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The Commission on Government Procurement recommended a new plan for acquiring major weapons systems and other major systems which has become the basis for a revised policy in procurement for all executive agencies. The Department of Defense suggested that the Pershing II program came close to the recommended procedures. Findings/Conclusions: The Pershing II program is not similar to the Commission's plan and is characteristic of the acquisition process the Commission was trying to reform. Army efforts to find a solution to the need the Pershing II is addressing have always been directed toward a surface-to-surface missile. Also, the Army's efforts to define and explore the Pershing II concept began without the Secretary of Defense involvement that the Commission envisioned. Under the Commission's plan, different technological approaches would have been solicited from industry, and industry would have explored selected alternatives before a specific system was selected. Recommendations: Executive agencies have to understand that under the new acquisition process mission area deficiencies must be determined and stated independently of any specific system solution. Effort allowed under the technology base requires redefinition so that solutions to mission needs result from competition between alternative solutions. Industry must be given greater flexibility to propose a wide range of alternative solutions to mission area deficiencies in responding to Government requests. (Author/SC)

REPORT TO THE CONGRESS

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

Comparison Of The Pershing II Program With The Acquisition Plan Recommended By The Commission On Government Procurement

Department of Defense

The Commission on Government Procurement recommended a new plan for acquiring major weapons systems and other major systems which has become the basis for a revised policy in procurement for all executive agencies.

GAO has compared the Pershing II program with the Commission's plan and has concluded that it is not similar to the plan and is characteristic of the acquisition process the Commission was trying to reform.

PSAD-77-51

JAN. 24, 1977

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-182956

To the President of the Senate
and the Speaker of the House of Representatives

This report on the Pershing II program is one of three reports on our review to determine how closely recent Department of Defense acquisition programs parallel the major system acquisition plan the Commission on Government Procurement recommended.

We made this review at the request of Senator Lawton Chiles, Chairman, Subcommittee on Federal Spending Practices, Efficiency, and Open Government, Senate Committee on Government Operations. As agreed with the Senator's office, we asked the Department of Defense to suggest systems for our review which came closest to the Commission's plan.

The NAVSTAR Global Positioning System and the Shipboard Intermediate Range Combat System are covered in separate reports. Of the three programs, only the Shipboard Intermediate Range Combat System had any significant similarity to the beginning steps of the Commission's plan.

We made our review pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

Copies of this report are being sent to the Director, Office of Management and Budget, and the Secretary of Defense.

Comptroller General
of the United States

Contents

ABBREVIATIONS

ASARC	Army Systems Acquisition Review Council
DCP	development concept paper
DOD	Department of Defense
DSARC	Defense Systems Acquisition Review Council
GAO	General Accounting Office
NATO	North Atlantic Treaty Organization
OSD	Office of the Secretary of Defense
ROC	required operational capability

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

COMPARISON OF THE PERSHING II PROGRAM WITH THE ACQUISITION PLAN RECOMMENDED BY THE COMMISSION ON GOVERNMENT PROCUREMENT
Department of Defense

D I G E S T

In December 1972 the Commission on Government Procurement recommended a new plan for acquiring major systems. The Commission's recommendations were the basis for an April 5, 1976, Office of Management and Budget circular on major system acquisitions; it prescribed policy for all executive branch agencies.

GAO was asked to compare the beginning steps in the acquisition process of some recent major systems with the Commission's plan. (See p. 1.)

Because Department of Defense officials had indicated that the Commission's intent had been accomplished either formally or informally in some Defense programs, GAO asked Defense to suggest programs which came closest to the recommended procedures.

One suggested program was the Pershing II, a surface-to-surface missile system with nuclear warheads having a program cost estimate of about $1 billion. Its selection, however, was apparently based on the program's compliance with revised Army acquisition regulations rather than on its similarity to the Commission's plan.

The Pershing II program is not similar to the Commission's plan and is characteristic of the acquisition process the Commission was trying to reform. (See p. 7.)

Army efforts to find a solution to the need the Pershing II is addressing have always been directed toward a surface-to-surface missile. Also, the Army's efforts to define and explore the Pershing II concept began without the Secre-

tary of Defense involvement that the Commission envisioned. (See pp. 8 and 9.)

Under the Commission's plan, the Secretary of Defense would have the Army's perception of the mission need reconciled with overall agency resources. The Army's exploration of alternative solutions would have begun only after the Secretary's approval of a statement of needs and goals independent of a specific system solution. (See p. 8.)

Pershing II is being developed as a modular improvement to the Pershing Ia under a sole-source contract with the Pershing contractor. Under the Commission's plan, different technological approaches would have been solicited from industry, and industry would have explored selected alternatives before a specific system was selected. (See p. 12.)

Single-system development would be permitted as an exception under the Commission's plan if the needs were sufficiently urgent or required such a massive system that competitive development would not be possible. Even in this instance, however, specific Secretary of Defense approval would be required. GAO believes the program would not meet the Commission's criteria for single-system development because the low funding levels in the program's early years do not suggest the urgency described by the Commission or a sufficiently large funding requirement to rule out competitive development. (See p. 13.)

It should be noted that some events in the beginning steps of the Pershing II evolution occurred before the Commission's report, and the Pershing II evolution was generally consistent with then-existing Army and Department of Defense regulations. (See p. 7.)

GAO presented the results of its review of the three programs during August 24, 1976, hearings before the Subcommittee on Federal Spending Practices, Efficiency, and Open

Government. GAO observed that implementation of the Commission's plan as outlined in the Office of Management and Budget circular will require improvements in several areas:

--Executive agencies have to understand that under the new acquisition process mission area deficiencies must be determined and stated independently of any specific system solution. This will enable agency heads and the Congress to make decisions based on a clear understanding of the mission deficiency and need for new systems.

