

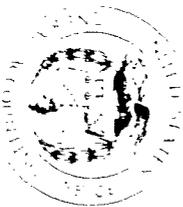
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High-Risk Series

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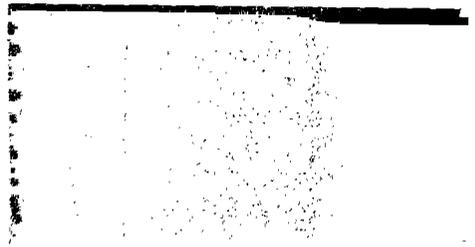
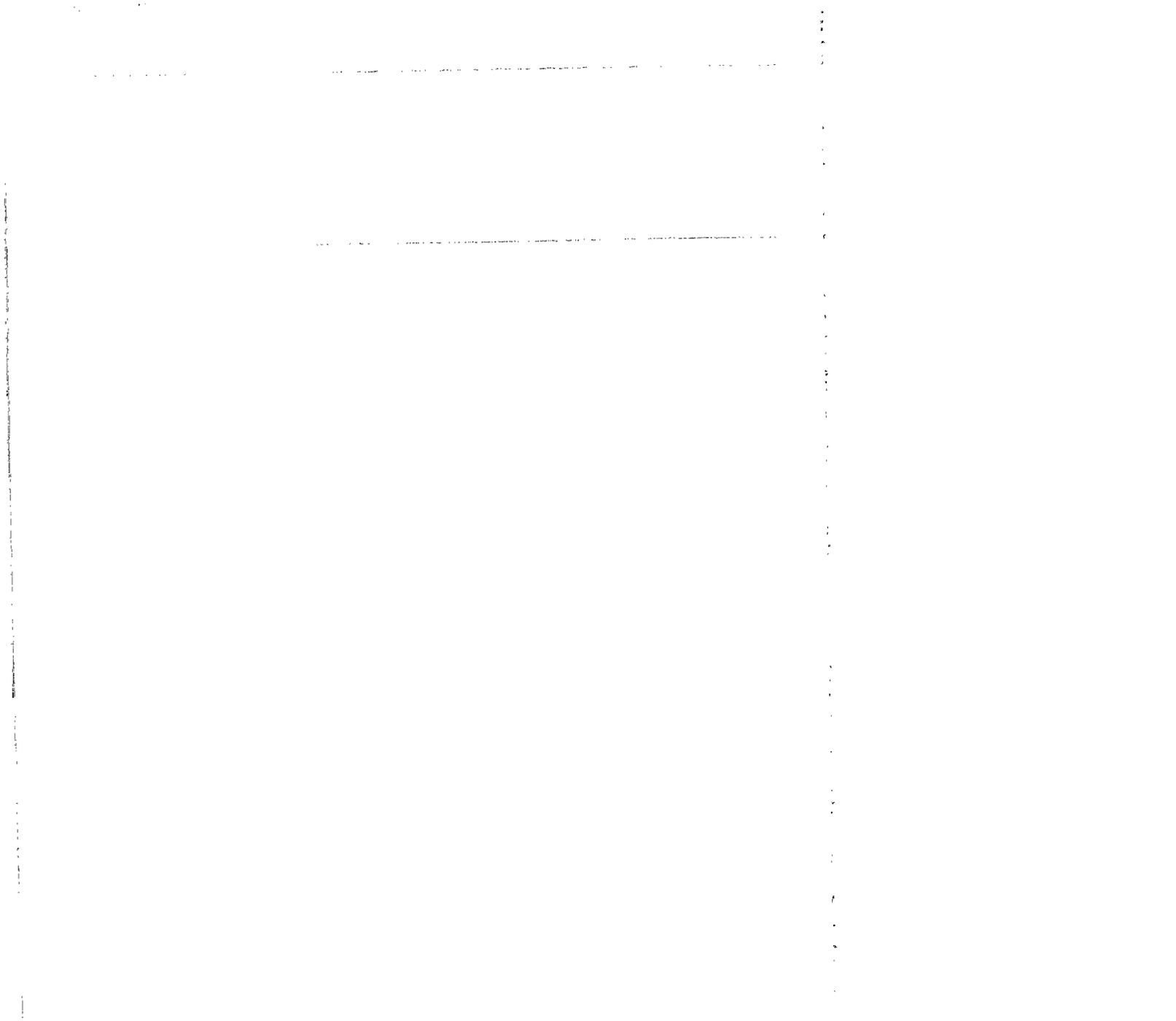
Defense Weapons Systems Acquisition



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**United States
General Accounting Office
Washington, D.C. 20548**

**Comptroller General
of the United States**

December 1992

The President of the Senate
The Speaker of the House of Representatives

In January 1990, in the aftermath of scandals at the Departments of Defense and Housing and Urban Development, the General Accounting Office began a special effort to review and report on federal government program areas that we considered "high risk."

After consulting with congressional leaders, GAO sought, first, to identify areas that are especially vulnerable to waste, fraud, abuse, and mismanagement. We then began work to see whether we could find the fundamental causes of problems in these high-risk areas and recommend solutions to the Congress and executive branch administrators.

