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Statement of

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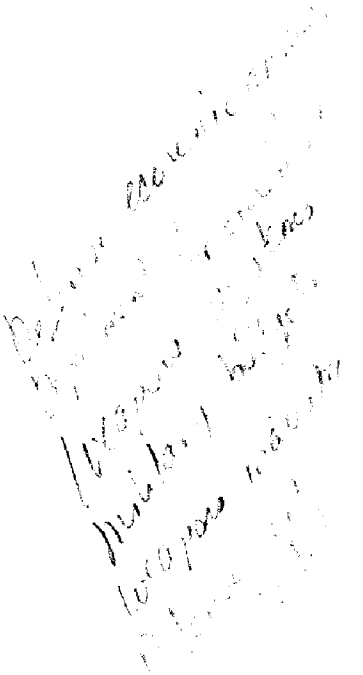
Before the

House Committee on Government Operations

Subcommittee on Legislation and National Security

on

Weapons Systems Costs



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Testimony

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Mr. Chairman and Members of the Committee:

We are pleased to appear here today to discuss cost growth in major weapon systems.

Background

The investments to acquire and operate major weapon systems have a heavy impact on the allocation of national resources. Currently, the armed forces are going through the largest modernization program in our history by making up the inventory shortfall and obsolescence caused by the Vietnam War. At March 31, 1979, there were 58 major acquisitions in development and production and reported in the DOD Selected Acquisition Reporting (SAR) System. These systems had current estimated costs of $235 billion, of which the Congress must fund nearly $127 billion in the future. Of the total of $235 billion, $97 billion represents cost growth over the baseline (development) estimates. In addition 24 systems, estimated to cost nearly $61 billion, are in early development and are potential SAR systems in future years. These 82 major acquisitions will require future funding of over $180 billion. The following chart briefly shows these numbers.

DATA AS OF MARCH 31, 1979
(Millions of Dollars)

Service	Number of Systems	Current and prior year funds	FY 1980 Budget	Balance to complete	Current Estimate	Cost Growth
Army	16	$ 7,287	$3,218	$35,726	$ 46,231	$17,164
Navy	28	60,192	8,306	69,637	138,135	59,334
Air Force	14	24,207	4,992	21,620	50,819	20,550
Total	58	$91,686	$16,516	$126,983	1/$235,185	$97,048

During the last 10 years, the subject of cost growth in weapons systems has proved to be particularly troublesome to the Congress, the Department of Defense, and to students of the acquisition process. Despite the level of anxiety, the publicity, and the many learned studies, the problem persists. There are some who would shrug it off as a bookkeeping/cost estimating exercise, or as a normal cost of doing business. We in GAO tend to view it as a very serious problem that has direct and highly visible effects on our national security. Because the United States must live with a relatively fixed defense budget, major cost increases contribute to the procurement of far fewer units of weapons than our military leaders say we need to maintain an adequate defense posture. Some examples are shown on this chart.

1/In addition, 24 major systems, estimated to cost nearly $61 billion, are in early development and are potential SAR systems in future years.

Selected Weapon Systems
Quantity and Program Unit Costs
(Dollars in Millions)

SYSTEM	Original Quantity	Current Quantity	Original Unit Cost	Current Unit Cost
Harpoon Missile	2922	2159	.353	.734
LHA Ships	9	5	153.4	314.0
M198 Howitzer	664	478	.184	.421
Patriot Missile	240	138	21.84	45.17
Airborne Warning and Control System	42	34	63.4	122.2

Also, the tremendous investments in research, development and production of new weapons systems limits the funds available for spare parts, munitions, and other necessary support. Without going into specifics, which are classified, I can tell you that our readiness posture around the world today is extremely poor. U.S. forces are short of munitions and spare parts, and are finding it increasingly difficult to maintain even the small quantities of expensive and sophisticated weapon systems that have been procured.

We do not appear here today professing to have all the answers. Cost growth of weapon systems is a highly complex and multi-faceted problem involving economics, military judgment and politics. If there is blame to be assigned, there is more than enough to be shared by the Department of Defense, industry, and the Congress. What I would like to do today is to discuss some of the factors that lead to cost growth, what the impact is on the Congress, and a few suggestions for your consideration. I urge you to keep in mind that each of the causes of cost growth I will address are interrelated - it is impossible to separate one from the other - or to assign specific dollar values to any one.

Preliminary Cost Estimates

Cost growth should be categorized in two ways - real growth and "paper" growth. The paper growth occurs when the early cost estimates, that become the basis from which growth is measured, are too low. Traditionally, there are 3 types of estimates

--the planning estimate

--the development estimate

--the production estimate

Congress usually gives its initial approval for research and development based on the planning estimate. Traditionally, this estimate is a very rough guess of what a highly complex and sophisticated weapon will cost 5-10 years before it will go into production. Further, at this point in time there are no designs, drawings, or firm plans of any kind. Yet, the Congress is asked to accept and rely on a very precise dollar estimate as the basis for decisions initiating multi-billion dollar programs.