--Effort allowed under the technology base requires redefinition so that solutions to mission needs are not dictated by in-house efforts but result from competition between alternative solutions.

--Industry must be given greater flexibility to propose a wide range of alternative solutions to mission area deficiencies in responding to Government requests.

Office of the Secretary of Defense and Army officials agreed generally with the report. Comments of these officials have been incorporated.

CHAPTER 1

INTRODUCTION

Major system acquisitions account for a large part of Federal expenditures. We reported 1/ in February 1976 that major Federal acquisitions 2/ in process as of June 30, 1975, would cost about $404 billion at completion. About $220 billion is for Department of Defense (DOD) acquisitions, excluding the Army Corps of Engineers.

In December 1972, after about 2-1/2 years of study, the Commission on Government Procurement issued its report containing 149 recommendations for improving Federal procurement. Twelve recommendations were on major system acquisitions. The Office of Federal Procurement Policy, Office of Management and Budget, issued Circular No. A-109, "Major System Acquisitions," on April 5, 1976. It prescribed policy for all executive branch agencies based on the Commission's recommendations.

During July 1975 hearings on major system acquisition reform, the Chairman, Subcommittee on Federal Spending Practices, Efficiency and Open Government, Senate Committee on Government Operations, asked us to undertake a special study of the "very beginning steps" in the requirements process for some current programs. He asked that we compare the evolution of these programs with the Commission's recommendations.

DOD officials had indicated in congressional hearings that the intent of the Commission's plan had been implemented either formally or informally in some DOD acquisitions. Therefore, with agreement from the Senator's office, we asked the Deputy Secretary of Defense to suggest acquisitions which were managed in a way that most nearly corresponded to the procedures the Commission recommended.

The Office of the Secretary of Defense (OSD) asked each service to suggest systems to be reviewed. The systems selected were (1) the Army's Pershing II missile system, (2) the Navy's Shipboard Intermediate Range Combat System, and

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1/ "Financial Status of Major Acquisitions, June 30, 1975," PSAD-76-72, dated February 27, 1976.

2/ For civil agencies, acquisitions over $25 million were considered major. For the Department of Defense, programs with research, development, test, and evaluation costs over $50 million or production costs over $200 million were considered major.

(3) the NAVSTAR Global Positioning System which has a joint service program office with the Air Force as the executive service. The Shipboard Intermediate Range Combat System and the NAVSTAR program are subjects of separate reports.

We presented the results of our review of the three programs during August 24, 1976, hearings before the Subcommittee on Federal Spending Practices, Efficiency, and Open Government. We observed that implementation of the Commission's plan, as outlined in the Office of Management and Budget circular, will require improvements in several areas:

--Executive agencies have to understand that under the new acquisition process mission area deficiencies must be determined and stated independently of any specific system solution. This will enable agency heads and the Congress to make decisions based on a clear understanding of the mission deficiency and need for new systems.

--Effort allowed under the technology base requires redefinition so that solutions to mission needs are not dictated by in-house efforts but result from competition between alternative solutions.

--Industry must be given greater flexibility to propose a wide range of alternative solutions to mission area deficiencies in responding to Government requests.

SCOPE OF REVIEW

Our review covered only the Commission's first six recommendations. To determine the evolution of the selected programs, we conferred with officials of OSD, military department headquarters, program offices, and selected contractors. We reviewed available correspondence; reports; briefing charts; contracting documents; and planning, programing, and budgeting system documents.

We did not evaluate the conclusions reached or decisions made in the programs' evolution. Rather, we compared the programs with the major system acquisition plan envisioned by the Commission and the Office of Management and Budget circular on major system acquisitions.

Formal comments were not obtained from DOD on this report. However, OSD and Army officials reviewed the report and generally agreed with its findings and conclusions. Comments of these officials have been incorporated.

CHAPTER 2

COMMISSION ON GOVERNMENT PROCUREMENT

The Commission on Government Procurement's recommendations on major system acquisitions called for:

--Establishing a common plan for conducting and controlling all acquisition programs. The plan should highlight the key decisions for all involved organizations: the Congress, agency heads, agency components, and the private sector.

--Defining each organization's role so it can exercise proper responsibility and control over acquisition programs.

--Providing the Congress and agency heads with the information needed to make key program decisions and commitments.

The plan forms a structure applicable to programs of all agencies. The recommendations were not designed to be selectively applied to the acquisition process but, rather, to be used together to improve the entire acquisition process.

Specific actions called for in the early stages of the process were:

--Agency components (such as the Army, Navy, and Air Force) would submit their perceptions of mission deficiencies to their agency head (such as the Secretary of Defense).

--The agency head would reconcile a perceived need with overall agency mission capabilities and, if there was agreement that a need existed, would (1) set initial cost, time, and capability goals and (2) direct one or more agency components to respond to the need.

--An agency component would establish a program office and solicit proposals from industry for conceptual solutions to the stated need.

--Industry would respond to the solicitation with proposed systems.

--The agency budget request and the congressional authorizations for front-end research and development would be by mission purpose rather than by individual items.

--The agency head would allocate funds to agency components for the proposed systems.

--The agency component would fund selected alternative systems using annual fixed-level funding after reviewing their progress each year.

--Industry would explore 1/ the selected systems within the established funding goals.

--The agency components would choose systems for competitive demonstration on the basis of this exploration.

--The agency head would specifically approve the competitive demonstration.