We identified 17 federal program areas as the focus of our project. These program areas were selected because they had weaknesses in internal controls (procedures necessary to guard against fraud and abuse) or in financial management systems (which are essential to promoting good management, preventing waste, and ensuring accountability). Correcting these problems is essential to safeguarding scarce resources and ensuring their efficient and effective use on behalf of the American taxpayer.

This report is one of the high-risk series reports, which summarize our findings and recommendations. It describes our concerns over the Department of Defense's annual expenditure of billions of dollars to acquire new weapons systems. It focuses on weaknesses in the way major weapons requirements are determined, planned, budgeted, and acquired. The report addresses process, procedural, and internal control weaknesses, as well as underlying conditions and cultural attitudes that help foster these weaknesses. These issues are addressed in more detail in our report Weapons Acquisition: A Rare Opportunity for Lasting Change (GAO/NSIAD-93-15).

Copies of this report are being sent to the President-elect, the Democratic and Republican leadership of the Congress, congressional committee and subcommittee chairs and ranking minority members, the Director-designate of the Office of Management and Budget, and the Secretary-designate of Defense.



Charles A. Bowsher

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Overview

The Department of Defense (DOD) spends billions of dollars each year developing and procuring major weapons systems. These expenditures have produced many of the world's most technologically advanced and capable weapon systems—as demonstrated during Operation Desert Storm. Nevertheless, the process through which weapons requirements are determined and systems acquired has often proved costly and inefficient—if not wasteful. In addition, the “high stakes” weapons acquisition process has proven vulnerable to fraud, waste, and abuse. It was this high stakes process—and the absence of adequate internal controls—that provided the breeding ground for the investigation and charges of influence-peddling known as “Ill Wind.”

DOD has made some improvements in the weapons acquisition process over the years. Major reforms recommended by the President's Blue Ribbon Commission on Defense Management—the Packard Commission—in 1986 have been or are currently being implemented. In addition, the diminished Soviet threat and corresponding budget reductions are also prompting major changes in the way DOD acquires weapons systems. Top management

within the Office of the Secretary of Defense has taken steps in an attempt to make the acquisition process more disciplined and to redefine the basic strategy for acquiring weapons. Moreover, key Members of Congress are calling for the military services to reevaluate their roles and functions.

The Problem

Despite many efforts to reform and improve DOD's weapons acquisition process over the years, a number of fundamental problems persist. For example, despite an increased emphasis on the sound development and testing of weapons, we still see major commitments to programs, such as the B-2 bomber and the Airborne Self-Protection Jammer, without first seeing proof that these systems will meet critical performance requirements. Despite improved cost-estimating policies and procedures, we still see the unit costs of weapon systems, such as the DDG-51 destroyer and the C-17 transport, double. Despite the increased emphasis on developing systems that can be efficiently produced and supported, we have weapons, such as the Advanced Cruise Missile and the Apache helicopter, that still encounter costly production and support problems.

Clearly, problems are to be expected in major weapons acquisitions, given the technical risks and complexities involved, but too often we find

- systems being acquired that may not be the most cost-effective solution to the mission need,
- overly optimistic cost and schedule estimates leading to program instability and cost increases,
- programs that cannot be executed as planned with available funds,
- program acquisition strategies that are unreasonable or risky at best,
- too much being spent before a program is shown to be suitable for production and fielding, and
- individuals seeking to improperly influence the outcome of the contracting process.

The Causes

While there are many reasons for these types of problems, the underlying cause of persistent and fundamental problems in

DOD's weapons acquisition process is a prevailing culture that is dependent on generating and supporting new weapons acquisitions. The culture is made up of powerful incentives and interests that influence and motivate the behaviors of participants in the process. Participants include the various components of the Department of Defense, the Congress, and industry. Sometimes, these interests transcend the need to satisfy the most critical weapons requirements at minimal cost. Such interests may include protecting (1) service roles and missions, (2) service budget levels and shares, (3) service reputations, (4) organizational influence, (5) the industrial base, (6) jobs, and (7) careers.

Collectively, these interests create an environment that encourages "selling" programs—a process that may entail undue optimism, self-interest, and other compromises of good judgment. In this environment, it may not be reasonable to expect program sponsors to present objective risk assessments, report realistic cost estimates, or perform thorough tests of prototypes when such measures may expose programs to disruption, deferral, or even cancellation.

The “culture” is not the cause of all the problems in weapons acquisitions. Some problems can be attributed to basic errors in judgment or other motivating forces. For example, the “high stakes”—that is, the big money involved—in defense acquisitions can lead to influence-peddling and contracting fraud and abuse—as found in the “Ill Wind” investigation.

**GAO’s
Suggestions for
Improvement**

If changes in the acquisition of weapons are to be of a lasting nature, they must be directed at the system of incentives that has become self-sustaining and very difficult to dislodge. Incentives and opportunities that produce undesirable behaviors must be eliminated or minimized through effective internal controls and/or offset by stronger—positive or negative—incentives. Moreover, officials in top DOD management positions, as well as the acquisition work force in general, must be held to the highest standards of integrity and conduct. Specific suggestions for addressing several prevalent undesirable behaviors or conditions are described below.

