we got these reports, and after we had evaluated it, was that this was going to be something that would be a moneymaker for the Government.

This is all we are concerned with in all of our management programs.

Mr. HARDY. I don't know but that that was your determination. What is bothering me is, What happened to your evaluation processes?

Admiral MOORE. Well, Mr. Hardy, there are many recommendations. Some of them didn't work out in the manner in which we thought they would work out. We found out in many cases that perhaps we had generated too much paperwork.

For example, what we had done among other things was saying that "Here are 2,500 plans for the building of a ship." And some of these plans may be 7 feet long, and they have work on that plan that would extend over a 3-year building period.

So a man goes down on a job. He couldn't unroll one of these big plans and pick out, well, in this little corner, with a magnifying glass, and say "I am going to work on this."

So we broke that plan down by our shop scheduling and analyses techniques into individual work packages, where you could put the work out—this big plan would be broken down into many workorders, and we would try to schedule it on a day-by-day basis, or a week-by-week basis, so all of it meshed together to get that product to come out on time as you wanted it.

Now we found out among other things, in breaking this down, that in many cases we generated too much paperwork. We found out that we broke the jobs down smaller than we would like, and we lost the overall picture, because we had so many pieces of paper when we broke it down that you couldn't put the mosaic back together.

Mr. HARDY. How long did it take you to get to that conclusion? You are now getting into the crux of what bothers me.

Admiral MOORE. When you get into a system of this kind, you have to work on it, within that yard, perhaps for a period of a year or a year and a half before you can get the people conditioned to it, and you can get the system going, and then see if it is producing the results.

In many cases it might take 2 years for you to decide whether it is good or whether it is bad and to what extent you have to make refinements in it, and this is precisely the area that we are in.

I happened to be the shipyard commander at the Portsmouth Naval Shipyard when the CMP program came in.

Mr. HARDY. Of course I hadn't mentioned that one, but that is the one we are talking about.

Admiral MOORE. I am completely familiar with this program.

Mr. HARDY. I was sure you were, because you put it in all over.

Admiral MOORE. I am familiar with the work that went on in the Portsmouth Naval Shipyard over a long period of span, for the simple ships and the more complicated ones. In selling this kind of a program to the shipyard employees—and I was doing this constantly, trying to get this across—I indicated that if this wasn't the system, it was the best one that I knew of, and we had to bend our shoulders to this program to make it work.

And you have to make it work as it is laid out before you can start taking exceptions. So it takes a long time in a big program of this kind before you can see where you have to walk the cat back; that is, where you have to make minor modifications, major modifications, and in some cases go completely back and start over.

Mr. HARDY. Well, I don't want to rehash the past, but what I am trying to explore right at the moment is what do we have to assure the best evaluation you can make at the time you get these reports back in there?

Admiral MOORE. Mr. Hardy, all——

Mr. HARDY. Wait a minute! And assure not only that having initiated a radical change, which some of them do involve, that you don't get yourself out on a limb and continue it so doggone long that you virtually can't get back to where you were before.

Admiral MOORE. Well, you can't guarantee this, Mr. Hardy. All I can say is that we have people who are looking these programs over and we have a management group in the Bureau. From time to time the Chief of the Bureau will call in all shipyard commanders who are skilled in shipbuilding and have worked at different levels on this problem, so they come in and we get our overall opinion.

We will have a conference of this kind coming up in October with this sort of thing on our agenda, and we will make the best evaluation we can, with the best staff people that we have available to us, consulting with outsiders from time to time, to see what we think about it before we implement.

And we have made some mistakes, there is no question about it, but we believe that once we have found the mistakes and once we are not achieving the results that we set out for, the best thing then to do is to face up to it, even though our faces may be red, reorient ourselves with a view——

Mr. HARDY. That is the hardest thing anybody in BuShips could possibly have to do: to face up to it, and then go back and correct it. You do it, but it sure is grievous.

Admiral MOORE. Well, in a large complex of this kind the changes don't come without a great deal of pain.

Because it affects so many activities and so many people.

Mr. HÉBERT. Any questions, Mr. Kitchin?

Mr. KITCHIN. Yes, I would like to ask two general questions of the Admiral.

Does the Bureau of Ships have other management contracts with other sources than Cresap, McCormick & Paget?

Admiral MOORE. No, sir. I believe it is correct that we do not have any other contracts of this kind going, sir.

Mr. KITCHIN. So I understand this one has been continuous since 1949.

Admiral MOORE. No, sir. No, sir. These have been specific tests. We call them in for a particular project, for a particular scope of work, at a particular time, and when it is finished it is finished.

Mr. KITCHIN. So, in substance, the recommendations that were made by this particular management group have been put into effect or at least implemented.

Admiral MOORE. They have been implemented to the extent that we desire to implement them.

We don't always agree with some of the things that they have recommended, and for the reasons that I just told the chairman, because we, too, think that we have knowledge in this area. And sometimes they are not able to gage the situations as well as we. Also they may be predicating their recommendations on the knowledge that they have, which may be in the industry rather than in the unique atmosphere that we have in the Government shipyards, sir.

Mr. KITCHIN. But in 1959, and again in 1960, you contracted with the same group to reexamine the recommendation that they made under prior contracts, which were implemented.

Admiral MOORE. Yes, sir.

Mr. KITCHIN. Which turned out to be a mistake. So now they are contracting at least partially to correct their own mistakes.

Admiral MOORE. I do not agree with the way you have put it, sir.

To this extent: In each of the reports many of the things that we have implemented have produced good results. Some of the things that they recommended didn't work out to our purpose.

But we particularly picked this company with malice aforethought. They have worked in this area with us. They know what had gone on before. And it only appears reasonable that to get the continuity of effort and not have to reindoctrinate people all over again, that again, the maximum benefits would accrue to the Government by this technique.

This is a management decision that I took part in. The Chief of the Bureau made this decision. I was wholeheartedly in support with it. And it was approved by the Secretary of the Navy.

Mr. KITCHIN. I am not being critical of the decision that was made.

But I was wondering—and the reason for my question was as to whether or not there shouldn't have been a little different technique used, if there are other organizations in the same type management

field, to get a divergence of opinion in those instances where the implementation has not worked.

Rather than going back to the same guy that made the suggestions that didn't work in the first place.

Admiral MOORE. Well, many of them did work, sir.

Your point is well taken. And it would appear to us that, as of the moment that our work is finished, for the time being. We can't say that we won't have to make more changes because—the very nature of life itself is change.

But we think that we can rest easy on this program for a while, and assimilate the entire package that we have now, which we believe to be good.

Now, if we make a subsequent survey, in perhaps 4 or 5 years, then I think we would give full consideration as whether we would now bring in the same organization again. Because as we see it, what we have been doing now is part and parcel of the same package that we set out initially to do. And that is why we have kept this in the context that we keep it, sir.

Mr. KITCHIN. Well, my questions were not meant to be facetious.

Admiral MOORE. I understand that, sir.

Mr. KITCHIN. From a practical standpoint, we all know that those living closest to the forest only see the trees.

Admiral MOORE. Yes, sir.

Mr. KITCHIN. And over a period since 1949 these people have been called upon to make these recommendations. And then again in 1959 they made a report. And apparently the Navy didn't take altogether the suggestions in the 1959 report, but called for another investigation from the same outfit.

Admiral MOORE. This isn't quite so, either.

I mentioned earlier that the first report was made in 1949. We waited too long in connection with having them survey to see if we had implemented it in the manner in which they had thought we should.

They had found many things that we had not read their language right and had not done precisely what they recommended.

They said, "If you had followed this report through more carefully," and if we had checked, maybe we would have this show on the road a little better.

So this time, to avoid that same mistake, we only waited about a year, which is the time I told the chairman it takes to get some of these things going and to discover the overall results.

We thought it was timely after a period of a year to come in and take a look-see and see how we are coming. And in this last report they went into it in a great deal more detail than they had before. And the number of modifications that we had to make were considerably smaller than we had in the previous cases, sir.

Mr. KITCHIN. Now, under the contracts that have been let with this particular outfit, is the $136,000, which is an estimated cost, and the $134,000, which you say is approximately actual cost, are they the funds that have already been expended, or are they the ones that will conclude the present contract that you have for the study?

Admiral MOORE. This should be a total, and it should be an actual cost, because insofar as I know, all the work has been completed on it.

Now, the difference here may be that all the return costs are not in now. But the specific tasks have been completed. This is not a continuing program. It is subject to audit. I couldn't say for a certainly whether the actual number is 134 or 136, but it is a concluded deal and subject to final audit; it is a closed-out program, sir.

Mr. KITCHIN. Now, contrary to the position that the research contracts were placed in in our discussion of the previous items, you do have tangible results from which you can calculate whether or not this expenditure of $136,000 has been profitable to the Navy?

Admiral MOORE. Yes, sir.

Mr. KITCHIN. What is your opinion?

Admiral MOORE. The results that we get from that are a number of publications, that would probably be——

Mr. KITCHIN. I just asked for an opinion at this time——

Admiral MOORE. The size of maybe two of these [indicating documents]. After they have made their study and analysis, they come up with specific recommendations as to what they think we should do from an organizational point of view, an operational point of view, and what have you, to get the kind of organization that we want in the shipyard to achieve the overall results that I mentioned before, sir.

Mr. KITCHIN. But my question was: In your opinion has the Government saved money through the exercise of these contracts?

Admiral MOORE. Already—if you are getting down to the question of money—this gets to be an extremely difficult question to answer. And it is the same question that I had the shipyarders ask me when I was shipyard commander in trying to implement this program.

It is hard for me to gage my performance today vis-a-vis what it was 10 years ago, because I am not building the same commodity. It is in an entirely different beast.

If I could build that same ship 10 years running, I could then give you a yardstick and say "Yes, it costs so much that day, and it costs so much this day."

But I don't have that. It is a different breed of cat.

I can give you some examples of how we are geeting tangible results, in my opinion. You could take——

Mr. KITCHIN. May I interrupt at this point.

