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Defense and Mr. McNamara

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STATEMENT OF SENATOR MIKE MANSFIELD (D., MONTANA)

HOLD FOR RELEASE
FRI DEC 13 1963

DEFENSE AND MR. McNAMARA

Mr. President:

For some time the Government Operations Committee has been inquiring into the circumstances surrounding the award of a contract for development of the T.F.X. plane. What will emerge from this investigation, what legislation will derive from it, cannot be foreseen. It is not my intention to anticipate, much less to prejudge the Committee's findings. But whatever the outcome, let there be no doubt as to the interest of the Senate in this matter. It is an entirely appropriate and pertinent interest.

Public funds are spent in vast sums for military research and development. Together with the President, it is the Congress which provides the legal basis for the procedures under which these funds are expended. It is the Congress which appropriates these funds. It is the Congress which must answer to the people as to the general wisdom of the appropriations. And in part at least, the Congress must answer for the effectiveness with which these appropriations are disbursed by the Executive Branch. The very process of Committee inquiry, moreover, has significant value in an educative sense. And in the end that which may be learned in this or any particular case could well have wider legislative application. In inquiring deeply into the T.F.X. matter, therefore, the Committee on Government Operations is discharging a wholly legitimate function by authority of and on behalf of the Senate.

May I say that what has transpired to date in the investigation has led me to take the floor today. I do so to give voice to the views of one Member of the Senate, a Senator from Montana. The views are not new. Rather, they are views which have accumulated over the years and have begun to crystalize in the light of developments in the T.F.X. inquiry.

It is apparent from these hearings, that an immense number of factors were involved in the T.F.X. contract award. Some of these factors are of a military nature. Others are broader than military in their implications. And many are not open or shut tangibles but, rather, involve best judgments on the part of the men who are expected by the nature of the responsibilities entrusted to them to make best judgments.

Since such is the case, I do not believe that it is reasonable to expect any Senator or Committee of Senators to say with certainty that Secretary McNamara's decision in the T.F.X. was the right one or the wrong one. Nor do I believe that the spokesman of any particular branch of the Armed Services is competent to say with certainty that the Secretary's decision was the right one or the wrong one. Nor, in the light of the factors involved, are all of the spokesmen of the military services combined competent to do so. To be sure, their professionalism gives great weight to such objective military opinions as they may advance. But we should not overlook the fact that their very professionalism compels them to regard the development of a piece of military equipment, not in the context of total costs and national policies but largely in terms of military desirability and specific utility and, perhaps, even more pointedly, in terms of military desirability and specific utility as seen against a background of a particular training and service experience. That is as it should be. Military leaders are not required and ought not to be required to answer

the questions of the people of this nation as to the additional tax burdens or the neglected civilian needs which any military cost may entail. But these questions must be answered by someone in this government. Indeed, they must be answered by the President and by the Congress. And because that is the case and must remain so under a system of free and responsible government, it is not appropriate and it may be misleading to weigh military observations on any weapons-system in a vacuum and to assume that decisions arrived at on that basis are automatically the valid decisions.

Even Mr. McNamara, the Secretary of Defense, with all due respect, cannot speak with certainty as to the correctness of his decisions in the T.F.X. matter. Only time, if even that, will permit a logical assessment of his specific judgments.

The truth is that there are no certainties in matters of this kind.

T.F.X. apart, I am inclined to think--and I reason now from history rather than specifics--that at some future date it will be seen in retrospect that Mr. McNamara made many correct decisions as Secretary of Defense and occasionally that he made wrong decisions. But for the present, all that can be asked, all that should be asked, of any man in his position is that, under the President, he exercise every diligence and full dedication to his public responsibility and do his best to reach the best decisions.

On that score, Mr. McNamara needs no defense from me or anyone else. His record speaks for itself. His is, in these times, the most difficult and the most complex assignment in the government after the President. His immense international responsibilities which dovetail with those of the Secretary of State involve questions of life or death for tens of millions in this country and elsewhere.

In addition, he has the supreme administrative responsibilities for the Defense Establishment. That Department now contains a million civilian employes and more than two and a half million men and women in uniform.