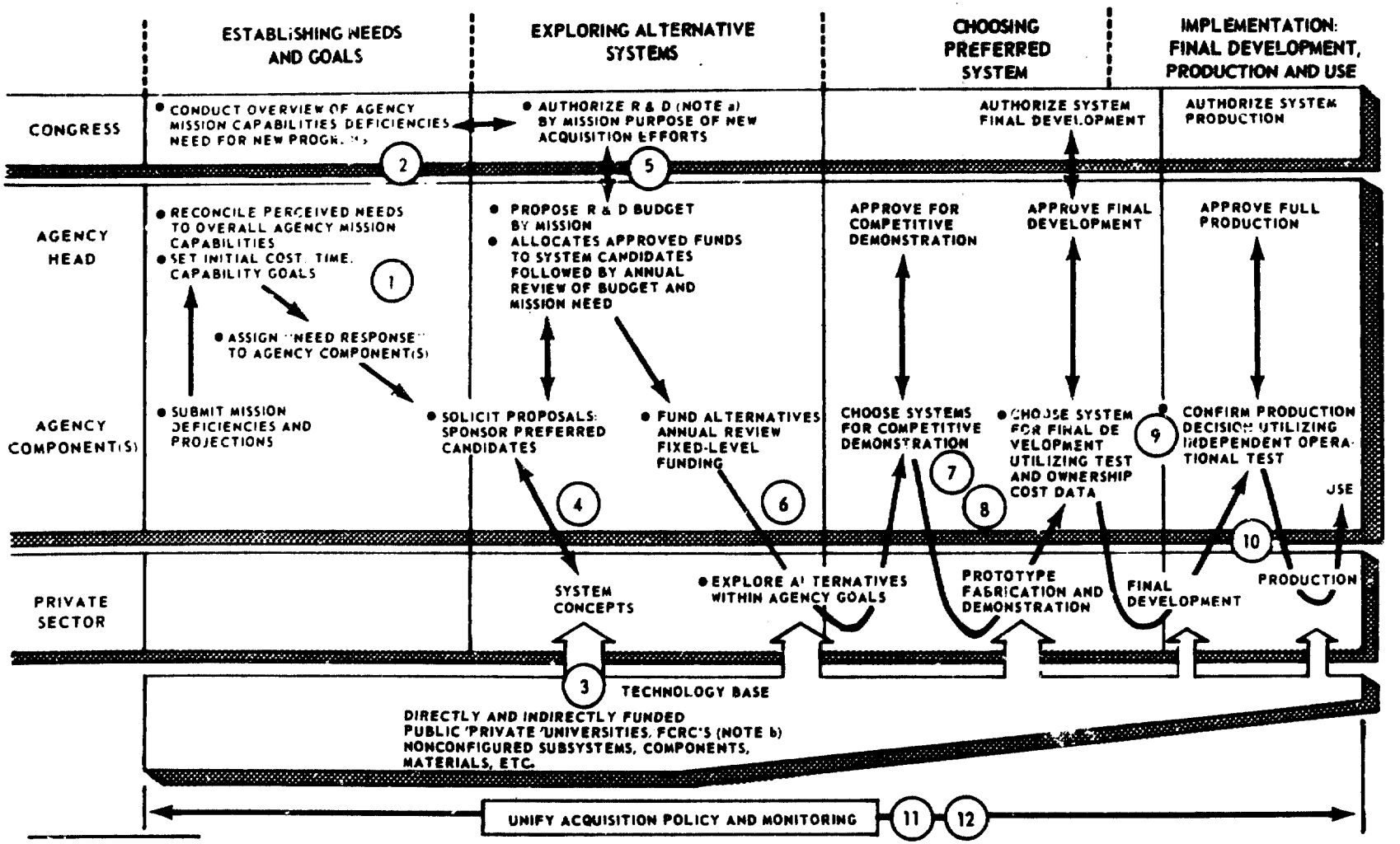
As an exception, agency head approval would be required if the agency component determined it should concentrate development resources on a single system.

The following chart from the Commission's report shows the interaction of the Congress, agency heads, agency components, and the private sector in the recommended major system acquisition plan.

1/ As used by the Commission, "exploring alternative systems" consists of the study, design, and development effort occurring between agency head direction for a component to respond to a need statement and the selection of systems for competitive demonstration.

MAJOR SYSTEM ACQUISITION

• RECOMMENDED ACTIONS



[a] RESEARCH AND DEVELOPMENT.

[b] FEDERAL CONTRACT RESEARCH CENTERS.

CHAPTER 3

THE PERSHING II PROGRAM

The original Pershing system is a mobile, surface-to-surface ballistic missile system with nuclear warheads and a selective range. The system was deployed in Europe in 1963 to provide a medium-range nuclear capability to support the Field Army.

A 1964 Office of the Secretary of Defense study concluded that Pershing was better suited than another option 1/ for the theater quick-reaction alert mission. 2/ This study resulted in Pershing being assigned the quick-reaction alert mission and the Pershing Ia being developed to make the system more suitable for that mission. Pershing Ia was deployed in 1969. Changes to the basic system included the modernization of ground support equipment and more launchers per battalion. The system has three alternate warheads and slightly better accuracy than the original Pershing system.

The Pershing II system, now in advanced development, is to be a modular improvement to the Pershing Ia. The improvements involve replacing the warhead and guidance and control section with new nuclear warheads and a terminally guided reentry vehicle. Pershing II will have the same range but a radar area correlation terminal guidance system 3/, now being developed, will provide greater accuracy. Several warheads are being considered for the system. The program cost estimate is $1 billion. In June 1978 the Defense Systems Acquisition Review Council (DSARC) II is scheduled to consider whether the system should enter engineering development.

Appendix I is a detailed presentation of the evolution of the Pershing II program.