I didn't want to go into the details, except to elicit your opinion as to whether or not this $136,000 has been spent profitably as far as the Bureau of Ships is concerned.

Admiral MOORE. I would say many, many, manyfold. I would suspect that the techniques that we have been employing because of these contracts have given rise to at least an increase in efficiency of 10 percent. I couldn't guarantee it, but this is my own opinion. And on the basis of the shipbuilding contracts that we have, this is real money.

Mr. HARDY. Well, Admiral, isn't there one yardstick that you can use for some measurement in your overhead experience?

Admiral MOORE. You couldn't precisely do that, Mr. Hardy, for the reason that you can set up rules in connection with overhead so that you could make overhead anything that you wanted.

Mr. HARDY. I know. I found that out.

Admiral MOORE. I realize that.

Mr. HARDY. And you do do that.

Admiral MOORE. Now, as we have gone on through this period, we have taken certain classes of employees who were productive and shifted to overhead, and vice versa.

Mr. HARDY. Now, Admiral, assembling the same set of rules in one particular shipyard where you have applied these things, you ought to be able to measure, and measure with some degree of accuracy, the results of putting these recommendations into effect.

Admiral MOORE. You could from an overhead point of view.

But the large moneysaver, Mr. Hardy, in connection with this program, is the man-days, the number of man-days, or the man-hours, that go into the building of that ship itself, in the productive area. And it is in this area where, as I told the chairman earlier, I am sure that it would have taken us at least twice the length of time to build the new complicated ships, the nuclear types that we have, with missilry, if we had done it in a hodge-podge fashion, that we used to do it.

Mr. HARDY. Well, I am thinking now in terms—you found out that your CMP program was more expensive actually and didn't produce the results you thought it was going to produce. And it took you 10 years to find that out.

Now, you come along with a reevaluation by the same management concern and they find out some of the things were done wrong.

Now, I don't know whether you didn't carry out their recommendations fully, as you have indicated a moment ago—the extent to which that may have been responsible.

But certainly, having gone back and made these, or instituted new procedures which they have recommended, there should be in a particular yard a basis on which you could make an evaluation to determine with some reasonable accuracy the effect of it.

I am surprised that you don't have some such evaluation.

Admiral MOORE. Well, only to the extent, Mr. Hardy, that this has taken place since 1949, and the very nature of the work that you are working.

Mr. HARDY. Let's talk about what happened since 1959, or since you put the changes back in.

Admiral MOORE. Well, this stemmed, Mr. Hardy, mostly from the fact that we ourselves recognized that we were making our task somewhat more difficult by breaking our job pieces down too small.

We were generating too much paper. We knew that whatever we had done had been an improvement, but we were also generating so much paper that it was getting burdensome. And we had to go back and take a look-see again.

Mr. HARDY. I am disappointed that you don't have any evaluation to indicate whether or not it actually has proven to be beneficial.

Admiral MOORE. I was trying to give you this in a gross way, in connection with comparing two submarines that had been built in a period—and I am picking up the end of World War II, where we had a production line of conventional submarines. We had built them by the hundreds and they were doing it mass production.

We paid $7 million total for those submarines.

Now, during this intervening time, we have put in the systems that I am talking about. And not too long ago, within the last 3 or

4 years, we completed *Skate*, which was a nuclear submarine, that went over the North Pole, infinitely more complicated in many respects, and is nuclear, also, and that was delivered to the Government for about $39 million.

Now, this is an increase of about 5 to 1, which hardly keeps pace with what we are doing in the automobile industry, where you still have a car that has four wheels, a little bit more horsepower, but is functionally the same thing.

Here we have brought a nuclear submarine which has infinitely more capability, and infinitely more basic man-hours in its construction. It gives you a measure.

I am not prepared to give you specifics in the case of the CMP, as to the savings that have come from our improving in management techniques.

Mr. HARDY. I didn't ask you for specifics. But I was trying to find if actually you didn't have some measurement and hadn't made some determination as to whether or not there had been an actual dollar savings, or a time savings.

I am surprised that you don't have it, because I thought sure you had.

Every time I have been in this kind of argument before, Admiral—and I have been in them a good many times, as you probably recall. You and I have had a few.

Admiral MOORE. Yes.

Mr. HARDY. Every time I have been in it, somebody has said, "We can show what this is going to do."

Admiral MOORE. Mr. Hardy, we are getting into the area of the various savings that we have done—not only from this devise but many other things that Admiral James has had, as a result of his ship cost analysis panel committee.

Mr. HARDY. I think I discussed them all.

Admiral MOORE. I think the savings that Admiral James had, and that he has attributed in these various areas, were discussed before the committee, of which you were a member, probably last week and the week before.

Mr. HARDY. I don't recall getting into any specifics on that.

Admiral MOORE. I am sure some of the savings were discussed at that time.

Is that not right, Mr. Secretary?

(Secretary BeLieu aside to Admiral Moore.)

Mr. HÉBERT. Admiral, could this have been an in-house exercise? Now, the Government has trained you people. You have been educated by the Government. You are experts in your line. But you must go outside to get other experts.

Don't we have the capacity and competence within our own shop?

Admiral MOORE. It requires some cross-fertilization.

I think if one starts looking at the same picture day in and day out, he sees the same things. I think it takes another set of eyes. It takes another viewpoint a lot of times for us to see the manifest errors we are making over and over ourselves.

We can indulge in self-criticism, but sometimes when we want to get closer to the truth we get somebody else to criticize us. So there is this technique.

Mr. HARDY. Of course you have your people that are employed for such a particular thing, to try to keep abreast of developments.

Admiral MOORE. Yes, sir.

Mr. HARDY. Of course you do. And who generally speaking do perform a good job.

I can understand, though, how it is desirable to bring in outside eyes, as you put it, to look over and to help them keep on their toes.

But Mr. Secretary, I hope that you will take a little look at this thing and find out whether or not these new innovations that are being made are actually proving out. Apparently, Admiral Moore hasn't got too clear a picture of it.

Admiral MOORE. Mr. Hardy, I do know the answers. And I don't want to beg this issue. I am not prepared to give them today.

But Admiral James has brought them up on the Hill, to the various appropriations hearings.

We have an entire presentation on what has been the result of some of our dollar stretch programs.

Mr. HARDY. I didn't ask you for the specifics of its. I asked you if there had been such a measurement made.

Admiral MOORE. Yes, sir. Yes, sir, there has been, there has been.

Mr. HÉBERT. Mr. Norblad, any questions?

Mr. NORBLAD. No.

Mr. HÉBERT. All right, Mr. Courtney, proceed.

Mr. COURTNEY. Mr. Chairman, I think that is all on this phase from the Navy so far as I can understand.

There are a few little supplements to the record.

(The two remaining contracts referred to are as follows:)

SUMMARY OF CONTRACT—NOrd 18452 (SERVICES)

FISCAL YEARS 1958–60

1. ARINC Research Corp., 1700 K Street NW., Washington, D.C.

2. Phase I, $58,407 (fiscal year 1958, $35,000) (fiscal year 1959, $23,407); phase II, $125,838 (fiscal year 1960); total, $184,245.

3. Task I. (*a*) Perform the necessary research and development required to develop methods and procedures by which the reliability of a Naval Ordnance Weapon System can be predicted during the early stages of design.

(*b*) Submit to the Bureau of Ordnance 10 copies of a report which includes the methods and precedures, the reliability prediction techniques and the controlled test program required for the application of the reliability prediction techniques to a Naval Weapon System.

Task II. (*a*) Apply the prediction techniques developed under task I to equipments aboard the USS *Forrestal* as specified below:

1. MK 56, Mod 40 fire control equipments.
2. MK 7 computer.
3. SPG–48 radar.
4. APS–20E radar.

(*b*) Develop the predicted reliabilities of the equipments mentioned above.

(*c*) Compare predicted reliabilities with measured reliabilities obtained under contract NObsr–64508 to ascertain accuracy of the procedure.

(*d*) Revise prediction technique procedure based upon analysis of the predicted versus the measured reliabilities.

(*e*) Prepare Military Standard in accordance with DOD Instruction M–203–B which includes a reliability prediction procedure suitable for application to any Naval Weapon System.

(*f*) Prepare educational presentation of the above material to be presented at regional reliability conferences with BuWeps contractors.

4. Summary of results and findings: The predication procedure, phase I, has been developed. The final report submitted was accepted by the Bureau of

Naval Weapons. This initiated action to fund phase II. Results obtained during the application phase indicated that the degree of accurancy of predicting reliability depends upon the availability of accurate parts failure data of all types. On electronic equipments, good correlation was obtained. On equipments containing many hydraulic, mechanical, and pneumatic parts the accuracy was not very good due to lack of parts failure data in these areas.

5. Action taken based upon results and findings: the Military Standard presented by contractor, after BuWeps review, has been questioned since it contains only procedure for predicting reliability of electronic equipments. This problem will be resolved shortly so that the final MilStd will contain procedures for predicting reliability of Naval Weapon Systems.

A program has been established at NOLC to collect parts failure data of all types from manufacturers developing systems for BuWeps. This program will supply the data urgently required to improve the accuracy of the prediction procedure in the mechanical, hydraulic, and pneumatic areas.

SUMMARY OF CONTRACTS—NOAS 60-6044c (SERVICES)

FISCAL YEAR 1960

A. Identity of contractor: Applied Psychology Corp., Arlington, Va.

B. Cost of contract: NOas 60-6044c, $14,723.62.

C. Purpose and scope of contract: For a period of 12 months make availabe and employ its research and development facilities and personnel to conduct a human engineering investigation to determine those flash patterns that are absolutely identifiable by a representative group of military personnel. The study is directly applicable to lighting utilization in order to prevent mid-air collisions and to provide positive identification of airborne and/or ground objects.

D. Summary of results or findings: Three types of flash patterns were investigated: Morse code, continuous, and dots. Thirty-six signals were studies. Subjects first learned a meaning associated with each signal. They were then tested for speed and accuracy of response to signals presented in random order.

The following results were obtained:

(*a*) Continuous signals are hardest to learn.