**Controlling
Inter-Service
Competition**

Several actions are needed to change incentives and conditions leading to

inter-service competition, self-interest, and the acquisition of unnecessary, overlapping, or duplicative capabilities. These actions could also reduce incentives for overselling programs. First, a consensus must be reached between the Congress and the administration on military strategy, the services' roles and missions, and future funding levels. Uncertainty surrounding current roles and missions encourages the services to acquire weapons that will support and protect traditional or desired capabilities. The inability of DOD to accurately predict outyear funding levels has resulted in optimistic spending plans that cannot be executed under actual funding levels.

Secondly, determining needed capabilities and the particular types of weapons to fill those needs should not be left with individual branches and warfare communities within the services. The duplicative outcomes of the acquisition process are an outgrowth of the fact that system requirements mirror the traditions and self-preservation instincts of their sponsoring organizations. Making these decisions at the Office of the Secretary of Defense level could enable competing demands, available resources, and the needs

of theater commanders to be more fairly assessed before a specific program is given life.

Discouraging the
Overselling of
Programs

A combination of internal controls and other forms of incentives and disincentives is needed to reduce the tendency to sell weapons programs through optimistic cost and schedule estimates and accelerated—and therefore, high risk—acquisition strategies. Under the existing culture, the success of participants' careers is more dependent on getting programs through the process than on achieving better program outcomes. Accordingly, overselling “works” in the sense that programs get started, funded, and eventually fielded. The fact that a given program costs more than estimated, takes longer to field, and does not perform as promised is secondary to getting a “new and improved” system to the field.

Limiting Technology
Risks

Research and technology efforts need to be freed from program association until they mature to a specified level, such as the demonstration and validation phase. This idea is already embodied in DOD's new acquisition strategy, which calls for advanced technologies to prove their

Overview

feasibility and producibility before they are incorporated into new or ongoing acquisition programs.

Limiting Opportunities for Fraud and Abuse

DOD must continuously review and ensure compliance with controls designed to (1) ensure the free flow of current and accurate information from the contractors and program offices to top decisionmakers and those with oversight responsibility and (2) prevent improper influencing of contract awards.

Today, the prospects for constructive change are quite encouraging. The demise of the Soviet threat and declines in defense budgets have created a unique opportunity to effect lasting changes in the weapons acquisition process. Both the Department of Defense and the Congress have acted upon this opportunity and have shown a willingness to support the types of changes needed to improve acquisition outcomes. DOD must ensure that effective internal controls are in place to minimize cultural influences, incentives, and behaviors that are not in the best interest of the taxpayers.

Persistent Problems in Weapons Acquisition

Despite conscious attempts to improve the acquisition process, weapons still cost more, take longer to field, often encounter performance problems, and, in many instances, are difficult to produce or support. The persistence of these problems reflects the fact that the design, development, and production of major weapon systems are extremely complex technical processes that must operate within equally complex budget and political processes. If a program is not well conceived, planned, managed, funded, and supported, problems such as cost growth, schedule delays, and performance shortfalls can easily result. Even properly run programs can experience problems that arise from unknowns, such as technical obstacles and changes in the threat. In short, it takes a myriad of things to go right for a program to be successful, but only a few things to go wrong to cause major problems.

On the basis of our experience in reviewing weapons programs over the years, we have noted that vulnerability to major problems can usually be associated with decisions or determinations made in answering the following five key questions as weapon systems proceed through the acquisition cycle:

- Is the system the best solution to the mission need?
- Are the program cost and schedule estimates reasonable?
- Can the program be executed with available funds?
- Is the program's acquisition strategy reasonable?
- Is the system suitable for production and fielding?

**Is the System the
Best Solution to
the Mission
Need?**

DOD acquisition policies require analyses of missions, mission needs, costs, and alternatives to ensure that cost-effective solutions are matched to valid needs before substantial resources are committed to a particular program. An important objective is to minimize overlap and duplication among weapon systems that perform the same or similar missions. This is of particular concern when more than one service participates in similar mission areas. We have found that, while the services conduct considerable analyses in justifying major acquisitions, these analyses can be narrowly focused, not fully considering

alternative solutions, including the joint acquisition of systems with the other services.

The consideration of alternatives to the Air Force's \$3.5 billion Sensor Fuzed Weapon program is an example of the narrow focus of some of these analyses. In an August 1991 report, we discussed the Air Force's plans to use the Sensor Fused Weapon primarily to interdict enemy follow-on forces before they could reinforce or replace troops at the front lines. We found that the Air Force's cost and operational effectiveness analysis had not considered the full range of weapons available. Weapons such as Air Force mines and Army surface-to-surface and air-to-surface missiles and rocket systems were excluded. DOD said the Army systems had not been considered appropriate for inclusion in the analysis because each service had a valid, complementary requirement to engage enemy targets and should procure weapons to kill those targets. We believe such a policy enables the services to pursue their own solutions regardless of what the other services are doing, unnecessarily increasing DOD's development, production, and support costs.

Similarly, in April 1992, we reported on DOD's determination of weapon system requirements for its close support mission. Again, we found that Air Force and Army analyses of alternatives to satisfy their mission needs have been limited to specific types of weapons within their purview. The analyses gave little, if any, consideration to the contributions of other close support weapons, especially those from another service branch.