Reposed in him is the trust of dispensing public funds in excess of \$50 billion a year, a sum equal to more than the total of all other federal expenditures combined.

In the light of these vast responsibilities, Secretary McNamara has been an outstanding and exceptional servant of the people of this nation. He was a tower of strength to the late President in carrying the great burdens of Chief Executive. His remaining in office at the request of President Johnson is an assurance to the nation that we will continue to have the highest possible degree of intelligent, experienced and dedicated public service in this most critical Cabinet position.

Mr. McNamara was confirmed by the Senate as Secretary of Defense to see to it that this nation has the kind of defense structure which the President, together with the Congress, deem necessary for national security. He was confirmed by the Senate to bring about and maintain that structure at the lowest possible cost to the people of the United States. That--no more, no less--is what the law, the Constitutional powers of the Presidency, and the dimensions of the office of Secretary of Defense require of him. And I should think that every Member of this body would want to consider a long time, a very long time, before seeking to require anything else of this Secretary of Defense or any other. I should think, too, that we would want to consider a long time, a very long time, before curbing or undermining the authority of the office of the Secretary of Defense in view of the critical decisions which must be made if this responsibility is to be effectively exercised.

If the Secretary of Defense does not have the authority to make the critical decisions where else shall it be lodged in this government? What shall we require of the Secretary if it is not the critical decisions? That he serve as a kind of coach or water-boy or, perhaps, a chaplain for the military services? That the final decisions, not merely those of the battlefield but of defense management and technology in effect, shall be made by military personnel? If I may be blunt, Mr. President, it would appear, in that concept, that the Secretary's principal functions would be reduced to fighting for the Defense Establishment's share of the total national budgetary pie and then to keeping the various services from coming to blows over how it is to be divided. If I may be blunt, in prior years we have had our experience with that kind of an approach.

Indeed, the Secretary of Defense is a sort of umpire. But the fact is that the present Secretary of Defense is an umpire who has sought increasingly to establish service-needs and expenditures on the basis of the requirements of total national policies and in response to the admonitions of the Congress for economic and efficient operation of the Defense Establishment. He is an umpire who has exercised the authority of his office to say, not only "yes," but "no," when necessary, and to make the "no" stick. He has exercised the power to say "no," increasingly, to curb that notorious invitation to waste and extravagance, the cost-plus contract. He has exercised the power to say "no" to budgetary requests from the various services which often and understandably are heavily influenced by a one-service rather than an all-service concept of national defense. He has exercised the power to say "no" to separate service purchase of common use items of equipment and supply. And the Congress knows that this type of purchasing did much to bring about the stockpiling of military surpluses,

surpluses whose costs dwarf even those engendered in agriculture. He has exercised the power to say "no" to certain new weapons developments. However, any such development may intrigue its advocates, from the national point of view it ought not to be pursued unless it contains sufficient promise and can otherwise justify itself on the basis of cost-to-potential contribution to total defense. And lest there be any doubt of the need of such curbs, I shall read to the Senate a list of projects and their cost to the public-- projects which over the past ten years did indeed intrigue their advocates but which were abandoned before completion or declared obsolete or surplus soon after completion.

S E E

L I S T

The total cost of these abandoned projects in the past ten years is over \$5 billion. To be sure, some value, some experience, may well have been obtained from each of them. But let there be no mistake about it. Taken together they are indicative, to say the least, of an immense and conspicuous consumption of the nation's supply of talent and facilities for research and development. For this technological high-living, it is the people of the United States who must pick up the check in actual military costs and in the incalculable costs of a distorted usage of scarce scientific and technological resources.

Taken together these abandoned projects have represented, too, a major factor in running up the accumulation of surplus and obsolescent property by the armed services. For years in the past the total of such property disposed of at a fraction of cost has fluctuated between \$4 billion and \$8 billion annually. To put this figure in some kind of perspective, consider that it means that every year our military establishment got rid of, at a fraction of cost, assets with a value anywhere from about equivalent to, to double the amount that the United Kingdom expends on all its armed services for all purposes. In short, the British have been running their Army, Navy and Air Forces year in and year out for something less than the cost to us of our annual losses through excess military accumulations or obsolescence.