(*b*) Signals with a larger number of elements (dots or dashes) are not necessarily more difficult to learn than those with fewer elements.

(*c*) In general, Morse code signals are most reliable for persons familiar with such signals; Dots are most reliable for persons inexperienced with flashing signals.

(*d*) Respone times are fastest, on the average, for Morse code signals.

(*e*) Correlation between signal length and response time ranged from slightly negative to moderately positive.

Seventeen of the 36 signals are recommended as worthy of further consideration in the operational situation. These consist of the 11 Morse code letters and 6 dot signals which were easiest to learn and which yielded more accurate and faster response times than the unselected signals.

E. Action taken based upon results or findings: This study is part of a continuing program of exterior lighting development for identification and other requirements for naval aircraft on combat and noncombat missions. Additional studies are required utilizing actual aircraft lamps and hardware before the results can be applied to aircraft in service.

The Navy has pioneered in systematic study of various commercial anti-collision light applications. The results of the current as well as previous studies have been released to the Federal Aviation Agency since that activity has been assigned U.S. responsibility for investigation of the anti-mid-air collision problem. It is anticipated that flash coding may make an important contribution to the solution of the problem by providing altitude and/or sector information.

Mr. COURTNEY. So I would say that this covers the area so far as the Navy is concerned.

Mr. HÉBERT. May I ask the Secretary one question, then?

Secretary BELIEU. Sure.

Mr. HÉBERT. In connection with the matter that was brought up when the Army was here: The Army testified, or presented here a contract spending $40,000 to find out how to attract finer young men to West Point.

Has the Navy found it necessary to spend $40,000, or does it contemplate spending any sum of money to find out how to attract young men to Annapolis?

Secretary BELIEU. Not to my knowledge, sir.

Mr. HARDY. Put more of them in the Presidential pool.

Mr. HÉBERT. Then I assume, then, that the Navy does not contemplate such a program, because it is satisfied with its input and its output of graduates—or students?

Secretary BELIEU. Well, the operation of the Naval Academy is a little bit beyond my bound of jurisdiction, although the graduates that I have observed from there, and the young men that I have met up there, I have felt highly confident of, and most proud.

Mr. HÉBERT. I am putting the Air Force on notice that I am going to ask them the same question, too.

I just wondered why one Academy has to go out and spend $40,000 to find out how to get more boys, and the other two Academies don't have to do it.

Now it is just a question that was raised in my mind about this particular item. I know, for instance—now the Superintendent, the present Superintendent of West Point—went down to Harvard to learn how to be Superintendent of the Academy.

He took a course down there on how to be a superintendent—not a superintendent, but how to be a president of a university. These things are very strange, and after the years that these fine and honored institutions have existed, that we come into the situation where we find these matters.

Secretary BELIEU. I would have to address myself to the philosophy of this, and just what I think, because, as I indicated, I am not in the academy business per se.

But I think it is a matter of motivation——

Mr. HÉBERT. We want to know why. We think we are giving you some good people.

Secretary BELIEU. It is a matter of motivation, Mr. Chairman.

I view these academies as national institutions that must be nurtured and protected and perpetuated, and if we can find for some reasonable cost a way of getting a higher quality of people, if this is possible, into our academies, the country will thereby benefit.

I have no knowledge of the Army's contract.

Mr. HÉBERT. I am sure the services have an answer to that, Mr. Secretary, and that is to let them do all the selecting and appointing and cut out Members of Congress, and they will get the finest people that they want. [Laughter.]

Secretary BELIEU. I wouldn't concur with that, sir.

Mr. HÉBERT. I know you don't, but the trend is that way.

Mr. KITCHIN. I would, almost. [Laughter.]

Mr. HÉBERT. You would, almost.

All we have left now in the way of appointments is the Post Office. [Laughter.]

Mr. HÉBERT. And some of us don't even have that. [Laughter.]

Mr. NORBLAD. That is right. And very happily so, I might add, Mr. Chairman. [Laughter.]

Secretary BELIEU. That also is outside my jurisdictional field, sir.

Mr. HÉBERT. Thank you very much, Mr. Secretary, for your cooperation.

And again may I compliment you on bringing responsive witnesses here today.

Secretary BELIEU. Thank you, sir.

Mr. HÉBERT. And yesterday, also.

Secretary BELIEU. It is a privilege to be here, sir.

Mr. HÉBERT. While we are still confused, we are certainly confused on a high level. [Laughter.] But it is proved that confusion does exist. [Laughter.] Thank you very much.

Secretary BELIEU. If I may say—off the record.

(Further statement off the record.)

Mr. COURTNEY. Mr. Chairman.

Mr. HÉBERT. The committee will be in order.

Mr. COURTNEY. In view of fact that we have——

Mr. HÉBERT. How much time remains?

Mr. KITCHIN. Twenty-five minutes.

Mr. HÉBERT. Twenty-five minutes.

Will that be enough time?

Mr. COURTNEY. I think so.

Mr. HÉBERT. The committee will be in order.

Mr. Courtney.

Mr. COURTNEY. Mr. Chairman, taking the presentation a little bit out of order, but the subject is a whole and entire subject.

The introduction of the committee into this contracting-out study dealt with the depot maintenance of planes and engines; the blue-collar worker versus the white-collar or civilian worker; the military personnel versus the blue collar, and the like; the efforts and the practices and the policies of the Air Force, which has the largest interest in that particular subject.

Now this morning we have these three colonels here, who will introduce themselves, and they have a visual demonstration, and the facts and figures implementing the policy which one of them will state.

The policy in substance seems to be that the live inventory is preferred as the way to have its work done, and attempt is made to have its depot maintenance conducted by inhouse personnal, either uniformed or civilian, and that as the inventory changes and obsolescence sets in, the practice is then to contract out.

Now, Colonel, if you will introduce yourself and your companions.

Colonel RECTOR. Yes, sir. I am Col. E. F. Rector. I am Deputy Director of the Directorate of Manpower and Organization, Headquarters USAF.

Mr. Chairman, in order to make the best use of the time this morning, we arranged to put on a portion of the Air Force presentation today—only a portion of it, with the remainder to be provided tomorrow.

The portion that we would like to discuss today concerns our contracting and depot maintenance.

Since Mr. Imirie will be appearing before the committee today, you might want to hold your general questions until that time.

I would therefore like to introduce Colonel Riemondy from the Headquarters Air Force Logistics Command, who will give you this presentation on depot maintenance, and the logistics command.

Mr. COURTNEY. Colonel, are you ready?

Oh yes, there you are. I didn't see you.

Colonel RECTOR. Colonel Riemondy.

Colonel RIEMONDY. Mr. Chairman and members of the committee, this part of the presentation will be aimed at a discussion of some of the basic policies, philosophies, and concepts which have dictated the way we have been accomplishing our depot maintenance responsibilities within the Air Force.

There are two basic underlying concepts which have caused a significant variation in the way we do our job. The first one had to deal with how we did our job under the mobilization concept, and second how we are attempting to do our job today under the concept of optimum combat readiness (C–2).

Our basic logistic objective during the period of time has remained unchanged, however. We recognize that there are many different kinds of systems which come into the inventory and that these systems have different missions assigned to them.

We recognized that whatever logistic system we establish, it must be tailored at insuring that we have the proper wherewithal in order to accomplish our military job.

We generally base our decision as to how we do this work on military necessity. Of course we temper it with economic considerations (C–3).

There are several basic constraints which are associated with our logistics job. I will attempt to summarize a few of these very briefly.

The very nature of the forces to be supported within the inventory is dynamic. Recognizing, then, that there are changes which are introduced daily into this inventory, to give you a feel for the magnitude of the change, over the last 10 years, for example the Air Force has had some 74 different kinds of aircraft within the inventory. And it has increased up to about 149, notwithstanding the fact that we have retired to obsolescence many kinds of aircraft weapons systems.

Another feel for the magnitude of this, or the dynamic nature of our business is: To look at the number of line items which the supply part of our logistic system supports.

Mr. NORBLAD. Before you get into that. You have the word "missiles" down there. Does that 149 include missiles?

Colonel RIEMONDY. No, this number only applies to aircraft systems. In addition to these aircraft systems now we have missiles.

Mr. NORBLAD. In addition to the 149 you also have missiles?

Colonel RIEMONDY. In addition to the 149 aircraft systems.

Looking at the line items, which our supply counterparts had to support within this logistics system, back in 1951 we had some 720,000 different line items. Within a 10-year period this increased to about

NOTE.—Letter and figure in parentheses refer to charts which will be found at end of this day's testimony.

sixteen hundred thousand and we are introducing line items in the inventory at a rate approximating 500 a day, at the present time.

Mr. COURTNEY. Does that include missiles?

Colonel RIEMONDY. That includes missiles.

This includes all kinds of line items which make up the entire materiel that we have within the Air Force. I am sure all of you are aware of the increase in cost and complexity of the equipment as we progress down the pike (C–4).

The composition of the force structure and the size of the force structure, along with the attendant flying-hour program as far as manned systems are concerned, pretty well determined the magnitude of the job we have to do.

Back in 1950 we had in the order of about 20,000 aircraft within our inventory. In 1960—rather, in 1950 we had about 12,000. In 1960 we had about 20,000.

At the present time it is in the order of around 17,000—a little bit over 17,000. The size of this force, with its attendant flying-hour program, pretty well determines from a maintenance standpoint the man-years of effort which we have to expend in order to support this inventory.

Back in 1950 we were accomplishing about 76,000 man-years of work. By 1960 it was up to 123,000, and as I will show you a little bit later on, in 1957 this workload peaked at some 163 man-years, a very sizable manpower effort in order to maintain this force.

The mix of the work that has to be done results from the composition, that is the various types of weapons within the inventory, and pretty well determines the kind of skills that we need to do the job (C–5).

We recognize that we are just not good enough in this business to design material in the first instance which is completely free from defects, be they structural, electrical, or mechanical. We also recognize that material is subject to deterioration through use. It wears out, and in some instances it wears out just sitting on the shelf.