**Are the Program
Cost and
Schedule
Estimates
Reasonable?**

Cost growth and schedule delays, two of the most prevalent acquisition problems, are also among the oldest and most visible problems associated with weapon systems. Program cost increases on the order of 20 to 40 percent have been common on major weapon programs, with numerous programs experiencing increases much greater than that. These increases become more telling when translated into unit costs. For example, the estimated unit cost of the Comanche helicopter has more than doubled since May 1985. Similarly, schedule delays are experienced on almost every program, with the accumulation of delays on some adding up to 4 or more years.

The desire of program sponsors to keep cost estimates as low as possible and to present attractive milestone schedules has encouraged the use of unreasonable assumptions about the pace and magnitude of the technical effort, material costs, production rates, savings from competition, and other factors. In some cases, acquisition cost estimates have been kept low by excluding relevant program costs—such as the cost of training equipment—which should be included in program cost estimates. Moreover, cost and schedule estimates are interdependent. A schedule delay, assuming program scope is not reduced, will likely drive program cost up.

Program cost increases and schedule delays are often the manifestation of other problems with a program. For example, it takes additional time and money to accommodate an expansion in program scope, to overcome technical or production problems, and to restructure a program to absorb funding reductions. On the other hand, cost and schedule problems often result from flaws within the estimates themselves.

We have reported on cost and schedule problems many times over the last 15 years.

Our September 1991 report on missile acquisition programs provides a good synopsis of these problems. We reviewed the 12 DOD missile systems in production that had at least 5 years of production experience. Each had encountered cost and schedule overruns, with the unit acquisition cost for 9 of the 12 having increased 20 percent or more over the planning estimates. A detailed examination of eight systems found that the unit cost and schedule planning estimates were often overly optimistic, not adequately reflecting the risks associated with the missile system's design, development, and production. Costs grew and delays occurred, reflecting the increased technological development required and the greater-than-anticipated complexity of the production processes.

**Can the Program
Be Executed With
Available Funds?**

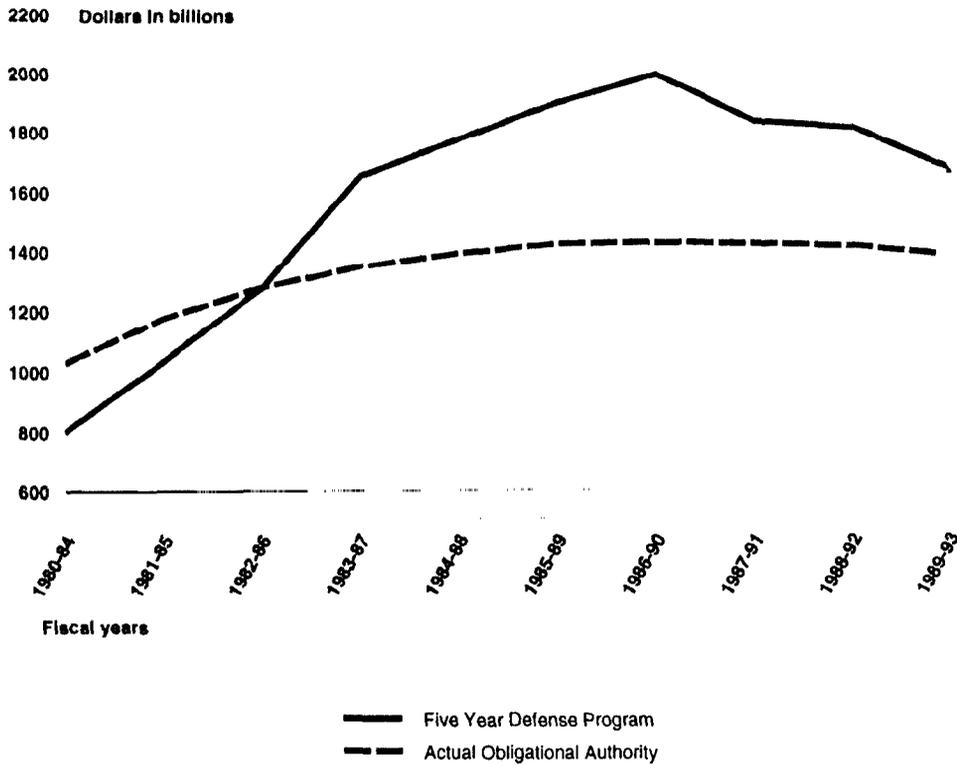
DOD's tendency to overestimate the amount of future funding available for defense, coupled with the tendency to underestimate program costs, has resulted in more programs being started than can be executed intact—"too many weapon systems chasing too few dollars."

We have reported and testified on what we call DOD's planning/reality mismatch. We

have noted that DOD's 5-year spending plan for 1986-90 was about \$553 billion more than what was ultimately funded. The 5-year plans, based on the assumption that real funding growth in the outyears would continue, showed that DOD was able to afford "on paper" the cost of developing and producing all the weapons in the pipeline at optimum and efficient rates. In other words, program managers were making development and production plans and schedules based on funding levels that ultimately would not be realized. When DOD was finally faced with funding reality, it often reduced, delayed, and/or stretched out programs—adding millions of dollars to their costs. Figure 1 shows the gaps between DOD's 5-year plan and funding realities beginning with the 1982-86 Five Year Defense Program.

Persistent Problems in Weapons Acquisition

Figure 1: Mismatch Between DOD's Planning and Budget Realities



Although in recent years DOD has made significant progress in reducing this gap, the spending plans have still not been able to keep pace with the rapid changes in the national security environment. DOD is now required by law to ensure that its spending plans and the President's budget match.