Mr. President, the Secretary of Defense, has, indeed, said "no" with frequency during the three years in which he has been in office. Yet there is nothing to suggest that because he has done so our defense position in the world is any less effective, any less impressive than heretofore. On the contrary, such indications as there are suggest that the Defense Establishment is better prepared and more capable of meeting a wider range of possible military challenges to this nation.

There is a good deal of talk about the high cost of government and the need to cut expenditures. In the light of this talk, I cannot imagine that anyone in the Senate would wish to undermine the Secretary's authority to say "no" to the ever-present and immense bureaucratic pressures for expenditures within the Defense Establishment. To be sure we can chop away at almost any item in the budget. The Department of State, for example, had a budget request for \$374 million this year and a show of economy can be made by reducing it and closing a few consulates abroad in the process. But we are deluding ourselves if we believe for one moment that it will be possible to curb the growth in the cost of the federal government, let alone reduce that cost significantly unless someone has the authority, under the President, to act decisively in connection with defense expenditures. For that is where the great expenditures are. In the 1964 budget, for example, \$53.7 billion was proposed by the President for the Defense Establishment. The next allocation in size in that budget was \$11.3 billion for Treasury, and of this total \$10.2 billion represents an allocation for interest on the public debt.

I ask the Senate to note, further, that the figure of \$53.7 billion in new obligational authority for the Defense Department represented the final figure proposed in the budget submitted to Congress early this year. But before it was arrived at, Secretary McNamara had pared down requests from all of the individual military services under his supervision. When these individual requests initially reached his desk they totaled the great sum of \$67 billion. In other words, Mr. President, the services, left to their own individual devices, would have sought of the Congress \$13.3 billion more than the Secretary of Defense, in the end, allowed them to ask. And yet in spite of this enormous cut, the \$53.7 billion requested for the armed services for fiscal year 1964 was still a record high.

With all due respect, would the President have been in a position to direct, except arbitrarily, a cut of \$13.3 billion in the combined requests of the various services? With all due respect, would this body or even its exceptionally capable Armed Services Committee have been able to say "no", with any degree of confidence, to the tune of a reduction of \$13.3 billion? Would the equivalent body in the House? With all due respect, I think the Congress would have had great difficulty in knowing where to enter the jungle of Defense finance and I doubt that we would have gone much beyond the fringes for fear of jeopardizing the necessary defense of the nation.

And, so, Mr. President, we are back to a Secretary of Defense with authority. If we did not have one he would have to be invented.

I am persuaded that we have in office an exceptional Secretary of Defense who is attempting to meet the full responsibilities of that office. I believe that he is exercising with great determination, intelligence and knowledge the authority which must go with those responsibilities.

It would seem to me that we ought to do whatever we are able to do to help him in his responsibilities. For we are all in agreement that we are seriously challenged by Communist power from abroad in a military sense as well as in other ways. We are all in agreement that against the military challenge there must be posed the necessary military defense for the security of the nation, at whatever the cost.

But the extent of the challenge from abroad is a variable depending upon changes in the world situation. The phrase "necessary military defense" is a variable, subject in interpretation to infinite extension.

And the phrase "at whatever the cost" is a blank cheque which if taken in a literal sense, can be drawn, in the end, upon the total resources of the people of the United States.

These are realities, Mr. President, which are just beginning to dawn upon us. These are realities with which, I believe, the present Secretary of Defense is seeking to grapple. These are realities to which, as legislators, we must turn our attention. It seems to me that we must begin to think deeply as to how the dimensions of "necessary military defense" may be drawn and redrawn more accurately in the light of an ever-changing international situation. And we must ask ourselves, too, how are we to keep "whatever the cost" of that necessary defense at a rational level in order that, in the end, it does not overwhelm the nation.

These are not empty questions nor are they theoretical questions. "Necessary defense" has been defined and redefined consistently over the past decade as more and more. "Whatever the cost" has risen from \$37.8 billion in fiscal 1954 to the \$53.7 billion which was requested for fiscal 1964. And the latter figure, as already noted, was presented to the Congress after the Secretary of Defense had reduced ~~by~~ the initial service requests of \$67 billion by \$13.3 billion.