In order to maintain this equipment, then, in a serviceable condition, somebody has to do some work on it. This is the job that is attributable to our maintenance engineering effort (C–7). The Air Force has seen fit to divide the responsibility for accomplishing our maintenance job into three areas which we commonly refer to as organizational, field, and depot.

The way we differentiate as to where we assign this responsibility: We take into consideration such factors as cost of facilities, degree of skills required, the amount of tools and test equipment you have to buy, and based upon the magnitude of these resources, we assign various jobs, then, to various levels.

We assign the depot level maintenance, which I will address my remarks to from here on, to the Air Force Logistics Command. This job requires the greatest investment in tools, test equipment, and facilities, and the highest degree of skills (C–8).

A little bit of historical data, then, I think would be in order. At the close of World War II we had within the Air Force this kind of a posture. He had 12 major depots in being, and we had some 216 subdepots.

We employed in the order of 142,000 civilian personnel. We had about 30 million square feet of shop area. The dollar investment in tools, test equipment, and facilities approximated $3 billion—rather, three-quarters of a billion dollars.

Each one of these depots was completely self-sufficient. It was for all practical purposes a general depot.

Within certain geographical boundaries we had certain Air Force equipment. Each one of these depots was capable of maintaining any and all equipment within that geographical area.

At the close of World War II we introduced a concept of specialization. In order to take advantage of mass production techniques, and in order to use lower-skilled personnel we started specializing certain kinds of jobs at particular depots. We concentrated our specialization at that point in time principally on aircraft engines and aircraft engine spare parts (C–9).

We thought it was a real good management move.

Since the introduction of specialization at the end of World War II, we have followed a concept of specialization, up until the present time.

Following World War II, I am sure all of you are aware of the tremendous rollback that took place as far as our forces were concerned. By 1947 we had reduced the number of groups to be supported within our inventory from 273 down to 48.

Correspondingly the workload decreased and we decreased our internal labor force from this 142,000 figure down to some 66,500.

Again, I would like to reiterate at this point in time that all of our depot maintenance was still being accomplished within our own organic resources. At the same time we accomplished this rollback and this decrease in personnel, we deactivated some of our major depots: The depots at Miami, at Spokane, at Rome, at San Bernardino, and the Fairfield Air Depot, which was located at Wright-Patterson Air Force Base. We closed all the subdepots and the majority of our oversea depots (C–10).

We had accomplished this job, and then we were faced with our first real emergency situation with the advent of the Berlin airlift. This imposed upon the depot system a rather significant increase in our total workload.

There was in-being at about the same time a number of contractors who were maintaining similar kinds of aircraft that we were using in the Berlin airlift. What we did, then, at this point in time, rather than to reactivate some of the depots which we had closed out and rather than to bring back on board a rather significant number of people, the Air Force made the decision that they would contract out some of this work to the same types of contractors who were already engaged in maintaining civilian counterparts to the aircraft that we were using on the Berlin airlift (C–11).

Mr. HÉBERT. Was that your first time that you contracted out?

Colonel RIEMONDY. That is correct, sir.

So starting with the Berlin airlift, then, we introduced the concept of doing some of our depot-level maintenance on contract.

Mr. NORBLAD. What is "LAS," at the end there?

Colonel RIEMONDY. Lockheed Air Services.

This was about a $4 million program. Following the Berlin airlift situation, the world situation was such, again, that it was decided that perhaps the forces which the Air Force had were not sufficient to cope with the military situation, and a decision was made to increase our force structure up to 143 wings.

Mr. NORBLAD. You changed from groups to wings there?

Colonel RIEDMONDY. Yes, sir. They are synonymous, however, for this particular presentation, in order to get a measure of comparability. With the advent of this plan it was obvious to all of us there would be a significant increase in workload again and we had to take some action to put ourselves in position to accomplish this workload.

Three courses of action were available to us. We could reactivate and man some of the depots which we had formerly closed out. Taking a look at the concentration of these forces, we recognized that there was going to be a terrific concentration of air defense forces in the northeast area of the country, and we felt that we needed another depot in that particular area.

There was available to us the course of action to construct a new depot, and the Congress actually appropriated $100 milion to do this job.

The other course of action available to us was to make more extensive use of contract facilities. Actually, we decided to pursue all three courses of action at the same time. We got dollars to construct a new depot, we reactivated San Bernardino and Rome, and we started to make more extensive use of contractor facilities (C–12).

This changing force structure during this period of time was characteristic of the era that we were in. We went to 143 wings. Then we went to some lesser amount. And so we were in a period of constantly changing the total forces to be supported.

Actually here, as far as constructing a new depot, we reassessed the situation as we moved on in time and before we spent any money we made the decision not to go ahead with constructing a new depot. As we look back now, or hindsight, this was a very good move. So we did not spend the $100 million that was appropriated to us.

We felt that the Rome depot and the Middletown depot were sufficient in the northeast area to take care of the concentration of forces which we were going to have.

Throughout the late forties and in the early part of the 1950's, our maintenance concept dictated that we would have to create in peacetime the wherewithal in order to successfully pursue a war in the event we got into one. At this point in time we were talking to a mobilization concept. We said we would have to create the wherewithal in peacetime to give us a suitable base from which we could expand in the event we got into a national emergency situation.

This was pretty well dictated by the weapons which we had available to us, and very frankly the weapons that our potential adversaries had. We felt that the kinds of weapons we had were such that if we got into another national emergency situation, that there would be ample time available to us to mobilize our forces that we needed to sucessfully pursue the war (C–13).

With this concept then in mind, we laid down some basic ground rules for the use of our depot facilities and also for the use of contractor facilities. We recognized that we had to create the wherewithal to take care of the most important weapons—the ones we had put our blue chips on in the event we got into war.

As a consequence, then, we scheduled our so-called first line weapons into our depots in order to create and develop a high degree of personnel proficiency, in order to work on those kinds of weapons in the event we got into war. Recognizing we couldn't saturate our facilities or we would have no basis for expansion, we deliberately limited the utilization of our facilities to a one-shift, 8-hour a day, 40-hours a week operation. This gave us sufficient room for expansion in the event of war (C–14).

We also recognized that with the changing force structure we were causing considerable concern as far as our manufacturers of our prime equipment. We turned on the production program and then we turned it off. We recognized we had to create there also a mobilization base, that is a base from which we could expand.

So we laid down a ground rule that those workloads associated with our first line weapons, which we could not accomlish within our depot, on this one-shift basis, would be contracted back to the prime manufacturers. These workloads were principally aircraft and engines.

We also recognized that we had what we call second-line equipment—cargo and liaison types—which had a commercial conterpart. These kinds of equipment we said we would contract with the so-called commercial maintenance industry.

However, we threw an element of caution in this thing. We said we would continue this organic contractual relationship only to the extent that it did not endanger the Air Force's maintenance engineering capability to cope with national emergencies. We felt this must be our job (C–15).

Based on an evaluation of this policy, the Air Force decided to limit its organic labor force to 66,000 people. It was felt that this number of people would provide the air force with a sound mobilization base, a reasonable utilization of our depot facilities, and a reasonable distribution of workload to industry (C–16).

That policy then pretty well dictated the way we did our job up through about 1955 and 1956.

When the Russians detonated their atomic bombs, we knew they had weapons which were capable of doing the same destruction as ours. We also knew that they had means of delivering them.

The whole complex of peace and war changed. And we in the Air Force felt that the mobilization concept was no longer valid, that if we got into another hostility we would undoubtedly have to fight with the weapons we had at hand.

So then there was born the necessity of creating a logistic system which would assure that the forces in being were maintained in a state of maximum operational readiness (C–17).

With this kind of a posture, then, in mind, it again became necessary to lay down some ground rules as to how we would accomplish the total job. We felt it was necessary to create a depot establishment which would be responsive to this new military need, and that

we would have to create an organic capability which was capable of complete management of the total Air Force maintenance engineering job.

This responsibility we said we would not contract out (C–18).

With this in mind, then, we said we would base, again, our decision as to where we would do our job on military need, and that we would utilize our organic resources for the accomplishment of workloads which were associated with those weapons which had to be maintained in a state of combat readiness, and that we would attempt to insure a complete technical capability for new weapons as they were introduced into the inventory (C–19).

This again, in order to give us the necessary know-how to properly manage our total engineering maintenance program.

On the other hand we said those workloads which are associated with weapons which are not vital to assuring this combat readiness, we would contract out to industry.

In some instances we recognize that there were weapons which were not assigned very high priority missions, and these we would contract out to industry (C–20).

We also recognized with the rate of technology being what it was, that it was conceivable that we would have many weapons on the R. & D. drawing boards for which we may never make a decision to produce for the inventory.

We would bring them up through the test stage, and depending upon the situation that existed at that time, we could conceivably not go into a big production program.

For these kinds of weapons, we said we would proceed with caution and would not attempt to create an organic capability to support them, but would leave those in the hands of our contractors.

We also recognized that there is inherent in a production capability a capability of accomplishing certain maintenance functions.

We felt in those cases wherein we had excess production capacity, and dependent upon the role that the weapon was supposed to accomplish, and dependent upon the numbers of weapons we were going to buy or the life that we expected to get out of these weapons, we said we will take a real good, hard look-see at these, and if these conditions are such to tell us that we should not duplicate these kinds of facilities because of the cost involved, we wouldn't do it (C–21).

So we threw in here what we considered to be a very significant group of judgment factors.

However, we felt again it was necessary to recognize that we had to exercise some caution in the distribution of this workload. And again we spelled out that we would continue this organic contractor relationship to the extent that it did not endanger the Air Force's capability of insuring that the forces in being are maintained at a constant state of operational readiness (C–22).

With the announcement of this particular policy, we set about to take a real good look-see into how we were distributing this work, recognizing that we were just evolving to a new concept.

This chart depicts the total workload through the 1960 time period. The brown is the workload we are doing contractually, and the blue is what we are doing organically.

You can see back in the 1948 time period, back here, we started with the Berlin airlift to contract out our work.