However, we have reported that planned spending levels contain billions of dollars in savings and reductions that may not fully materialize. These include (1) higher costs and less savings than expected from base closures and other activities, (2) less savings than expected from the Defense Management Report initiatives, and (3) less savings than expected from the proposed termination of some major programs that Congress continues to fund. Another important factor in the affordability equation not captured in figure 1 is the widening effect that unplanned cost growth in weapon programs has on the funding mismatch. That is, if program costs were reasonably estimated and the pace and quantities called for in the individual program plans were not changed, the demand for funds would actually exceed the levels currently projected in DOD's program plans. Thus, cost growth will still provoke an affordability problem, even if funding projections are reasonable. Further, it appears that the Congress intends to fund less than the planned amounts in the current spending plan, thereby continuing the gap between proposed and actual funding amounts.

Is the Program's
Acquisition
Strategy
Reasonable?

The acquisition strategy, which is a comprehensive plan of how to achieve the weapon system program's goals and objectives, is a major determinant of program outcomes. It is the service's plan for developing, fielding, and supporting a weapon, including the managerial, technical, and contractual approaches. A key element of the strategy is the program schedule, which is punctuated by major events such as testing and key decision points. The two most basic demands an acquisition strategy must meet are inherently conflicting—developing and fielding the weapon as quickly as possible to counter the threat, while minimizing technical and cost risks. A strategy optimized for accelerated fielding will likely accept higher risk primarily through concurrent development and production. Under such a strategy, major problems are more likely to be discovered in production, when it is either too late or very costly to correct them. On the other hand, a strategy optimized for risk aversion will result in a prolonged development schedule and increased developmental costs.

We have found that in striking these compromises, acquisition strategies embody optimistic assumptions regarding the difficulty of the technical effort; the outcome

and timing of key events, such as testing; and, as discussed earlier, the cost, schedule, and affordability of the effort. The inevitable result has been acquisition strategies that are tightly strung, being both sensitive and susceptible to perturbations such as funding reductions and unanticipated technical problems.

**Concurrency in the
Acquisition Process**

Perhaps the most troublesome characteristic of acquisition strategies in the 1970s and 1980s was the high degree of concurrency between the development and production of weapons. "Concurrency" can be broadly defined as the practice of beginning production before completing development, testing, and evaluation. Concurrency can be used to expedite the acquisition and deployment of weapon systems, and a certain amount of it can make good management sense. For example, proving out critical production technologies in development can avert major problems in production. However, the reason most commonly cited for using a concurrent acquisition strategy has been to expedite development and production so the weapon can be fielded quickly to counter the Soviet threat. Concurrency is also used to absorb delays caused by cost, funding, technical, or

other problems. Such an approach increases program risk, particularly when complex or novel technologies are involved.

At the very least, a highly concurrent strategy forces decisionmakers to make key decisions without adequate information about the weapon's demonstrated operational effectiveness, reliability, logistic supportability, and readiness for production. Also, rushing into production before critical tests have been successfully completed has resulted in the purchase of systems that do not perform as intended. These premature purchases have affected the operational readiness of our forces and have quite often led to expensive modifications. Among the most celebrated examples of excessive concurrency are the C-5A cargo aircraft and the B-1B bomber programs. The C-5A entered production before the aircraft was fully tested, which led to a 12-year wing modification program costing about \$1.3 billion to correct problems. On the B-1B, full-scale development and production contracts were awarded on the same day for the aircraft's defensive avionics system, which has since been plagued with problems that have seriously impaired the aircraft's capability.

When weapon system development and production schedules become more concurrent than planned, the critical function of independent operational test and evaluation often suffers. Such tests are crucial for assessing mission performance before making significant program dollar commitments. In May 1990, we reported that, based on our review of six weapon systems and other audit work, operational test and evaluation results often were not available to support decisions to start production because the military services failed to plan for such testing. In June 1985, we reported on the testing and evaluation of five weapon systems—the Air-Launched Cruise Missile, the B-1B bomber, the Sergeant York air defense gun, the F/A-18 aircraft, and the AGM-88A High Speed Anti-Radiation Missile. We disclosed that DOD had not obtained operational test results on any of the five systems before beginning production. On four of the five weapons we identified negative effects, including expensive retrofits or modifications. The Sergeant York program demonstrated the most extreme consequence. After the Army had spent \$2 billion and produced 64 of the 614 gun systems, the Secretary of Defense terminated the program because operational tests showed that the system was only a

marginal improvement over the existing air defense system.

Even if the operational test and evaluation are timely, methodological shortcomings can inhibit their effectiveness. Common weaknesses in the quality of such testing that we have reported include the lack of realism, independence, and test resources in the planning, execution, and evaluation of the tests. We have also reported on long-standing problems with the completeness and accuracy of test and evaluation reports provided by the services to the Office of the Secretary of Defense and Congress.

**Is the System
Suitable for
Production and
Fielding?**

Although operational effectiveness problems often attract the most attention, we have found that many weapons encounter significant problems on the production line and in the field. It is DOD's policy to begin planning for production early in the acquisition process to ensure that the weapon system design not only meets performance objectives but also can be produced in an economical and timely manner. Experience, however, has shown that new weapon systems frequently encounter great difficulties as they begin

production. Problems on the production floor commonly result in high unit production costs, late deliveries, high maintenance demands, and poor field reliability. Production cost increases on the order of 50 percent are not unusual and can greatly disrupt funding plans, schedules, and program quantities.