May I say that it is understandable if, in defining the dimensions of necessary military defense, those who have direct military responsibility are inclined to leave a margin for safety. That is appropriate; it is proper; it is to be commended rather than criticized. After all, those who have these responsibilities are grappling in an area which is both inexact and ever-changing and one which is not subject, in the end, to computer-calculation.

I, for one, do not begrudge the cost of a margin for extra safety--a substantial margin--and I believe the people of the nation

are similarly inclined. But the problem still remains. We must be ever-mindful lest in determining what is necessary for military defense we become so obsessed with the extra margin for safety that it grows into a fear-fed monster which, in the end, devours that which it is designed to safeguard.

In the same fashion, our willingness to pay "whatever the cost" of necessary defense must not be an invitation to acquiesce in administrative procedures within the defense establishment which tend toward wasteful rather than prudent expenditures. And I would emphasize that in this area--in the area of management procedures--there is no excuse for an excessive margin of safety. Expenditures for the management of the defense establishment, unlike the determination of over-all defense needs, can be subject to reasonably exact control by computer-calculation, by accounting procedures and by the many other tools of modern American business management.

If I may sum up, Mr. President, two questions ought to be ever-present in our minds in considering any problem of defense:

1. How are we to insure that this government defines and re-defines "necessary military defense" with full adequacy but without fantastic and obsessive excess, in a world situation in which "necessary defense" is an ever-changing but not necessarily an ever-increasing quantity?

2. How are we to design the procedures within this government and within the Defense establishment so that they will provide this fully adequate necessary defense at the least cost to the people of the nation who, in the end, must pay for it?

There is no formula by which these questions may be answered. For years, we have been ordering and re-ordering the processes of the Executive Branch, in order that that branch may define more accurately for the President the nature of the international dangers which confront us. For years we have been ordering and re-ordering the structure of the Defense Department, in an effort to limit expenditures to the necessary. Yet year after year the problem has loomed larger.

If there is not an easy formula, there are certain negatives which might be examined for the light that they shed on what may stimulate defense costs far beyond the necessary. These are the things, it seems to me, we must not do, if we mean to keep a rational perspective on the realities which face us in the world and, in the light of them, hold expenditures for defense at a rational level consistent with national security. These negatives, these tentative observations, I should like to leave with the Senate in concluding my remarks.

In defining and redefining the dimensions of "what is necessary" for defense, we are likely to leave a most wasteful, rather than a desirable margin for safety unless these realities are recognized anew:

1. That, under our system of government, there can be no substitute for the preponderant judgments of the President as to the total and the ever-changing challenge from abroad to this nation. These judgments must provide the key for determining the essential dimensions of what is militarily necessary for the security of the nation.

2. That, in making his judgments, the President must necessarily depend on advice and counsel from whatever sources he deems appropriate--military and civilian--but once his judgments are made, it is inappropriate for any permanent official of the Executive Branch--military or civilian--to do other than his best to carry them into effect.

3. That the President's judgments--once made--in this connection are subject to challenge not by permanent officials of the Executive Branch--military or civilian--but only by the Congress, acting as the Constitution makes clear that it can and shall act, by legislative initiative and by legislative oversight.

4. That, under the President and the laws of the land, the Secretary of Defense has the authority to establish--with the help of the Joint Chiefs--the strategic concepts which shall set for all the armed services, their appropriate roles in maintaining the kind of defense which the President and the Congress have deemed necessary for the nation's security; and, further, that within the Defense Establishment, the Secretary of Defense has authority to control administrative procedures and practices for efficient and effective operations.

And if I may continue with the negatives, Mr. President, I should like also to stress that we are not going to get an effective and efficient defense at a tolerable cost unless it is recognized in all frankness:

1. That the Defense Establishment, as the largest single purchaser of goods and services in the nation, has come to occupy a substantial position in the civilian economy of this nation; that, in this connection, what the Defense Department does or does not do has come to have great importance not only for defense but for the well-being of business, labor and whole communities scattered throughout the nation.

2. That, in the light of this economic position which the Defense Establishment occupies it would be a gross naivete to assume that pressures--increasing pressures--will not be present for decisions to be made by the Defense Department not solely on considerations of necessary, effective and efficient defense--and may I say that colloquies on the floor between Senators from various of the larger states underscore this point.