This chart shows that over a period of about 10 years we created a very sizable contractual maintenance industry.

It also depicts that for all practical purposes, with a few minor peaks and valleys, we have pretty well maintained the size of our organic labor force, from the 1949 time period up until the present time.

However, we said, "Well, let's go behind the scenes and see what kinds of workloads we are doing organically and what kinds of workloads we are doing contractually" (C–23).

Now, if you recall, we made the decision here that those workloads in support of vital systems—these are the kinds of workloads we should be doing organically, and the so-called nonvital workloads we should be doing contractually.

Bear with me for a moment and accept at this point in time that these kind of weapons, to which I will speak, we designated to be vital. As we looked at the mix of this workload, we found that in the case of the B–52, which at that point (1959) and still at this point in time is one of our most vital weapons systems, we were contracting out about 58 percent of our workload. Conversely, we were doing about 42 percent in-house.

The B–47 we were contracting out about 70 percent.

The KC–135, again in the order of 70 percent.

The F–100, about 50 percent.

At the same time as we were contracting out these vital workloads, we were doing within our organic resources almost completely whole series of nonvital workloads, such as the F–84, the F–86.

We recognized at the moment that as far as our aircraft workloads were concerned some realinement was in order.

We went behind the scenes and took a look at some of the armament and bomb-nav systems which are in integral part of these aircraft weapons systems. And we found at that point in time that the bomb-nav system in support of the B–52 was being supported 100 percent contractually.

The fire control system on the F–102 was being done about 75 percent out on contract.

The fire control system on the F–101 was being done about 80 percent contractually.

It became quite obvious to us that when we looked at this particular picture here, that we had to lay down some plans for realizing those workloads, because they were inconsistent with our own announced policy (C–25).

We took a look-see at the resources which we had at that point in time. We had some 62,000 civilians. These folks had an average experience of between 12 and 15 years of depot level maintenance.

We had roughly 16 million square feet of shop area. And we had a dollar investment in tools, test equipment, and facilities approximating $385 million.

We had some 10 major installations still in being (C–24).

I have already pointed out the tremendous growth in the contractural side of the house. So actually we created in that 10-year period what we refer to as about a billion dollar contract maintenance industry.

We knew we had tremendous resources available to do the job.

It became then a question of how do we redistribute this workload and how do we take realinement actions on a time-phased basis in order to line ourselves up so that we were a little bit more consistent with the policy that we laid down.

Mr. HÉBERT. Was any consideration given in this area here to the proposition that you could rebuild your in-house capability cheaper than your contracting out?

Colonel RIEMONDY. Yes, there were those kind of considerations.

Mr. HÉBERT. And what conclusion did you come to?

Colonel RIEMONDY. Well, we generally concluded, sir, that within those areas that we could make some decent cost comparisons, that dollar for dollar we were getting just about an equal return both ways. Because having created this industry—we had a tremendous investment in there, too, because a lot of that industry was created at Government expense. We provided the tools, the test equipment, and in lots of instances the brick and mortar.

At this point in time it became necessary, in order to take these realinement actions, to first define those systems which we felt were vital.

These, then were the systems which at that point in time we defined as being vital and the workload associated with them we should be doing organically (C–26).

We then embarked upon a program of defining within the next 5 years the kinds of moves we wanted to make. Recognizing you just couldn't turn this thing overnight, because of the tremendous investments both organically and contractually, we said "We have to proceed with doing this job on an orderly time-phased basis"—some of the past actions then that we took.

During 1959, these are some of the weapons and some of the components associated with them which we phased out of our organic facilities in order to free manpower to work on these more vital systems over in this area.

For example, we phased out the F–89 aircraft from Mobile, and also Ogden, and put this out on contract.

In its place at Ogden, we started working on such things as the Bomarc and the F–101 aircraft.

We phased out the F–86 aircraft from Sacramento. In its place we started doing more of the F–100's. And a little bit later on, the F–104's as they came into inventory.

Also the F–84 aircraft was phased out of Mobile. In its place we started to put some F–102's. And more recently, some F–105's.

Some cargo-type airplanes: We phased out of Middletown, the C–123.

Out of Oklahoma City we phased out the B–47.

And we started differentiating between our C–124's because of the types of missions they had to perform.

And we phased out C–124's in support of our military air transport service.

We phased these out of San Bernardino and concentrated on working our SAC C–124's, and also the 124's which are assigned to the Air Force Logistics Command.

As far as engines were concerned, we phased out of Mobile the R–3350 engine. In its place we started working on gas turbine engines.

We phased the J–73 engine out of Middletown, and in its place we started working on the J–79.

These are some of the kinds of actions which we took then in 1959 (C–27).

A little bit later on, as I go into some more of the details of our 5-year workload plan, I will show you some more of the other actions which we took (C–28, 29).

In the summer of 1960, DOD published directive 4151.1, and I have been told that you gentlemen are familiar with this particular directive (C–30, 31, 32).

I think it would be well to go to a chart which depicts our interpretation of the 4151.1 directive (C–32a).

We recognized this directive as being permissive to the Air Force to accomplish certain kinds of workloads organically.

We recognized within this directive really a statement and an affirmation of the policy which the Air Force itself announced.

We don't find any significant variance with the 4151.1 directive and our announced policy which we had announced back in 1958.

Yes, granted some of the words are a little different. For example, we talk to "mission essential" things, within this directive. We say this is synonymous with the word "vital," which we use.

We interpret this directive as giving us a license to have an organic capability to support military missions and those weapons associated with them which are declared essential or which are declared vital since they mean the same thing to us.

It recognizes that contractor resources will be used for "nonvital" workloads and also "overflow of mission essential" workloads.

And this "nonvital" workload business here is the same as "non-essential" workloads.

That, USAF organic resources in support of vital workloads will be limited to the minimum capability necessary to insure technical competence and to meet contingencies.

And we say this gives us a license to do those jobs which we feel are necessary from a military standpoint.

In cases where total vital workloads are being done on contract, some realinements of these workloads will be made.

In other words, our realinement actions that we started to take we feel are consistent with the DOD directive.

We also recognize within this directive that some weapon systems declared "mission essential" may never be brought into the depot. And this choice is ours to make.

Now, with this, then, in mind, it might be well to briefly talk to some of our long-range planning efforts which are geared to continuing our realinement which we say is consistent with DOD 4151.1. The directive does not preclude us from doing the job that we had started to do back in 1958.

We recognize, however, that as time goes on we must constantly redefine those weapons which are "mission essential" or which we tend to call vital.

At the present time these are the weapon systems for which we say we have a license to and should be accomplishing the workloads as they generate (C–35–36).

This list will change as we go on from day to day.

I have a few charts here to show you some of the actions which we are taking in our long-range effort.

We realize that this workload plan, or our long-range workload and resources plan, is also dynamic. You just can't make it today and then forget about it and just proceed blindly as you go down the way.

As a consequence, every quarter we publish and implement a new 5-year workload plan. The reason we do it every quarter is that this corresponds with the programing cycle within the Air Force and the publishing of new program documents.

The thing again that determines the workloads we have to do is pretty well the forces to be supported and the flying hour program associated with them or the operational concept behind a particular weapon as in the case of missiles.

Some of the things that we do in this workload planning effort is, first, to try to identify for the next 5 years the total workload.

Once we have identified the total workload, then we go back to the individual items which make up this total workload. Then we assess the workload against our existing policies and determine how this workload should be distributed between organic and contract facilities.

We take into consideration such things as the availability of skills, the need of acquiring new skills, the availability of facilities, the needs for modifying facilities or constructing new facilities, the total workload associated with a particular job, and many, many other factors.

Our first breakout of the total workload is broken out into five major areas, because of the compatibilty of the kind of skills which are associated with the various functional areas.

We have broken it down to missiles, aircraft, engines, armament electronic system, and then related airborne and ground equipment.

The workload as we see it from this particular chart—if you keep in mind the other chart I showed you that came to the 1960 period—you will note that there is a continuing downward trend in total workload, principally occasioned by the fact that we are introducing into the system more missiles. But the workloads associated with these missiles are not comparable to the workloads which are associated with the aircraft which we are phasing out of the inventory (C–37).

As we look down through 1965, we see that the missile workload is going to about double, but the total workload associated with these missile programs is less than 10,000 man-years. Not a very significant workload when viewed in the total (C–38).

As far as aircraft are concerned, we see a rather sizable decrease in this total workload. And I would like to say something here off the record, if I may?

Mr. HÉBERT. Off the record, Sam.

(Further statement off the record.)

Colonel RIEMONDY. I am back on the record now.

Mr. HÉBERT. Back on the record.

Colonel RIEMONDY. As far as aircraft are concerned, we visualize a rather significant reduction of some 12,000 man-years over the next 5 years.

And this will be principally absorbed within the contractual area because of the kind of weapons which are being phased out of the inventory, principally in the nonvital category (C–39).

As far as engines are concerned, we expect a corresponding decrease here, again principally associated with the aircraft that are going out.

The distribution of workload here as between contract and organic facilities, however, remains about the same (C–40).

In the electronics area, we expect a slight increase of about 1,300 man-years. And again the distribution as between contract and organic remains about the same. However, the mix is going to have to change, as to what is being done down here and what is being done up there (C–41).

In the case of our airborne and ground components, we expect a decrease of about 3,000 man-years between now and 1965 (C–42).

Now, in addition to this kind of detail, we go behind the scenes. And I have listed on several of the charts here—I see, I am running overtime.

Mr. HÉBERT. No, we are going to continue until the bells ring.

Colonel RIEMONDY. Until the bells ring, all right, sorry. I will just skip through the charts. I will speed it up. I won't go through all of them, because this next series of charts is repetitive in nature. All it does is deal with different components. But this kind of planning goes on.

We started our realinement in 1959 on these time-phase charts, of which this is a percentage distribution. In each case again, the blue is what we do in inhouse and the brown is what we do contractually. This will give you a feel of the distribution of our work as between contract and organic facilities.