In a May 1985 report, we analyzed the experience of six weapon systems as they made the transition from development to production. We found that, in varying degrees, production preparations, such as producibility studies and manufacturing technology projects, for four of the programs—the Copperhead projectile, Black Hawk helicopter, Tomahawk cruise missile, and High Speed Anti-Radiation Missile programs—had been sporadic and underfunded and had been largely compressed into the late stages of development and early stages of production.

Despite increased recognition by DOD during the 1980s of the importance of addressing producibility in the acquisition process, we have continued to witness production problems on some of the very latest acquisitions, including the B-2 bomber, the

SSN-21 attack submarine, and the Advanced
Cruise Missile.

Operational
Suitability

The technology that has made high-performance weapons possible has also introduced new challenges to weapon system designers to make these weapons suitable for field operations. To be operationally suitable, weapons must, among other things, be able to be effectively operated, maintained, and supported by the military forces. Our reviews have disclosed that design considerations such as reliability, maintainability, and logistics support have been compromised or otherwise not adequately considered during the acquisition process. Performance and schedule requirements tend to take precedence over operational suitability concerns, particularly when funding shortfalls force trade-offs. The result has often been very high maintenance and support costs and lower-than-expected availability for operations.

Although DOD took steps during the 1980s to place increased emphasis on operational suitability considerations during the acquisition process, we continue to witness weapon systems being deployed without reliable support and test equipment or with

design problems that require retrofits and modifications to make them suitable for field use. Examples include the Apache helicopter, the Advanced Medium Range Air-to-Air missile, and various electronic warfare systems, including their test equipment.

Fraud and Abuse in Contracting

The investigation and charges known as “Ill Wind,” involving influence-peddling, bribery, and fraud, provided a startling reminder that, despite years of reforms and efforts to minimize the risk of such activity, the vulnerability to such activities is present whenever powerful incentives and opportunities for these behaviors exist.

Vulnerability to contract fraud and abuse is high in basically two areas. The first area is overpriced defense contracts, which cost the taxpayer billions of dollars more than necessary. Overpricing practices include contractors’ (1) failing to provide DOD with accurate, complete, and current cost or pricing data at the time of negotiations (producing what is called “defective” pricing) and (2) using inadequate methods to estimate costs. This vulnerability is addressed in a separate high-risk series report entitled Defense Contract Pricing (GAO/HR-93-8).

Improperly influencing the outcome of the contracting process is the second area of contracting vulnerability—which was the focus of the “Ill Wind” investigation. The investigation involved search warrants and more than 250 subpoenas for documents and evidence on the activities of over 50 private

consultants and more than a dozen defense companies and industry executives, as well as DOD officials. Convictions that resulted from the investigation included those of (1) a high-ranking DOD official for selling his influence for bribes and leaking government information to defense firms bidding on weapons contracts, (2) a consultant for arranging bribery payments to two DOD officials, and (3) a large corporation for bribing government officials and conspiring to defraud the United States.

A November 1991 congressional report entitled Management Reform: A Top Priority for the Federal Executive Branch identified a number of specific issues related to the adequacy of existing procurement practices and the lack of a management capability to address the procurement problem. These included (1) a high dependency on the use of consultants to write specifications, prepare cost estimates, and even monitor other contractors; (2) a highly competitive contracting environment, which created a frantic market for inside information; (3) the lack of properly trained government personnel; and (4) "revolving door" opportunities for government personnel to obtain employment with contractors with which they worked.

Despite the overall high integrity, ethics, and professionalism of the defense acquisition work force and those who manage it, the opportunity and incentives for fraud and abuse are ever present. In the current high-stakes, highly competitive environment of shrinking defense expenditures, the outcome of a major contract award can often determine the continued survival of a company. Such high stakes increase the incentive for improper conduct. Also, streamlining efforts are placing greater decisionmaking responsibility on individuals and eliminating layers of review and oversight. While such streamlining efforts are beneficial and necessary, it is important not to overlook the value of internal controls.

Conclusions and Action Needed

The Groundwork for Cultural Change

The opportunity afforded by the dissolution of the Soviet threat opens the door to making needed changes; declining defense budgets demand them. By themselves, however, even these compelling reasons may not be enough to uproot an acquisition culture whose system of incentives has become self-sustaining. Acquisition participants hold the key to cultural change since they largely determine the motives and incentives of the acquisition process.

The defense acquisition decisions made over the next few years will be especially critical because they are intertwined with the rewriting of national security policy and military strategy. Decisions on next-generation weapons will define solutions to defense policy needs, dictate budgets for the remainder of the decade, and, in the process, either take advantage of or miss the opportunity to improve the acquisition culture.

While DOD has revised the military strategy, congressional debate on issues such as roles and missions suggests that a consensus has not been reached. Long-term dividends could result if the Congress and the administration refrain from making weapon system milestone decisions until they agree on a

military strategy, including how and where U.S. forces should be prepared to fight; how the forces should be structured to accomplish national security objectives; and how to preserve the research, technology, and industrial base. These should be explicit choices; they should neither be dictated by individual program decisions, nor be the tenuous byproduct of budget compromises. With an agreed-upon strategy, consensus on the roles and missions of the services could be more easily reached, and weapon programs could then be the result of clear decisions on how to implement policy, rather than the result of incremental decisions that address individual interests.