3. That however understandable these pressures may be--and as a Senator from Montana I hope that I try to do as much for my state as any other Member--the nation will be ill-served if there is not within this government those attitudes and those conditions for administration of the affairs of the Defense Establishment which permit the decisions, in the end, to be made on the basis of necessary, effective and efficient defense.

Mr. President, in making these remarks today, I have not been unaware of the eloquent farewell address of the former President, Mr. Eisenhower, in which he warned of the need to guard against the development of an industrial-military complex of power in the nation. Nor have I been unmindful of dangers to that classic doctrine of freedom--the doctrine of civilian supremacy.

And yet, with all due respect, I do not see the principal difficulty which confronts us in these contexts. If there were ever to be an imminent danger to freedom in this nation of the kind alluded to by Mr. Eisenhower, it is not likely to be the cause of the failure of popularly responsible government. Rather it is likely to be the consequence of the failure of civilian responsibility in the Congress no less than in the Executive Branch of the government. And I want to say to the Senate, that this system of freedom which we know will not fail. It will not fail so long as an excessive fear does not drive us to an obsessive interpretation of what is necessary for defense. It will not fail if we are prepared to face the economic and social difficulties which confront the nation and deal with them on their own merits--their civilian merits--rather than to seek to evade them, or to act on them haphazardly and inadequately and ineffectively because we find it easier to act under the camouflage of an inflated concept of military necessity.

These, then, Mr. President, are some of the observations which I have to make. They are observations stimulated by the work of the T.F.X. inquiry which is being conducted by the very able Senator from Arkansas (Mr. McClellan) and his distinguished colleagues on the Government Operations Committee. They are observations growing out of a very high respect for the patriotic dedication and the ability with which Mr. McNamara is seeking to serve the nation under the President.

It is incumbent upon all of us, it seems to me, not to ignore these larger implications of the T.F.X. matter. It is incumbent upon us-- the President, the Congress, the press and the people of the United States-- to face them, to discuss them, and, as necessary, to act on them within the Constitution.

Department of the Army
Projects Cancelled
(1953 - 1963)

<u>Project Title</u>	<u>Year Cancelled</u>	<u>Funds Invested (Millions of Dollars)</u>	<u>Prime Contractor(s)</u>
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MISSILES

DART	1958	44.0	Aerophysics Corp.
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A wire-guided surface-to-surface antitank missile with a range of approximately 6,000 yards. This missile system was cancelled since the French designed SS-10 proved to be more effective in this role.

ORDNANCE, COMBAT VEHICLES AND RELATED EQUIPMENT

VIGILANTE	1961	32.0	Sperry Gyroscope
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A 6-barrel, 37mm automatic anti-aircraft gun system mounted on a full-track vehicle chassis and complete with radar fire control. This gun system was cancelled since the MAULER surface-to-air missile system has been designed and should be more effective in the anti-aircraft role intended.

OTHER EQUIPMENT

AN/USD 4 Drone	1960	40.0	Republic Aviation
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A medium endurance surveillance drone, capable of carrying a 450 lb. pay-load for 55 minutes duration. This drone program was cancelled since it was considered that the AN/USD-5, when developed, could perform this mission as well.

AN/USD 5 Drone	1962	103.3	Fairchild Astro Corporation
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A long-endurance surveillance drone, capable of carrying a 450 lb. pay-load for 90 minutes duration. This drone program was cancelled since cost effectiveness studies have indicated that the Air Force with their F4C and RF-101 modernization program can perform the mission more effectively.

Department of the Navy
Projects Cancelled
(1953 - 1963)

<u>Project Title</u>	<u>Year Cancelled</u>	<u>Funds Invested (Millions of Dollars)</u>	<u>Prime Contractor(s)</u>
<u>AIRCRAFT:</u>			
SEAMASTER	1959	330.4	Martin Co. Marlan Const. Co.

Jet powered mine laying seaplane. Specialized for low altitude attack against submarine pens. Cancelled because of technical problems, high cost and slippage in program.

MISSILES:

REGULUS II	1958	144.4	Ling Tempco L.F. Stillwell & Co.
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Surface-to-surface missile with 500 nautical mile range and weight of 11,570 lb. equipped with Shoran grid guidance. Cancelled because it became redundant when better systems were assured before its completion.