You will note that even in the cases of some of our most vital systems we do not contemplate accomplishing 100 percent of the workload. We do not feel it is necessary to do 100 percent of the workload in order to have at our resources sufficient technical competence and sufficient know-how to meet emergency situations as they come up (C–43, 44).

These charts here pertain to the missiles. You will note in the case of the GAR–8, which is the Sidewinder—and this is a very important weapon. But nevertheless we are cross-servicing this one with the Navy, because they have a capability to maintain it. We feel we have enough know-how from working on these GAR's that it isn't necessary for us to work on this one also. And we are using cross-servicing arrangements with the Navy (C–45).

The aircraft picture looks something like this. In the case of the B–52, it is never planned to do 100 percent of that workload. However, as we move down again through 1965, we intend to pick up a bigger share of it (C–46).

The reason it decreases in 1963—this is tied into a special modification program. This job is of such nature that we have assessed the only people that can do it at this point in time because of the nature of the modification is the prime manufacturer.

However, in 1964, then, we will be doing a most sizable part of this particular job.

The B–57, which we consider to be not a vital weapons system—we phased it out completely at the end of this year (1961) to contract.

The B–58, as it comes in: We are going to do this one—in this particular case we are going to do 100 percent of this airframe workload because the total size of this job does not warrant having a split source.

In other words, on the numbers of birds involved here, or the total workload, we don't feel we can afford to have two people in the business. So we are going to single-point this particular job.

The KC–97: All out on contract.

These charts, then, depict some of the phasein and phaseout actions. In the case of fighters, as I mentioned before, we phased out the F–84, the F–86 and the F–89. Doing more of the F–100, doing considerably more of the F–101, a good portion of the F–102 (C–48).

However, as this mission changes, we will start phasing out more of it to contract.

The F–104: Doing a portion of it inhouse and a portion out on contract. This is principally tied into the fact that we phased these aircraft out of the Air Force in inventory into the Air National Guard (C–49).

In the case of the engines—just briefly on some of these engine charts.

Again, these are the principal engines that we are doing organically. The J–57 of course which is the backbone of our fleet, we are doing these at Oklahoma City and San Bernardino.

We started to phaseout some of our 2–4360's, principally at Warner Robbins, and we phased out those series of this engine which are in support of our nonvital aircraft. We will continue to keep San Antonio in business on this engine, and also Sacramento, for a period of time. Then we will phase Sacramento out of that engine.

The J–71's is all being done at Middletown.

The J–75 all at Oklahoma City.

The J–79 also at Middletown. We have two turboprop engines, the T–34 and the T–56 (CX–50). These are being done at San Antonio. The rest of the engines have been phase out to contract (C–51).

However, as you note here, we are maintaining an organic capability for accomplishing those engines which power those aircraft which are assigned our most important missions. We feel this gives us enough capability in the engine field.

Now we have done the same thing in fire-control systems, and I won't go through all these charts, except for the this one.

Recognizing that there was a realinement necessary, and recognizing that perhaps we did not have in being the necessary skills to do the job, and recognizing that perhaps it would be too much of a jump in going from this relative position of limited know-how to a much higher position, we deliberately workloaded some of our nonvital systems into some of our facilities, to create the necessary training base.

And once we had acquired this know-how we moved, for example, this E–4 fire-control system, which is part of the F–86, out to contract, and in its place we moved in the MG–10 fire-control system.

Note the buildup here, corresponding at the same time period. We had acquired the necessary how-how, learning to walk first, on the E–4, and graduated into the MG–10, and this year we are doing all of the MG–10 (C–52, 54). [Pointing to the charts showing the E–4 phaseout and the MG–10 phasein.]

Mr. HÉBERT. Would it be fair to say, Colonel, then, that your general philosophy in future planning is directed that in the vital or essential area you pull them inhouse?

Colonel RIEMONDY. Yes, sir.

Mr. HÉBERT. The less vital, or the less essential you will contract out?

Colonel RIEMONDY. Yes, sir.

Mr. HÉBERT. Is that the general overall program?

Colonel RIEMONDY. That is correct.

And we do this on an orderly time phase basis, in order to make proper use of the resources we have, to provide necessary leadtimes for training, and at the same time to provide the necessary leadtimes to either go contractually or organically, so that we don't degrade our combat support. This is the whole objective of this particular exercise.

Now in addition to doing all of this planning we take a real good look-see at our organic resources and ask ourselves, How must we change the mix? What does the future look like? How will the workloads distribute between these five areas I talked about?

For example, here is a chart on Ogden. It shows that over this time period we are going to have a rather substantial buildup in missiles. This is because the Minuteman is coming into the inventory, plus greater emphasis on the Bomarc, and a little bit later on the Skybolt (C–58).

So we are taking planning action, way back here, to acquire the necessary resources to effect the necessary training in order to put ourselves in a position to do this job at this point in time.

Also it shows what we phase out—since we have to phase something out—of the organic establishment in order to provide the necessary manpower to do that job?

This is blown up a little bit more on this chart and this depicts the rather significant increase in the missile workload, and manpower being made available from redistributing some of the other workloads which these people were formerly doing (C–59).

Mr. NORBLAD. What is your SM–80, and your IM–99 there?

Colonel RIEMONDY. The SM–80 is the Minuteman. The IM–99 is the Bomarc, and this is the Skybolt as it comes along.

Mr. HÉBERT. Now, how much more do you have to finish?

Colonel RIEMONDY. I can finish right here, sir, because the rest of these charts are merely an indication of the same kind of rationale which is applied to all the rest of our air materiel areas (C–60–67).

Mr. HÉBERT. So that concludes your presentation?

Colonel RIEMONDY. That concludes my presentation.

Mr. HÉBERT. Well, thank you—you want to ask a question?

Mr. COURTNEY. Mr. Chairman. You have—the numbers of men: This was the question that was raised.

You have the actual numbers of men in one of your series of charts, civilian versus military, who are performing these tasks.

Colonel RIEMONDY. Principally, Mr. Courtney, these people are all civilians. I am talking to the depot level.

Mr. COURTNEY. Yes.

Colonel RIEMONDY. Our depots are principally manned by civilians, and a handful of military personnel.

Mr. HÉBERT. Well, thank you very, very much, Colonel. You have given a very splendid and comprehensive presentation. The committee appreciates it.

Colonel RIEMONDY. Thank you, sir.

Mr. HÉBERT. Very comprehensive.

Did you want to ask something, Mr. Norblad?

Mr. NORBLAD. No. I just wanted to say he did a very nice job.

Mr. HÉBERT. He certainly did.

The committee will stand in recess until 10 o'clock tomorrow morning.

Very fine, Colonel.

Colonel RIEMONDY. Thank you.

Mr. HÉBERT. Very fine.

(Whereupon, at 12:15 p.m., the subcommittee adjourned, to reconvene at 10 a.m. Friday, August 11, 1961.)

MAINTENANCE Engineering

OBJECTIVE

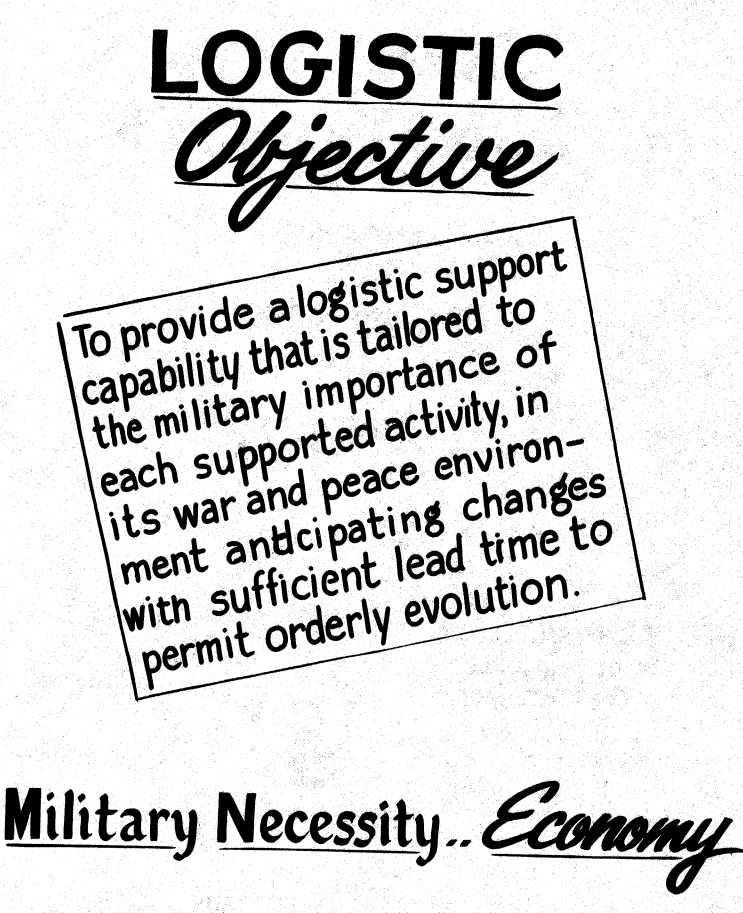
to portray the

MAINTENANCE ENGINEERING STORY

thru a discussion of the evolution of policies, concepts and philosophies which dictated the way we have accomplished the Maintenance Engineering Functions....