Further down the road the first development estimate is prepared. A little more is known about the system at that point in time - but still not enough to support a reliable cost estimate.

As the development process continues - and as the system gets closer to production, the cost estimates get better. Technological and production problems are identified, decisions on operating characteristics and cost trade-offs are being made, subsystems are chosen, etc.

The question that arises is why the early estimates - even given the lack of firm data - are always so much lower than the later estimates. I think it is fair to say that human nature plays a major role. Program advocates both in DOD and industry want to get a program started. They tend to be highly optimistic with respect to costs, technical developmental problems and operational characteristics, i.e., the proposed weapon will do wonders at a very low cost. This is expressly intended to "sell" both the decisionmakers in DOD as well as the Congress.

The major problem with this consistent pattern of underestimation is that the Congress is being placed in an untenable position. The Congress has to make choices and decide for itself what the spending priorities should be. Without good cost estimates, Congress is making major decisions in a vacuum.

The lesson to be learned here is that the Congress should take, with a great big grain of salt, the promises and cost estimates presented by DOD early in a major program.

Before proceeding further I would like to discuss several cost trend charts which show the trend of cost estimates over the past 10 years. These trend charts illustrate the point I am trying to make, i.e., preliminary cost estimates are optimistically low, sufficient data is not available to support reliable cost estimates early in program development, and the Congress and the DOD in making decisions must take these factors into consideration. The data shown by these charts was taken from DOD Selected Acquisition Reports (SARs) at the end of each fiscal year.

(PRESENT COST TREND CHARTS HERE)

Technology

As a general rule, the weapon's acquisition philosophy of our military leaders is to attempt to develop highly sophisticated weapon systems - to use advanced technology to overcome the numerical advantages in manpower and weapons held by the Soviet Union.

To a certain extent this strategy has proven to be successful. One on one, our weapons are usually considered to be better than the comparable weapons fielded by the Soviets. The other side of the coin is cost-development, testing, production and support costs are naturally much higher for the high technology systems than for less complex weapons that might not be quite as effective.

There is continuing debate about the wisdom of the U.S. weapons acquisition policies - should we stress high cost/high capability/low quantities or lower cost/lesser capabilities/larger quantities. Hopefully we will never find out the answer because war will be the only real test.

What is certain, however, is that the high technology policy is a major contributing factor to cost growth. The drive for greater capability usually means complex electronics, avionics, fire control systems, etc. that keep adding to the cost in three ways. First the research, development and test costs are driven up by the need to design, test and

integrate these complex sub-systems - make them all work together to do the job that is desired. Secondly, the cost of procuring these items for production is extremely high, pushing the production costs way up. Third, and probably the greatest cost, is the high maintenance and support costs of complex equipment once the system is deployed. These costs are often overlooked during the acquisition cycle - but can be many times the cost of acquisition.

Relating this problem back to the cost estimates - the history of weapons programs has shown that program advocates preparing early cost estimates, tend to be highly optimistic about solutions to known technical problems and about the costs of solving unanticipated technical problems. Yet, there has been almost no weapons program that has not encountered serious developmental problems that added substantially to the cost.

Inflation

Inflation has been both a real and "paper" cause of cost growth over the years. Inflation that is due to escalating labor and material costs cannot be controlled by either the Department of Defense or by industry. Real inflation is a problem that affects every element of our society and must be recognized as a valid cost of producing weapon systems. For this reason, it is advantageous for

DOD to attribute as much cost growth as possible to inflation to reduce the criticism about rising costs.

Much of the cost growth attributed to inflation by DOD, however, has not been due to real economic escalation. DOD program cost estimates have included provisions for inflation since about 1971. As with other aspects of cost estimates, the program advocates tended to be highly optimistic about the rate of inflation in order to keep the estimates as low as possible. Not too long ago, DOD prescribed the rates that would be used for all cost estimates. In years when actual rates of inflation were 7-8 percent, or higher, DOD was instructing its cost estimators to project rates of 2-4 percent. When escalation actually exceeded those estimates, as we know it did, DOD attributed the cost growth to economic conditions over which it had no control.

In recent years, DOD has given program managers greater latitude in estimating inflation applicable to their individual programs. The tendency, however, is still to underestimate whenever possible.

There are other methods by which DOD attributes more of its cost growth to inflation than is reasonable. Any time a program is stretched out, for whatever reason, DOD will attribute as much of the increased cost as possible to inflation. For example, if the program

encounters technical difficulties and a production decision is delayed for a year, a substantial portion of the additional cost is classified as program change related to inflation.