PETREL	1957	87.2	Fairchild A/C
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Air-to-surface missile with 20 nautical mile range and weight of 3300 lbs. equipped with active radar homing plus acoustic torpedo. Cancelled for consideration of reasons including state-of-the-art advances, changing military requirements and cost considerations.

CORVUS	1960	80.0	Ling Tempco
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Air-to-surface missile with 170 nautical mile range and weight of 1750 lbs. equipped with passive or semi-active radar homing. Cancelled for consideration of reasons including state-of-the-art advances, changing military requirements, cost considerations, plus contractor difficulties.

EAGLE	1961	53.0	Bendix Aviation
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Air-to-air missile with 70 nautical mile range and weight of 1400 lbs. equipped with midcourse command plus active radar homing. Since this was the missile system for the Missileer aircraft, it was cancelled when Missileer was dropped.

Department of the Navy

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<u>Project Title</u>	<u>Year Cancelled</u>	<u>Funds Invested (Millions of Dollars)</u>	<u>Prime Contractor(s)</u>
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MISSILES:

METEOR	1954	52.6	M. I. T.
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Air-to-air missile with 10 nautical mile range and weight of 510 lbs. and semi-active homing. Cancelled in weeding out of early air-to-air missile projects in favor of more promising air-to-air projects.

RIGEL	1953	38.1	Grumman A/C
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Surface-to-surface missile with 400 nautical mile range and weight of 19,000 lbs. equipped with ramjet, command mid-course, plus radar homing. Cancelled for same weeding out process as METEOR above, plus it was a competitor to REGULUS.

DOVE	1955	33.7	Eastman Kodak Co.
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Air-to-surface missile with gravity bomb and weight of 1300 lbs. equipped with infrared homing. Cancelled because of changing requirements plus technical difficulties.

SHIPS:

Submarine Underwater Propulsion Systems	1954	25.0	General Electric Allis-Chalmers Elliott Company Westinghouse Elec.
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Work began in 1945 and continued to 1954 on closed and semi-closed propulsion cycles, all of which could be used to propel submarines in fully submerged conditions. Cancelled because of the success of nuclear propulsion.

Department of the Navy

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<u>Project Title</u>	<u>Year Cancelled</u>	<u>Funds Invested (Millions of Dollars)</u>	<u>Prime Contractor(s)</u>
<u>OTHER:</u>			
NRRS, Sugar Grove	1962	70.0	Tidewater Constr. Co. Patterson-Emerson Constr.

A 600'diameter, rotatable radio antennae device to provide an improved capability in space research and intelligence gathering activities. Cancelled because costs increased from initial estimate of less than \$80 million to over \$190 million and, during the period when the structural design phase of the antennae was in progress, other scientific techniques capable of performing the antennae functions were perfected.

ZIP Fuel	1959	123.0	Callery Chem. Co.
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Fuel of 50% higher energy than jet fuel, for use in gas turbines. Cancelled because of high cost and technical difficulties.

Department of the Air Force
Projects Cancelled
(1953 - 1963)

<u>Project Title</u>	<u>Year Cancelled</u>	<u>Funds Invested (Millions of Dollars)</u>	<u>Prime Contractor(s)</u>
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AIRCRAFT:

ANP	1961	511.6**	Boeing/Gen. Dyna. GE/P&W
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This was a program to develop a nuclear-powered long-range, long endurance aircraft for possible strategic application. The program was cancelled because it had inadequate military potential in any form which was technically feasible.

F-108	1959	141.9	North American
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This program was for development of a long-range (1000 mile) supersonic manned interceptor, equipped with a highly sophisticated fire control system, to counter the airborne bomber threat of the 1960's and 1970's. The overall program was cancelled because of the relative decrease of the manned bomber threat.

XF-103	1957	104.0	Republic
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This was an advanced fighter concept for a titanium mach 3.0 fighter, powered by a dual cycle (turbojet/ramjet) propulsion system. It was cancelled primarily as a result of technical problems (e.g. poor visibility, J-67 engine problems) rising costs, and greater promise of the F-108 program (e.g. long range).