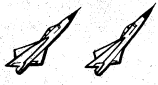
MOBILIZATION CONCEPT

MAXIMUM OPERATIONAL READINESS CONCEPT


LOGISTIC
Objective
To provide a logistic support capability that is tailored to the military importance of each supported activity, in its war and peace environment anticipating changes with sufficient lead time to permit orderly evolution.
Military Necessity.. Economy

Summary of CONSTRAINTS

FORCE TO
BE SUPPORTED
IS
Dynamic



No. of A/C series to be supported increased from 74 in 1950 to 149 at the end of 1960 + Missiles

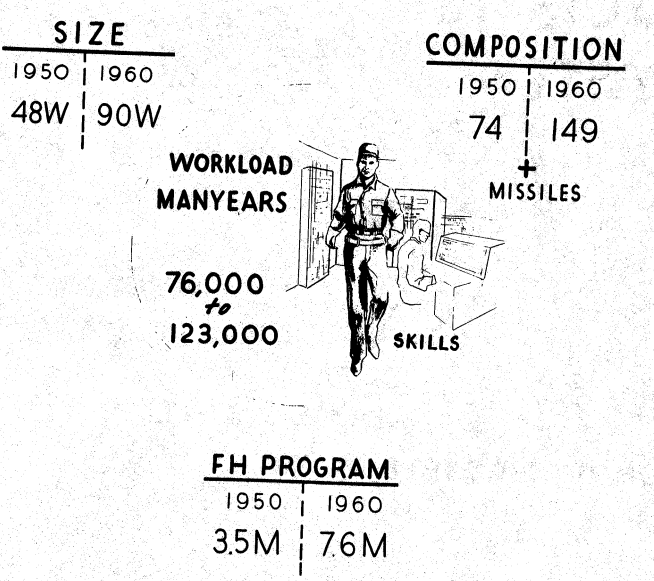
Cost and complexity of equipment

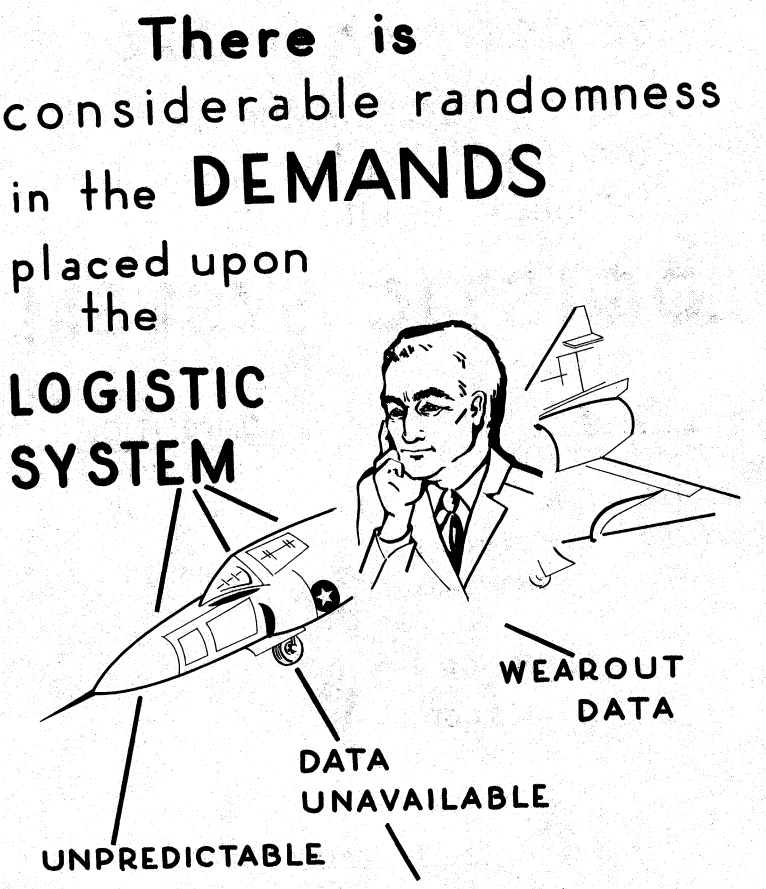
Line items in system increased from 720,000 in 1951 to 1,600,000 by 1960

Composition and **Size**

of force structure and its attendant flying hour program determines magnitude of the

LOGISTIC SYSTEM




There is
considerable randomness
in the DEMANDS
placed upon
the
LOGISTIC
SYSTEM
WEAROUT
DATA
DATA
UNAVAILABLE
UNPREDICTABLE

WHAT IS MAINTENANCE ENGINEERING ?

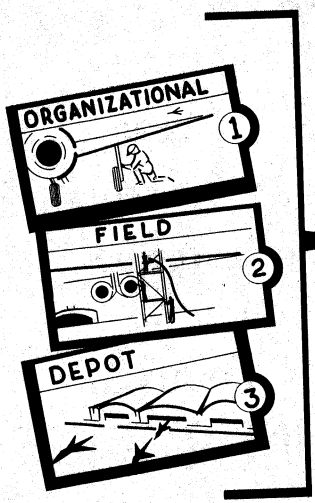
1. We are unable to design materiel which is free from defects.

2 Materiel is subject to deterioration and wear thru use.

3. If it is to remain serviceable, it must be maintained

The tasks associated with keeping materiel in an operable status is the function of MAINTENANCE ENGINEERING —

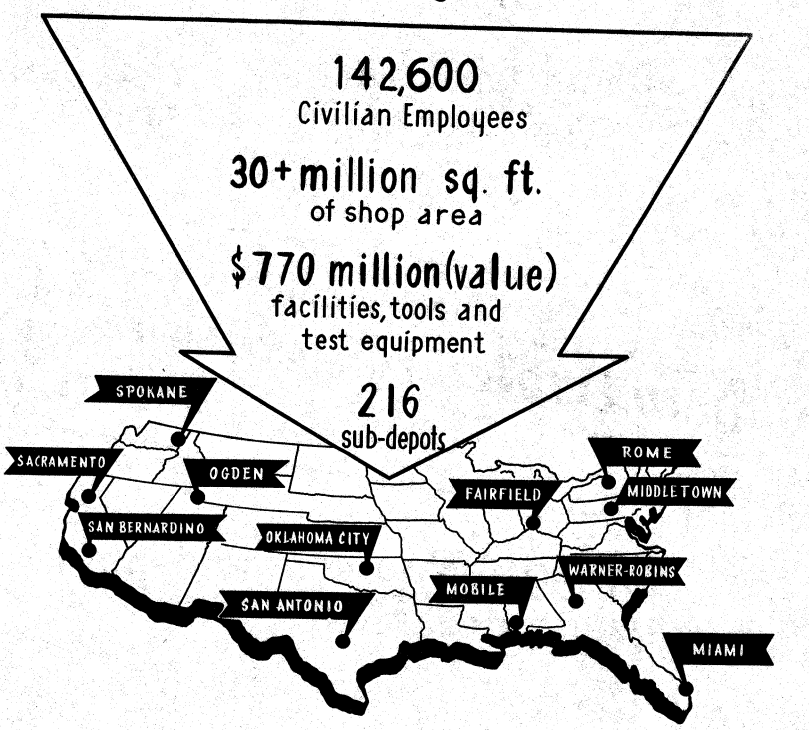
The AIR FORCE has established 3 levels of MAINTENANCE



The magnitute, complexity, and investment of facilities, special tools and test equipment, and the degree of skills required to accomplish maintenance are the principal criteria which serve to differentiate between the levels of maintenance

MAINTENANCE ENGINEERING

during World War II



- Force structure had been reduced from World War II level of 273 groups to 48 groups.
- Depot labor force ZI reduced from 142,600 to 66,500

Deactivated MIAMI, SPOKANE, ROME & SAN BERNARDINO FAIRFIELD AIR DEPOTS

- Majority of overseas depots were deactivated

Cycled reconditioning of C-47 and C-54 by TEMCO, AEMCO and LAS

utilize

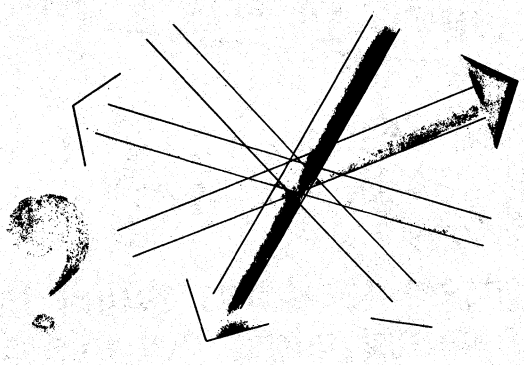
Contract facilities rather than expanding our depot system.

1949

Decision to build Air Force structure to 143 WINGS

Increased woakload will require additional facilities.

- Activate San Bernardino & Rome
- Construct new depots
- Use contractor facilities



the Concepts of

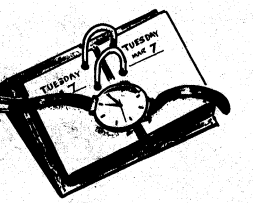
Maintenance following World War II thru the early 1950's dictated that an *Expandable Mobilization Base* had to be maintained in Peacetime to aid timely accomplishment of National Emergency Missions *(RAWLINGS LEWIS AGREEMENT)*

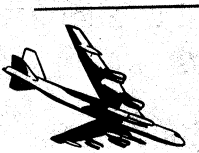
Available Weapons established that

- Length of War would be similar to World War II.
- Ample time for mobilization of our Resources.

1. Develop and maintain a high degree of personnel proficiency

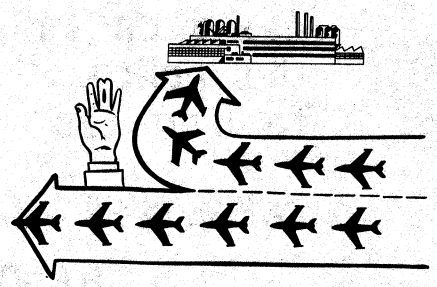
2. Utilize depot facilities on a 1 shift - 40 hr. week operation



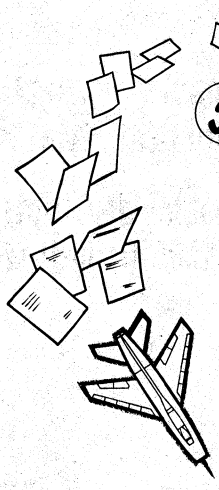


3. Schedule first line aircraft and engines to depots

4. *Maintenance Workloads* beyond one shift capability will be contracted to industry.



- Prime Manufacturers
- Commercial Maintenance



5. *Continue* Contractual Maintenance Programs but not the extent it would endanger the A/F M/E capability during an emergency.

Based on an evaluation of this policy, it was decided to limit the .....

"IN-HOUSE" LABOR FORCE to 66,000 people

this number would provide

- A sound mobilization base.
- A reasonable utilization of depot facilities.
- A reasonable distribution of workload to industry.