We believe that an alternative to the current DOD cost estimating policy would be to require the Department to limit inflation to the budget year estimate and show a range of total costs at different inflation rates. Each year the programs' current estimates would be adjusted to provide for the inflation incurred during the past.

The point I am making, of course, is that the impact of inflation on weapon programs, while substantial, is not of the magnitude that DOD would lead you to believe.

Funding

For most products, be they weapon systems, autos, or washing machines, that are to be produced in quantity, there is an optimum rate of production that keeps application of overhead costs to a minimum and takes maximum advantage of automated production equipment and labor skills.

Because of the high costs of our weapons, and the number that are in development and production at any one time, there are often insufficient funds to schedule production at the most economical rates. Both the Congress and the Department of Defense juggle production rates to spread available funding as

judiciously as possible, and these changes increase the cost of almost every system that is produced.

Annual funding by the Congress, and changes in production rates also create an element of uncertainty in weapon programs. Contractors find it difficult to plan production and are reluctant to make substantial capital investments that could help keep costs down.

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These factors of technology uncertainties, inflation, underestimation of program costs, production delays, changes in production rates, and production inefficiencies all contribute to cost growth of weapon systems. These are some of the reasons why we are procuring fewer and fewer new weapon systems over a longer time span. This, in turn, encourages the development of more sophisticated replacements because of the rapidly changing requirements, threats, and technologies.

Bow Wave

In the past, production delays and quantity reductions have been taken in stride (rather lightly) as one of the necessary evils in the budgetary process, and the services could always wait for the out-years to correct this temporary shortfall. Unfortunately, the time had come when the impending "bow wave" in defense funding is real. The armed forces are in the largest modernization program in our history, as most of the programs were started after the

Vietnam War, during which the needs to replace war items were more important than the development of new systems.

Without discussing the specific problems among each of the services, we only need to look at the current procurement cost for the Department of Defense budget which is estimated to be over $560 billion. If we assume a rather modest projection of 30 percent cost growth, which is less than DOD is experiencing now, this procurement cost could easily be as high as $725 billion. Assuming a relatively long 10-year procurement phase of the acquisition cycle, we can see that DOD will need $72 billion per year for its procurement programs. This figure is twice as large as the appropriation requested for the Fiscal Year 1980 procurement programs.

It seems clear that, in the absence of actual conflict or imminent threat, peace time military budgets show no major variation from one year to the next. With this budgetary reality, difficult decisions on the acquisition program must be made. Examples of these decisions include: the proper level of investments between the research, development, and production of new weapon systems versus funds for spare parts, munitions, and other necessary support; the balance between qualitative and quantitative improvements of weapon systems; the means

to provide sufficient incentive for industries to produce at the most economic rate; and, the data needed for Congress to macro-manage the military budgets so that the priority programs can be retained. Allow me to present a few suggestions for your consideration.

More Realistic Cost Estimates

The requirement for DOD to provide accurate dollar estimates during the planning and development phases is difficult to meet. At the same time, it is just as difficult to ask Congress to accept these estimates as the basis for decisions for the initiation of programs.

The critical step of determining whether a program should enter production should be based on the most realistic cost estimates available. We believe that DOD should prepare its planning and development cost estimates in ranges of costs rather than specific point estimates. These ranges of estimates should be supported by confidence factors and by areas of risks which could impact on the estimates.

Furthermore, because of the inherent difficulties in estimating the impact of inflation over the acquisition process and the tendency for DOD to attribute more of the cost growth to inflation in the latter phase of the program it might be useful to require the Department of Defense in

preparing cost estimates to include inflation in the budget year, but project a range of costs at different inflation rates. The Department would adjust its cost estimates each year to recognize the actual inflation factors experienced during the past.

Multiyear Funding

The contracting authority of the defense agencies is naturally tied to Congressional appropriations. These appropriations are usually stated in the allowable maximum amounts and for a definite period of time. Annual appropriations are the most prevalent form of Congressional funding for weapon systems. Multiyear contracting authorities are sometimes granted, but only for limited purposes.

Where appropriate, we believe that there is potential to apply the multiyear funding concept to encourage greater contractor investment and to enable procuring agencies to plan more economic rates of production.

Mission Area Budgeting and Prioritized Programs Within Mission Area

In recognition of the peace time military budget constraints and the impending "bow wave" on the procurement funding, it is too tempting for Congress, OMB, and DOD to micro-manage programs through specific authorizations and appropriations for individual programs. The problem in the first case is that this process is influenced by

parochial viewpoints which do not assure that the highest priority needs of the overall defense plan and strategy are being addressed.

We believe that the policies established by the OMB Circular A-109 on major system acquisitions are positive steps in alleviating these problems. Through mission element need statements, mission area budgeting and prioritization of program elements within each mission area, Congress is given the opportunity to examine and debate key programs.

Mr. Chairman, this concludes my prepared statement. We will be happy to answer any questions you have at this time.