1/ Specific data on the second option is classified.

2/ Quick-reaction alert refers to the capability to attack preassigned, high-threat, time-sensitive, fixed targets immediately.

3/ Before launch, a reference scene of the target area is inserted into the reentry vehicle. During the powered portion of the missile flight and immediately after reentry, an inertial navigation system is used for guidance corrections. After reentry, the onboard radar begins to scan the target area, comparing each "picture" with the previously inserted reference scene, leading to appropriate guidance corrections.

CHAPTER 4

COMPARISON OF THE PERSHING II EVOLUTION WITH THE COMMISSION'S RECOMMENDATIONS

On the basis of our comparison of the evolution of the Pershing II with the Commission's first six recommendations, we believe that the program is not similar to the Commission's plan and that it is characteristic of the acquisition process the Commission was trying to reform. It should be noted, however, that (1) most events in the front end of the Pershing II evolution occurred before the Commission's December 1972 report and (2) the Pershing II evolution was generally consistent with then-existing Army and Department of Defense regulations.

The following sections present our comparision.

STARTING AND COORDINATING PROGRAMS

"Recommendation 1. Start new system acquisition programs with agency head statements of needs and goals that have been reconciled with overall agency capabilities and resources.

(a) State program needs and goals independently of any system product. Use long-term projections of mission capabilities and deficiencies prepared and coordinated by agency component(s) to set program goals that specify:

(1) Total mission costs within which new systems should be bought and used.

(2) The level of mission capability to be achieved above that of projected inventories and existing systems.

(3) The time period in which the new capability is to be achieved.

(b) Assign responsibility for responding to statements of needs and goals to agency components in such a way that either:

(1) A single agency component is responsible for developing system alternatives when the mission need is clearly the responsibility of one component; or

(2) Competition between agency components is formally recognized with each offering alternative system solutions when the mission responsibilities overlap."

The Commission envisioned that an agency component, such as a military service, would submit long-term projections of mission capabilities and deficiencies to the agency head for review. The agency head would then have these projections reconciled with overall agency resources and capabilities. New major system acquisition programs could start in accordance with the first recommendation if the agency head agreed that a deficiency existed. This agreement was to include a statement of needs and goals which did not call for a specific solution and was to occur before identification and exploration of specific system alternatives.

In accordance with the then-existing major acquisition development process, the Army defined the Pershing II concept as its solution to the stated mission deficiency before Office of the Secretary of Defense approval was formally given to the acquisition program. North Atlantic Treaty Organization (NATO) and OSD documents in 1970-72 dealt with the general need Pershing II is addressing (such as improved accuracy, lower collateral damage, and an earth penetrating warhead), but these statements did not constitute Secretary of Defense approval of a new system acquisition program or contain the specific mission capability and cost and schedule goals called for by recommendation 1.

Also, Army effort beginning in 1970 focused on a surface-to-surface missile solution to the mission need rather than considering different technological approaches.

Identifying the need

The need the Pershing II is addressing resulted from a 1967 NATO change in tactical nuclear weapons strategy. The development concept paper (DCP) following DSARC I (see p. 22), states that arguments against Pershing II precluded a complete endorsement at that time. Arguments for the system, however, were considered sufficient to justify an advanced development program as an option for future force modernizations. These issues will be considered at DSARC II before entering full-scale development.

Selecting a specific system solution

The Commission stated that current DOD policy delegates the responsibility for deciding needs and goals to each military service. The services define needs and goals in terms

of specific hardware instead of the mission. The result has been pressure to stick to a single-system approach without adequately considering alternatives.

This policy was reflected in the Pershing II evolution. A 1970 unsolicited proposal from the Pershing prime contractor was to design and fabricate a radar area correlation guidance system and to flight test the system using the Pershing Ia.

In February 1971 the Pershing project manager confirmed with the major U.S. commanders in Europe, where Pershing Ia is deployed, that Pershing needed improved accuracy and reduced nuclear yield. The project manager prepared the Pershing Alternatives Plan, which described and recommended methods to improve the Pershing system's capabilities. Subsequent Army contracts with the Pershing prime contractor were for a radar area correlation terminal guidance system.

The Secretary of Defense was not involved in the Pershing II evolution as he would be under the Commission's plan in terms of reconciling perceived needs against overall agency resources before developing the system concept and assigning responsibility for pursuing the new capability. A step was made in this direction, however, much later, when the Army's Deputy Chief of Staff of Operations insisted on an Air Force review of the Army's draft DCP. He said that he would not support a recommendation to forward the DCP to OSD unless it was referred to the Air Force to resolve the need for the system on a mission-area basis. This occurred, however, just before approval of advanced development for the Pershing II.

The Commission opposed allowing agency components to make early selection of a specific system solution because it felt the needs and goals perceived by the agency component would be shaped by the component's views of missions and priorities and would not necessarily coincide with the views of other components or the agency head. According to the Commission, results could be destructive interagency rivalry, overlaps in mission capabilities, and the use of old technology weapons rather than exploring the benefits and costs of new technologies.

CONGRESSIONAL REVIEW OF NEEDS AND GOALS

> "Recommendation 2. Begin congressional budget proceedings with an annual review by the appropriate committees of agency missions, capabilities, deficiencies, and the needs and goals for new acquisition programs as a basis for reviewing agency budgets."

Past DOD budget requests, including requests for funding the effort leading to the Pershing II program, have not been presented under a mission-area format. 1/ The 1974 Congressional Budget Act requires that starting with the fiscal year 1979 budget request, the President's budget will contain descriptive information in terms of national needs, agency missions, and basic programs.