TODAY's CONCEPT *of Operation*

- Future all out conflicts will be fought with weapons at hand
- Old mobilization concept no longer valid
- Today's logistic system must assure that forces in-being are maintained in a maximum state of combat readiness

- IN ACCOMPLISHING THE MAINTENANCE ENGINEERING TASK, AMC MUST:
- Provide an Air Force depot establishment responsive to military needs.
- Establish an organic capability for total management of Air Force Maint. Engr. programs to assure inviolate support to combat forces.

- Base decision for depot or contractor support, on military need
- Utilize organic resources for accomplishment of workloads most vital to combat readiness
- Insure complete technical competence for new weapons entering the inventory

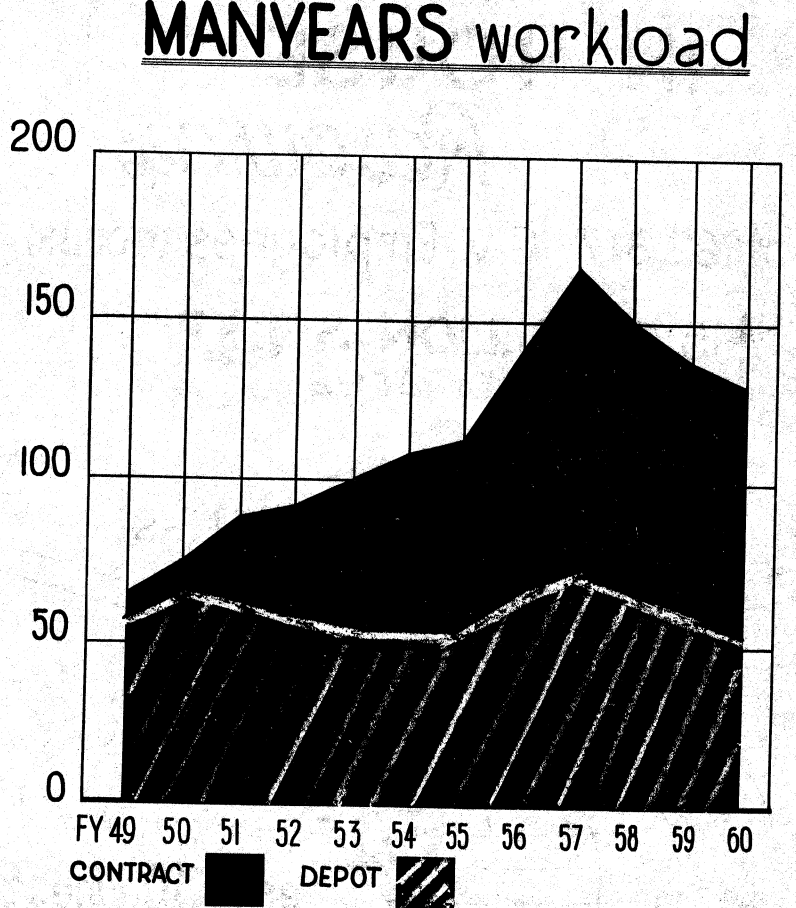
- INDUSTRY WILL ACCOMPLISH WORKLOADS:
  - Not vital to combat readiness
  - In support of weapon systems not assigned missions requiring immediate response in national emergencies

- In support of weapon systems for which a decision to produce for the inventory has not been made
- On selected items where available production facilities possess sufficient maintenance capability and the cost to duplicate would be prohibitive

continue the in-house industry relationship only to the extent that it

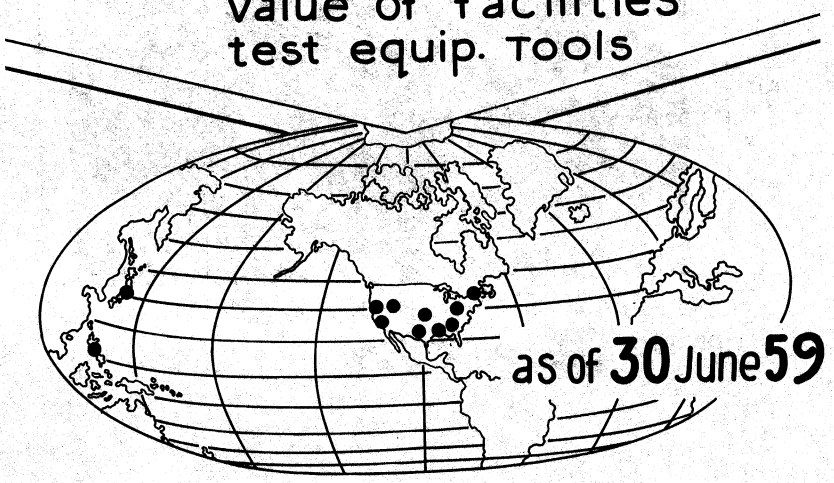
Does Not Endanger

the Air Force capability of assuring that the forces in being are maintained at a constant state of operational readiness


MANYEARS workload
200
150
100
50
0
FY 49 50 51 52 53 54 55 56 57 58 59 60
CONTRACT
DEPOT

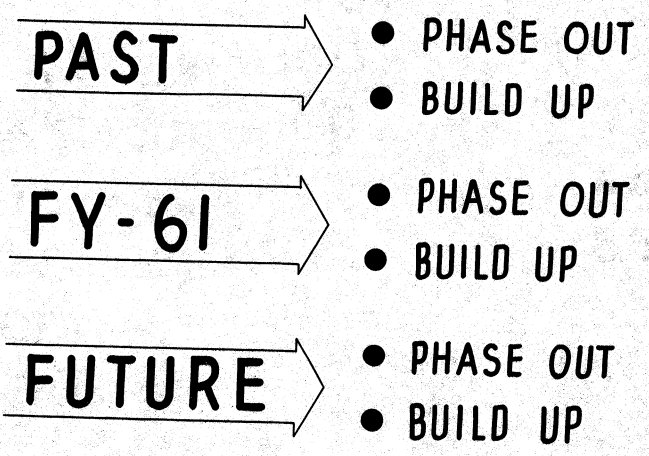
"IN HOUSE" Resources

- ★ 62.317 Civ. Employees (conus)
- ★ 15.8 **MILLION SQ. FT.-** shop area
- ★ $385 **MILLION-** value of facilities test equip. tools



as of 30 June 59

REALIGNMENT ACTION



F - 89J
F - 100
F - 101
F - 102
F - 104
F - 105
F - 106

B - 47
B - 52
B - 58
B - 66
B - 70

KC - 97
KC - 135
RC - 121
C - 124
C - 130
C - 133

All missiles

AC&W network

Associated Alert Systems

PAST ACTION

PHASE OUT	BUILD UP
• Aircraft F-89, 86, 84 C-123 B-47 C-124 (MATS)	• Missiles SM-65 GAM-77 IM-99
• Engines R-3350 J-73 J-65 R-4360	• Gnd Supp Eqp GAS TURBINE EQP PACKETTE ENG.
• Associated Comp & Accessories	• Armament ASB-4/9 BNS MA-1 ANCS MD-7/ASG-ZI FCS ASQ-42 BNS MG-10 FCS MG-13 FCS
	• Ground C&E MDA

1-27

27

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FY-61 ACTION

REALIGNMENT or PHASEOUT	BUILDUP
• Aircraft B-57 B-66 KC-97 F-102 (SA, SB)	• Missile SM-68
• Engine R-4360 (WR) J-71 J-47	• Accessories B-52/B-58/KC-135
• Armament E-SERIES FCS MG-12 FCS A-5/MD-4 FCS	• Armament *Continue buildup of* ASB-4/9 ASQ-38 MA-1 MD-7/ASG 21 ASQ-42 MG-10 MG-13
	• Ground C&E Continue Buildup of MDA.

FUTURE ACTION

PHASE OUT	BUILD UP
• Aircraft F-102	• Aircraft B-52G/H KC-135
• Engines R-4360 (SM) J-57 (SB)	• Engines TF-33
• Missiles SM-75 SM-78	• Missiles SM-80 GAM-87 INERTIAL GUIDANCE
	• Instruments MD-1 ASTRO-COMPASS KS-120/140 ASTRO-COMPASS
	• Accessories CONTINUE BUILD UP B-52/B-58/KC-135
	• Armament CONTINUE BUILD UP F-101/F-105/F-106 B-52/B-58
	• Ground C & E CONTINUE BUILD UP MDA

POLICY

DOD DIRECTIVE 4151.1

(26 JULY 1960)

A

It is a general policy of the Department of Defense to utilize private industry for the accomplishment of maintenance of military materiel to the maximum extent practicable, recognizing that *maintenance in support of military missions is a vital part of military capability which shall not be compromised*

Continued

B

Each military department shall develop and/or retain an in-being military depot level maintenance capability for only that mission-essential materiel which would require continuing depot level maintenance to sustain operations under emergency or wartime conditions or which would require such depot maintenance in peacetime *to assure operational readiness*

Continued

This policy should not be construed as requiring a complete capacity when materiel is determined mission-essential. The extent should be only the minimum capacity necessary to insure *a ready and controlled source of technical competence and resources to meet military contingencies.* Contractual sources or interservice support may be used for the depot maintenance of mission-essential materiel to any extent beyond the established minimum capacity

USAF INTERPRETATION of DOD 4151.1

- USAF will have an organic capability to support military missions declared essential.
- Contract resources will be used for non-vital workloads and overflow of mission essential workloads.
- USAF organic resources in support of vital workloads will be limited to the minimum capability necessary to insure technical competence and to meet contingencies.
- In cases where total vital workload is done contract some realignment of workloads will be made.
- Some W/S declared mission-essential may never be brought into the depot.

ASSUMPTIONS

1. Manpower authorized commensurate with workload based on policies governing use of commercial and military resources for maintenance
2. Internal manpower realignments commensurate with workloads
3. Vital workloads currently on contract realigned only to extent necessary to insure technical competence and minimum capacity for military contingencies