If changes in the acquisition of weapons are to be of a lasting nature, they must be directed at the system of incentives that has become self-sustaining and very difficult to uproot. Incentives and opportunities that produce undesirable behaviors must be minimized or eliminated through effective internal controls and/or offset by stronger—positive or negative—incentives. Specific suggestions for addressing key undesirable behaviors include (1) elevating authority for determining weapons priorities, (2) defusing the need to oversell programs on the basis of performance and urgency,

(3) reducing technological risks prior to incorporating research efforts into specific weapons development programs, (4) discouraging unrealistic cost estimates, and (5) aligning career success with better program outcomes.

Authority for
Determining
Program Needs

To reduce the narrow service self-interest currently inherent in program justifications, the authority for determining needed capabilities and the particular types of weapons to fill those needs should not be left with individual branches and warfare communities within the services. The duplicative outcomes of the acquisition process are consistent with the fact that system requirements mirror the traditions and self-preservation instincts of their sponsoring organizations. Moving this authority higher up in the DOD organization could enable competing demands, available resources, and the needs of theater commanders to be more fairly assessed before a specific program need is given life.

There appears to be a misunderstanding that such authority is currently being exercised by the Joint Requirements Oversight Council (JROC) and/or the Defense Acquisition Board (DAB). The JROC, which must review, approve,

and revalidate each major weapon requirement before the weapon can proceed to the next stage in the acquisition process, has revalidated every weapon system requirement it has reviewed since 1989.

The DAB, which conducts milestone reviews of weapons programs at each stage of the acquisition process, has taken a limited role in managing overall weapons acquisition, requirements, and affordability. Despite major changes in threat and reductions in defense spending, the DAB has approved every program to proceed to the next acquisition stage since January 1990.

There is not necessarily a "right" answer to the question of where the authority for determining program needs should be vested. Possibilities include the Defense Planning and Resources Board, which was established to help develop stronger links between national policies and the resources allocated to specific programs and forces; the Office of the Secretary of Defense; or perhaps a high-level council/board within each service, following any realignment of their roles and missions.

It is also important that if a debate is to occur between DOD and the Congress over

the need for a weapon, it should occur early in the process, before the weapon gains too much momentum.

Defusing the Need to Oversell Programs on the Basis of Top Performance and Urgency

The dissolution of the Soviet Union, together with the current U.S. inventories of highly capable weapons, presents opportunities to abate the need to oversell weapon programs, the associated optimism in cost and schedule, and the tendency to weaken acquisition strategies in favor of schedule acceleration or preservation. DOD has made several proposals along these lines, including limiting or terminating production plans for several major weapon systems and reducing concurrency in new programs. However, these changes will not necessarily produce better program outcomes if overselling performance and urgency still "work" in gaining program approval. Defusing the need to oversell programs on the basis of performance and urgency will require decisionmakers to ensure that their decisions on individual programs are consistent with military strategies, policies, and funding levels agreed upon by the administration and the Congress.

When to Define Programs

Carrying research and development efforts further before incorporating them into specific weapon programs could reduce the tendency to overpromise expected results. Weapons programs have traditionally relied on risky technology development efforts. Such efforts, when drawn into a major program, not only become dedicated to the program but are subjected to the same requirements for precise cost and schedule estimates, even though their immaturity defies such precision.

Freeing research and technology efforts from program association until they mature to a specified level, such as the demonstration and validation phase, could be one element of an overall strategy to ensure that the nation nurtures a healthy research and technology base in the face of declining weapons production. Given sufficient funding, the efforts themselves would benefit because they would be more able to explore the full range of results, rather than being directed toward meeting program-specific goals. Under these circumstances, testing could assume a "no fault" nature, whereby its main and proper purpose would be to gauge and guide the progress of the work. In this arena, test failures, problems, and redesigns would be

part of a healthy process, whereas the same results now represent potential disasters in major programs.

When the need for a major program is determined, the program could pick from mature research and technology projects, reducing the subsequent risks to the program. In addition, the testing of a major weapon could then be more properly focused on "how well" it performs, rather than on "whether" it will perform. Many of these ideas are already embodied in DOD's new acquisition strategy, which calls for greater demonstration of advanced technologies, to prove their feasibility and producibility, before incorporating them into new or ongoing acquisition programs. The success of this strategy will depend on the cooperation of all acquisition participants.

Financial Realism

In weapon acquisitions, optimistic cost estimates are rewarded because they help gain program approval, win contract awards, and attract budgetary income. The consequences of cost growth are not directly felt by an individual program because they are "accommodated" through stretch-outs and quantity changes and by spreading the pain across many programs.

To discourage unrealistic cost estimates, the consequences should be tied back to the program at hand. Such incentives could work the other way as well—programs that are well-managed within estimates should be undisturbed and should keep at least a portion of any cost savings they can achieve.