Funding for the initial Army effort leading to the approved Pershing II program was under a radar area correlation project in the terminal homing systems program element in the fiscal year 1972-75 budget. The Pershing II program element did not appear until the fiscal year 1975 budget request. Congressional review of the budget requests was on a line-item basis rather than as part of a mission-area review.

The Commission stated that the Congress cannot effectively review expenditures and the allocation of national resources without clearly understanding the needs and goals for new programs. It continued that the needs and goals for a program are presented to the Congress when a single system is proposed, with cost, schedule, and performance estimates often predicated on insufficient research and development. At this point, the cost to meet a mission need is largely determined by the cost of the new system, not the worth of the new mission capability compared to other alternatives.

The Congress should have an early opportunity to (1) understand and debate an agency's mission needs and goals for new acquisitions and (2) discuss the relationship of proposed mission capabilities to current national policy and the allocation of resources in accordance with national priorities.

TECHNOLOGY BASE

"Recommendation 3. Support the general fields of knowledge that are related to an agency's assigned responsibilities by funding private sector sources and Government in-house technical centers to do:

(a) Basic and applied research.

(b) Proof of concept work.

1/ We are currently reviewing research and development budget formulation to compare actual budget formulation for selected projects in various executive agencies with the Commission's recommendations affecting budget formulation. We hope to report on this review in January 1977. Pershing II is one of the programs being reviewed.

(c) Exploratory subsystem development.

Restrict subsystem development to less than fully designed hardware until identified as part of a system candidate to meet a specific operational need."

The Commission sought to make an agency's technology base better serve new programs by (1) controlling how far projects are taken within the base and (2) giving the base greater access in offering new system alternatives. The recommendation is directed toward the total technology base efforts of an executive agency. It is related to the budget reform of recommendations 2 and 5 in that the Commission felt a separate appropriation category should be established for technology base effort.

We did not review the DOD technology base. We believe, however, that under the Commission's plan, effort in the radar area correlation contracts leading to the OSD-approved program would have been made after an OSD decision to start a new system acquisition effort (recommendation 1).

A January 1972 contract with the Pershing prime contractor was for (1) advanced development of the radar area correlation guidance system and (2) demonstration through captive flight tests on a helicopter that the guidance system could achieve the required Pershing II accuracy under static conditions. This effort was aimed at improving the accuracy of the Pershing but was not identified as part of a major acquisition effort even though the Army had approved the Pershing Alternatives Plan in October 1971. The Pershing II program did not appear as a line item until the fiscal year 1975 budget request.

CREATING NEW SYSTEMS

"Recommendations 4. Create alternative system candidates by:

(a) Soliciting industry proposals for new systems with a statement of the need (mission deficiency); time, cost, and capability goals; and operating constraints of the responsible agency and component(s), with each contractor free to propose system technical approach, subsystems, and main design features.

(b) Soliciting system proposals from smaller firms that do not own production facilities if they have:

(1) Personnel experienced in major development and production activities.

(2) Contingent plans for later use of required equipment and facilities.

(c) Sponsoring, for agency funding, the most promising system candidates selected by agency component heads from a review of those proposed, using a team of experts from inside and outside the agency component development organization."

The Army has been exploring a single-system solution to the stated mission need. This exploration began with funding of the Pershing prime contractor's 1970 unsolicited proposal to study the use of radar area correlation terminal guidance on the Pershing Ia.

The Army did not solicit industry proposals to create alternative system candidates. 1/ After the Pershing II concept had been defined, the Army Missile Command in 1971 and the Pershing II Special Task Force in 1973 identified and evaluated alternative system candidates. They recommended Pershing II as the alternative with the best technical approach. The Pershing II missile system is now being developed as a modular improvement to the Pershing Ia by the Pershing development contractor. Consequently, rather than several alternatives being explored, a single solution is being developed under sole-source contracts.

Within the Commission's plan, on the other hand, commitment to system concept, technical approach, and design would be delayed and alternative system candidates would be explored as relatively inexpensive insurance against the possibility that a premature choice would later prove to be a poor and costly one. The Commission's report states that the combined pressures of (1) limited resources to explore alternatives and (2) the requirement that the military services defend a system before large-scale resources are committed induce the services to focus prematurely on one technical approach. Military services advocate specific methods and approaches to meet their responsibilities on the basis of past operational experience. For example, the Air Force solution to the need being addressed by Pershing II might be based on weapons delivered by aircraft.

1/ Alternative system candidates, as defined by the Commission would have different design approaches, thereby providing different performance features, effectiveness levels, and costs of acquisition and ownership.

Single-system development in a major system acquisition would be permitted as an exception to the Commission's plan when

--urgent needs could not be met if time were taken to explore alternative systems or

--needs and goals would require major systems so physically and financially massive that no one contractor (or team of contractors) would be able to marshal, consolidate, and manage all the necessary talents and resources to compete.

Even in these instances, however, specific Secretary of Defense approval would be required. Considering the nature of the Pershing II program, including the lack of agreement on the need for the system (see p. 22), we believe it would not meet the Commission's criteria for single-system development. The low funding levels in the program's early years do not suggest the urgency described by the Commission or a sufficiently large funding requirement to rule out competitive development.

CONGRESSIONAL REVIEW OF SYSTEM EXPLORATION

"Recommendation 5. Finance the exploration of alternative systems by:

(a) Proposing agency development budgets according to mission need to support the exploration of alternative system candidates.

(b) Authorizing and appropriating funds by agency mission area in accordance with review of agency mission needs and goals for new acquisition programs.

(c) Allocating agency development funds to components by mission need to support the most promising system candidates. Monitor components' exploration of alternatives at the agency head level through annual budget and approval reviews using updated mission needs and goals."