F-107	1957	100.0	North American
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This was a fighter-bomber development program in competition with the F-105. It was cancelled in favor of the latter, which proved to be a superior weapon system.

J-83 Engines	1959	55.0	Fairchild
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This was a small lightweight turbojet engine in the 2000 lb. thrust range, for possible missile or aircraft application. It was cancelled in favor of a competitively superior engine.

* Tentative; pending termination proceedings.

** AF costs only.

Department of the Air Force

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<u>Project Title</u>	<u>Year Cancelled</u>	<u>Funds Invested (Millions of Dollars)</u>	<u>Prime Contractor(s)</u>
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AIRCRAFT:

C-132	1957	54.0	Douglas
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This was a turboprop heavy long-range transport designed to carry 100,000 lb. payload. It was cancelled because of potential high cost and because the C-133, although not capable of as high a payload, appeared sufficiently versatile to meet Air Force needs.

T-61 Engine	1959	37.4	Allison
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This was an internal combustion turboprop engine of advanced design. Cancellation was based on the fact that the engine had not been designated for application to any specific future weapon system.

H-16	1954	23.4	Vertol
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This was an extremely large fuselage, twin-rotor, high capacity helicopter. Hampered by technical problems, delays and cost over-run, it was cancelled as a result of reappraisal following the crash of an experimental model.

MISSILES:

NAVAHO	1957	679.8	North American
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This was a supersonic surface-to-surface intercontinental strategic missile. It was cancelled in its flight test phase, having been overtaken by the accelerated ICBM development program.

SNARK	1962	677.4	Northrop
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This was a subsonic surface-to-surface intercontinental strategic missile. Although completely developed and placed in the active inventory, it was rendered quickly obsolete by the accelerated ICBM program.

GAM-63 RASCAL	1958	448.0	Bell
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This was an air-launched air-to-surface missile for use by strategic forces (B-47). The program was cancelled in favor of the inherently superior Hound Dog.

Department of the Air Force

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<u>Project Title</u>	<u>Year Cancelled</u>	<u>Funds Invested (Millions of Dollars)</u>	<u>Prime Contractor(s)</u>
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MISSILES:

GAM-87 Skybolt	1963	440.0*	Douglas
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This was a ballistic missile to be air launched from the B-52 or British Vulcan bombers. Cost escalation, time delay, revised estimates of actual performance, and availability of other ways to do the job better on a cost-effectiveness basis caused cancellation.

TALOS (Land Based)	1957	118.1	Bendix
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This was a land-based surface-to-air missile for the air defense mission. Air Force effort terminated when short range surface-to-air missiles were designated as an Army sole responsibility.

Mobile MINUTEMAN	1962	108.4	Boeing
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This program consisted of the present Minuteman surface-to-surface missile transported and fired from railroad cars. It was cancelled because of high cost and little military value versus other systems.

Q-4 DRONE	1959	84.4	Northrop
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This was a small turbojet drone to be used by Air Defense Command for training. It was cancelled because of a lack of funds and a change in requirements.

SM-73 GOOSE	1958	78.5	Fairchild
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This was a subsonic long range decoy missile for strategic application, to be ground launched as an electronic countermeasure device. The program was overtaken by other developments (e.g. GAM-72 Quail) and by changes in concept of operation.

GAM-67 CROSSBOW	1956	74.6	Northrop
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This program was the original air-to-surface anti-radiation missile (ARM). The modern version is the SHRIKE. It was cancelled because other systems were considered more favorable and because of uncertainties in the guidance system.

Department of the Air Force

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<u>Project Title</u>	<u>Year Cancelled</u>	<u>Funds Invested (Millions of Dollars)</u>	<u>Prime Contractor(s)</u>
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OTHER:

AN/ALQ-27	1959	142.0	Sperry
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This program was a complete integrated electronic counter-measures system for the B-52. It was cancelled because of the extreme cost.

Hi Energy Boron Fuel	1959	135.8**	Olin Mathieson, others
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The program was for the development of fuel to power a Chemically Powered Bomber. It was cancelled because it was overtaken by other developments, because of technical problems encountered, and because the requirement was cancelled for the specific aircraft to which it had known application.