The Future Years Defense Program can be used as a tool to help decide how much money can be afforded for an individual program and to confront the consequences of program cost growth. The Future Years Defense Program could force the arrangement of programs so they fall within reasonable funding levels. The timing of major programs could be staggered to reflect financial realities. Without some actions along these lines, DOD could, in the future, be faced with a financial “bow wave” of next-generation weapons—a condition that can bring out the worst in acquisition management. The funding plan could also serve to discourage other sources of program cost growth, including requirements increases and program redirections. When any participant—including the Congress—proposes an action that will change the funding profile or timing of a program, that participant should also

propose the trade-offs in the plan that will make the action fiscally possible.

Aligning Career
Success With Better
Program Outcomes

One of the aspects of the acquisition culture that will be most difficult to change is the fact that the success of participants' careers is more dependent on getting programs through the process than on achieving better program outcomes. The success of cultural change will depend on whether participants are rewarded for taking actions that produce better outcomes. It is possible that program managers' careers could be aligned with better outcomes if their progression is governed by the quality of their management and not by the survival of their programs.

At this point, perhaps the most important step participants can take is to recognize the broader implications of their individual actions. In July 1992, the Chairman of the Senate Armed Services Committee called for an overhaul of military roles and missions. To make the difficult choices necessary in such an overhaul, he suggested that the standard should be "what is best for America," not what is best for the individual services. This standard should govern the actions of participants at all levels in the weapons acquisition process.

Effective Controls and High Work Force Integrity Are Keys to Combating Contracting Fraud and Abuse

Establishing and maintaining effective internal controls are essential to minimizing the opportunity for improper conduct on the part of both government and contractor officials. While adequate control mechanisms are often in place, their effectiveness can quickly erode without a sustained commitment to adhering to and enforcing existing controls. Such erosion invites circumvention and opens the door to fraud and abuse.

As DOD continues down the path of downsizing and streamlining its operations, as it must, we caution that due consideration must be given to ensuring that the necessary internal controls and oversight are not lost in the process. Moreover, the key ingredient to combating fraud and abuse is maintaining a high degree of professionalism and integrity in the work force. In 1990, Congress enacted the Defense Acquisition Workforce Improvement Act, which is designed to improve the overall training, education, and experience of the acquisition work force.

A commitment to establishing and maintaining a high degree of professionalism and integrity will be necessary as DOD continues to streamline and downsize its operations. The effect of such actions will be

to place ever increasing reliance on the sound judgment of individuals.

The Prospects for Change Are Encouraging

We believe that the top management in the Office of the Secretary of Defense and the Joint Chiefs of Staff has displayed the ability and conviction to forge significant change. They have also done much to reestablish central management of weapon acquisitions. In addition to DOD's recent reform initiatives, these characteristics have been manifested in a number of ways, including

- the strong collective leadership of the Secretary of Defense and the Chairman of the Joint Chiefs of Staff during Operation Desert Storm;
- DOD's proposal to trade off weapon programs in favor of military personnel in an effort to make an orderly transition to a smaller force;
- more realistic funding projections, coupled with an announced firm stand not to allow programs to proceed if they are shown to be unaffordable in the future; and
- renewed commitment to the Packard Commission's recommendations and to

improving the quality and professionalism of the acquisition work force.

The Congress has also taken constructive actions and made proposals to improve weapon acquisitions. For example, the Joint Chiefs of Staff was strengthened by the Goldwater-Nichols Act, enabling it to function more effectively in situations such as Operation Desert Storm. Both the Senate and House Armed Services Committees have been forthright in highlighting the need for a new military strategy in light of the reduced threat and have put forth proposals on such a strategy. The Senate Armed Services Committee has pioneered efforts to authorize funding for entire acquisition phases, so as to reduce program instability. More recently, Members of Congress have proposed renewed emphasis on the "fly before buy" policy in weapon programs and have enacted the Defense Acquisition Workforce Improvement Act to improve the quality of the work force.

Today, the ingredients for making lasting improvements to weapons acquisitions—the need, the opportunity, and the leadership—exist. To convert these ingredients into constructive change will require both the Congress and the

administration to take joint ownership of repetitive acquisition problems and to take explicit steps to resolve them. The actions already under way are important to better outcomes. Also important, in our view, is the recognition of the cultural dimension of acquisition problems and the solutions it suggests. Beyond directives and controls, acquisition participants will have to pull together to make better outcomes the more natural products of a healthier acquisition culture.

Related GAO Products

Weapons Acquisition: A Rare Opportunity For Lasting Change (GAO/NSIAD-93-15, forthcoming).

Electronic Warfare: Established Criteria Not Met for ASPJ Production (GAO/NSIAD-92-103, Mar. 23, 1992).

Electronic Warfare: Radar Jammer Proliferation Continues (GAO/NSIAD-92-83, Feb. 28, 1992).

Tactical Missile Acquisitions: Understated Technical Risks Leading to Cost and Schedule Overruns (GAO/NSIAD-91-280, Sept. 17, 1991).

Acquisition Reform: Implementing Defense Management Review Initiatives (GAO/NSIAD-91-269, Aug. 8, 1991).

Defense Planning and Budgeting: Effects of Rapid Changes in National Security Environment (GAO/NSIAD-91-56, Feb. 5, 1991).

Aircraft Development: Reasons for Cost Growth on the Advanced Tactical Fighter Program (GAO/NSIAD-91-138, Feb. 1, 1991).

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