The Commission stated that

"Congress has difficulty overseeing the growing expenditures for agencies' R&D [research and development] budgets; its intensified demands for information and justification leaves Congress burdened with detailed reviews that obscure the overall pattern."

The Commission added that the Congress could better understand where research and development money is spent if it reviewed,

authorized, and appropriated funds for exploring candidate systems according to mission.

This approach would segregate funds for (1) maintaining the technology base, (2) exploring alternative solutions to mission needs, and (3) developing the selected systems. Funds to explore alternative solutions would group together all development projects associated with the alternatives to meet each agency mission need.

Specific advantages listed for this approach were (1) reduced pressure to make premature commitments to a particular system to gain funding approval, (2) greater executive branch flexibility to explore alternative systems and to cope with uncertain systems, and (3) more effective congressional review of major system acquisition programs.

Previous comments under recommendation 2 apply to this section also. Budget requests, authorizations, and appropriations have not been made by mission area.

Efforts leading to the Pershing II program have been financed according to current appropriation procedures. Funds for the program have been requested in the advanced development section of the Army's research and development budget for missiles and related equipment. In fiscal years 1972-75, funds were requested under radar area correlation. For fiscal years 1975-77, funds have been requested under Pershing II. Both program elements were submitted and reviewed on a line-item rather than a mission-area basis.

REINSTATING MEANINGFUL COMPETITION

"Recommendation 6. Maintain competition between contractors exploring alternative systems by:

(a) Limiting commitments to each contractor to annual fixed-level awards, subject to annual review of their technical progress by the sponsoring agency component.

(b) Assigning agency representatives with relevant operational experience to advise competing contractors as necessary in developing performance and other requirements for each candidate system as tests and tradeoffs are made.

(c) Concentrating activities of agency development organizations, Government laboratories, and technical management staffs during the private sector competition on monitoring and evaluating

contractor development efforts, and participating in those tests critical to determining whether the system candidate should be continued."

As stated earlier, alternative system solutions to the stated mission need are not being explored; the Army is pursuing a single-system solution.

The Commission stated that effective competition in system acquisition is often precluded when the Government makes early design decisions on the best approach. The Commission believed that important benefits could result from allowing competitors to be independently responsible for the evaluation of their systems by:

--Reinstating a competitive challenge to industry to use a wider span of technologies for simpler, less expensive system solutions.

--Creating incentives that encourage economy and austerity in development because, unlike in sole-source situations, competitors can be motivated to achieve austerity in system design and system design activities.

--Restoring the integrity of contracts, with each contractor fully responsible for designing the system contained in its proposal. Ultimately, system demonstration should determine the success or failure of a contractor's approach and there should be a sound basis for negotiating a production contract.

This wider latitude for contractors to propose and explore system alternatives would, according to the Commission, be balanced by technical competition among them.

EVOLUTION OF THE PERSHING II PROGRAM

The Pershing II concept, including the need for the system and the technology to be incorporated into the system, evolved in the late 1960s and early 1970s. The need being addressed by Pershing II resulted in 1967 from a North Atlantic Treaty Organization change in tactical nuclear weapons strategy to that of having the capability for a flexible response to an attack. The nature of the change is classified and is excluded from this report.

The Pershing II system, directed toward resolving the need, evolved from several studies and actions beginning shortly after NATO approved the strategy of flexible response.

In February 1969 the Office of the Secretary of Defense's Advanced Research Projects Agency awarded a 6-month, $150,000 contract to the Pershing Ia prime contractor to study alternative weapon systems that could be operational during the next decade and beyond to perform certain missions. The resulting September 1969 report concluded that a tactical interdiction missile appeared to be more practical and cost effective than other options considered.

The conceptual tactical interdiction missile identified in this study would, in its mobile concept, operate much like the Pershing and would include a radar area correlation terminal guidance system to provide accuracy comparable to Pershing II's. The study recommended that the radar area correlation terminal guidance system be demonstrated as soon as possible.

Accordingly, in February 1970 the contractor submitted an unsolicited proposal to the Army Missile Command for a radar area correlation terminal guidance development program. The program was to establish the feasibility and operational effectiveness of a terminally guided reentry vehicle system for potential use in a Pershing Ia-type mission. The proposed development program was to consist of conceptual studies, design and fabrication of a radar area correlation terminal guidance system, and flight testing of the guidance system using modified Pershing Ia missiles. Generally, this is the type of development being carried out in the Pershing II program.

A February 1971 Army study stated that improved accuracy for Pershing, coupled with a low-yield, earth-penetrating

nuclear warhead, would offer a major tactical advantage in Europe. The study said that these potential characteristics of Pershing suggest that it might be no longer used for mass destruction and instead be considered for selective use against operating bases for fighters and bombers.

Also in February 1971, the Pershing project manager confirmed with the major U.S. commanders in Europe where Pershing Ia is deployed that the Pershing improvements were needed. Subsequently, the Pershing project office, along with U.S. Army Europe, and the U.S. Army Combat Development Command (now part of the Training Doctrine Command), prepared the Pershing Alternatives Plan, which described and recommended methods to achieve the improved capabilities.

INITIATING THE PERSHING II PROGRAM

Several actions during 1971 led to the conceptual Pershing II program. These included the (1) fiscal year 1972 budget request for $5.5 million for advanced development of radar area correlation guidance, (2) initial contract award for radar area correlation in May 1971, (3) completion of the Pershing Alternatives Plan in July 1971, and (4) official Army approval of the Pershing II program conceptual phase in October 1971 based on recommendations contained in the alternatives plan.

Budget request for radar area correlation effort

The radar area correlation effort leading to Pershing II first appeared in the fiscal year 1972 budget request to the Congress as a project entitled radar area correlation under the terminal homing systems program element. This program element was included in the advanced development section of the Army's research and development budget request for missiles and related equipment.

Initial radar area correlation contract

In May 1971 the Army Missile Command awarded the initial contract for preliminary design efforts on a guidance system which is now part of the Pershing II concept. The contract was awarded on a sole-source basis to the Pershing prime contractor for $500,000. The contractor was to establish the design requirements for and the preliminary design of the radar area correlation guidance system to demonstrate the performance of a terminally guided ballistic missile. The contractor was selected on a sole-source basis because (1) it designed and

developed the Pershing missile system, (2) the contract required system-oriented personnel with intimate knowledge of the Pershing system, and (3) the Government had already paid the high starting and learning costs included in this procurement.

Completion of the Pershing Alternatives Plan

In July 1971 the Pershing project office completed the alternatives plan. The plan was to determine

--whether requirements would exist in the 1980s for such a system,

--how well other existing systems could fill the requirements,

--how well Pershing could fill the requirements, and

--whether modular improvements to Pershing would be economical.

The plan concluded that (1) requirements exist for a Pershing-type system, (2) the Pershing has characteristics similar to those needed to fill the requirements, and (3) modular improvements to Pershing could greatly increase system and cost effectiveness. The plan recommended that:

--The radar area correlation program be continued as a Pershing advanced development program.

--A terminally guided reentry vehicle (using the Pershing Ia first and second stages) be developed and procured after the successful demonstration of the radar area correlation terminal guidance.

--An earth-penetrating nuclear warhead and appropriate conventional munitions be developed for the terminally guided reentry vehicle.

Improving the inertial guidance system components was identified as a way to increase Pershing accuracy but was not recommended since such improvements could not provide accuracy as great as the radar area correlation terminal guidance system.

Approval of the Pershing II program

In October 1971 the Army approved the requirements for a system with the capabilities of Pershing II by approving the Pershing Alternatives Plan. The Army then requested the Missile Command to prepare a system development plan and a draft development concept paper for Pershing II and to coordinate the development of nuclear warheads for Pershing II with the Atomic Energy Commission and the Army Combat Development Command. In addition, the Combat Development Command was requested to forward a materiel need statement for Pershing II to Army for approval not later than December 1971. After Army approval, the Missile Command extended the $500,000 radar area correlation design contract through December 1971 for an additional $100,000 to initiate the hardware program.

The Pershing II-type improvements approved by Army were also included in Department of Defense guidance documents dated December 1971 and February 1972. These documents stated that (1) an earth-penetrating warhead was required and could be carried on a modified Pershing system and (2) tactical nuclear weapons should be developed to improve accuracy and reduce collateral effects.

DEVELOPMENT EFFORT AFTER PROGRAM APPROVAL

DOD's fiscal year 1973 budget request was presented to the Congress in early 1972. The Army requested $6 million for radar area correlation effort in the terminal homing systems program element of the advanced development section of the Army's research and development budget for missiles and related equipment.

In January 1972 the Army Missile Command awarded a 2-year, $10.5 million sole-source contract to the Pershing prime contractor for (1) advanced development of the radar area correlation guidance system and (2) a baseline definition for advanced development of the reentry vehicle. This contract was to demonstrate through captive flight tests on a helicopter that the guidance system could achieve the required Pershing II accuracy under static conditions.

In April 1972 the Combat Development Command submitted the Pershing II draft materiel need statement requested by Army, and the Missile Command submitted the Pershing II system development plan. In May 1972 the increasing Army activity related to Pershing II prompted a request from DOD's Deputy

Director of Defense Research and Engineering for the Army to prepare a DCP. The DCP is used for DOD's Defense Systems Acquisition Review Council review and the later Secretary of Defense decision to begin or continue a system development program.

In January and February 1973 OSD documents provided additional guidance for developing tactical nuclear weapons. These documents identified needed improvements but did not identify the specific level of capability needed above existing systems. The documents also identified planned Pershing improvements.

CHANGE IN THE ARMY'S ACQUISITION PROCESS

In July 1972 the Army established new guidelines for major systems acquisition. These guidelines called for establishing a required operational capability (ROC) need statement as the first step in system development. After ROC approval, an all-Army special task force would be created to investigate alternative system designs and to recommend an approach to fulfill the system need. The special task force would prepare:

--A concept formulation package (consisting of a trade-off determination, trade-off analysis, best technical approach, and cost/operational effectiveness analysis).

--A development plan.

--A draft DCP for consideration by the Army Systems Acquisition Review Council (ASARC).

The Army selected Pershing II as the first major program that would be developed and procured using the new system acquisition guidelines. Accordingly, the Army restructured the Pershing II draft materiel need statement into a ROC need statement. In October 1972 the Army approved the ROC and established a special task force to investigate alternative system designs.

The Pershing II Special Task Force convened in January 1973 and prepared its final report in April. The task force director was a former commander of the 56th Field Artillery Brigade, U.S. Army, Europe, and the deputy director was the Pershing project manager. The task force was composed of 19 Army personnel representing (1) the Materiel Command (including the Missile Command and the Pershing project office), (2) the Combat Development Command, (3) the Continental Army Command, (4) U.S. Army, Europe, and (5) Department of the Army staff.

The task force, as required by the new system acquisition guidelines, made trade-off determinations and trade-off

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analyses to determine the best technical approach to fill the system need for Pershing II. The cost and operational effectiveness of the recommended approach was then compared with other weapon systems which might satisfy the Pershing II ROC characteristics.

The task force identified and investigated 20 alternative guidance system approaches and 2 system approaches to fulfill the system need. The system approaches were to (1) develop a new missile system or (2) modify the Pershing Ia. Modification of the Pershing Ia system was selected because it was much cheaper.

Radar area correlation was selected as the guidance approach because it was the most accurate and thus was most likely to minimize civilian collateral damage. In addition, it was considered to have better all-weather capability and distinct tactical operational advantages.

The cost and operational effectiveness of this approach was compared with several existing and conceptual surface-to-surface missile systems and aircraft-delivered weapon systems for the selective-release, general-strike, and general-support missions envisioned for Pershing II. The task force concluded that Pershing II was the best alternative weapon system to meet the broad requirements of the three missions.

PROGRAM APPROVAL BY OSD

During 1971 and 1972 the Army and OSD established new system acquisition guidelines, which provided for preparing a DCP for ASARC and DSARC members to review. The ASARC and DSARC meetings provide top-level reviews of a weapon system before the Secretary of Defense decides whether to initiate or continue development of that system.

The initial ASARC review for Pershing II was scheduled for May 1973--a month after the task force completed its final report. The ASARC was held in October 1973, however, because of internal differences the Army encountered while coordinating the DCP. Specifically, the Deputy Chief of Staff for Operations said that he would not support a recommendation to forward the DCP to DOD unless the DCP was referred to the Air Force to resolve the need for the system on a mission-area basis and to identify trade-offs between Army and Air Force capabilities which introducing the Pershing II would permit. As a result, the Army Chief of Staff referred the Pershing II DCP to the Air Force for comment by October 1973.

An Air Staff Ad Hoc Study Group reviewed the Pershing II

DCP. It agreed with the stated need Pershing II is addressing but disagreed that Pershing II was the best approach to satisfy that need. The Pershing II Special Task Force director reviewed the study group's report and pointed out factors used in the Air Force analyses which he felt were incorrect and would, if corrected, result in a conclusion supporting Pershing II. He concluded that Pershing II was needed because of its utility and the flexibility it would provide.

The Army DCP was then sent to OSD on November 1, 1973. After the OSD staff review and comment on the DCP, DSARC I was held on January 22, 1974, to consider approval of the Pershing II system for advanced development.

As reflected in the DCP, the DSARC considered five basic issues related to Pershing II:

--Are the proposed changes and role of Pershing II consistent with DOD policy for theater nuclear forces?

--Should the United States continue to maintain a long-range surface-to-surface missile as part of the theater nuclear forces?

--What is the role of Pershing II and will it have significant potential value to NATO?

--Does Pershing II fill the need better than other alternatives?

--Is the proposed technical approach the best way to fill the need?

The DCP presents arguments for and against the proposed changes and role of Pershing II in theater nuclear forces. The arguments precluded a complete endorsement for the deployment of the Pershing II system at that time. However, arguments for the system were considered sufficient to justify the initiation of the advanced development program as an option for future force modernization.

On March 7, 1974, the Deputy Secretary of Defense authorized the Army to proceed with the Pershing II advanced development program, as it was presented to DSARC. In his program decision, he said the system's technical performance and the requirement for Pershing II in light of emerging nuclear policy

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were major issues to be resolved. Therefore, he said the Army should be prepared at DSARC II, scheduled for June 1978, to show (1) how development and deployment of Pershing II would implement theater nuclear policy and (2) its need and worth relative to other alternatives.

PERSHING II ADVANCED DEVELOPMENT

In early 1974 the fiscal year 1975 budget request was presented to the Congress. For the first time Pershing II appeared as a line item or program element in the Army's budget request for advanced development of missiles and related equipment. For fiscal year 1975 the Army requested $12 million to complete its radar area correlation efforts and $11.2 million to begin developing Pershing II.

In February 1974, a month after the DSARC review, the Army awarded to the Pershing prime contractor the third sole-source contract associated with the Pershing II program. This contract provides for verification of the guidance system under dynamic conditions and an option for the advanced development of the Pershing II system. This program is to culminate with flight tests of the terminally guided reentry vehicle. The contract, which is still active, is scheduled for completion in January 1978 at a total cost of $68.1 million.

The DSARC II review is scheduled for June 1978 to consider whether the Pershing II system should enter engineering development.

APPENDIX II

PRINCIPAL DEPARTMENT OF DEFENSE OFFICIALS RESPONSIBLE FOR ADMINISTERING ACTIVITIES DISCUSSED IN THIS REPORT

	Tenure of office	
	From	To
SECRETARY OF DEFENSE:		
Donald H. Rumsfeld	Nov. 1975	Present
William P. Clements, Jr. (acting)	Nov. 1975	Nov. 1975
James R. Schlesinger	July 1973	Nov. 1975
William P. Clements, Jr. (acting)	May 1973	July 1973
Elliot L. Richardson	Jan. 1973	May 1973
Melvin R. Laird	Jan. 1969	Jan. 1973
DEPUTY SECRETARIES OF DEFENSE:		
Robert Ellsworth	Dec. 1975	Present
William P. Clements, Jr.	Jan. 1973	Present
Kenneth Rush	Feb. 1972	Jan. 1973
Vacant	Dec. 1971	Feb. 1972
David Packard	Jan. 1969	Dec. 1971
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING:		
Malcolm R. Currie	June 1973	Present
John S. Foster, Jr.	Oct. 1965	June 1973
SECRETARY OF THE ARMY:		
Martin R. Hoffmann	Aug. 1975	Present
Howard H. Callaway	May 1973	July 1975
Robert F. Froehlke	July 1971	May 1973
Stanley R. Resor	July 1965	June 1971