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Report to Congressional Requesters

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DOD ACQUISITION

Case Study of the Army Tactical Missile System

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Early Technology Development Efforts

As early as fiscal year 1979 the Army and Air Force agreed to jointly develop a deep attack weapon. The Air Force was to develop reconnaissance systems that would permit them to monitor behind the enemy's forward battle lines and provide initial guidance to a deep attack weapon The Army was to develop the missile, its fire control equipment, and terminally guided submunitions The Army requested $10 3 million in fiscal year 1979 to implement this plan.

The Congress refused to authorize the requested funds, however, citing its concern about the cost and sudden proliferation of programs in the terminally guided submunitions research and development area. As a result, the Department of Defense (DOD) transferred the program to the Defense Advanced Research Projects Agency. The program was named "Assault Breaker "

The Assault Breaker technology demonstration effort was to last through 1982. The concept made use of ground launched missiles to deliver terminally guided submunitions and bomblets with less elaborate guidance to attack second echelon armored forces moving from areas up to the forward edge of the battle Both the Army and the Air Force participated in the Assault Breaker program The Army's Patriot (T-16) and Lance (T-22) missiles were used as the delivery vehicles for the demonstration program The Air Force's Pave Mover radar system was used to locate and track the targets and provide guidance to the missile and submunitions The program successfully achieved all objectives except the ability of the submunitions to hit multiple moving tanks.

Army and Air Force Programs to Apply Technology

In January 1981, even before the Assault Breaker technology demonstration was completed, the Army established its Corps Support Weapon System Program to make practical application of the technology demonstration and assigned a contracting officer to the program. The Deputy Secretary of Defense approved the Mission Element Needs Statement for this system in April and in June the Army issued an unrestricted competitive solicitation for concept definition of the system. Proposals were received from three contractors but because of funding cuts, the Army only purchased the proposals; it did not award concept definition contracts.

Also during 1981, the Air Force recognized a need for a standoff weapon with range and payload requirements similar to those postulated for the Army's Corps Support Weapon System. The Air Force weapon was also to be used for attacks against second echelon armored forces. In

Army Tactical Missile System

Background

The Army Tactical Missile System (Army TACMS) is one of a family of complementary weapons to be developed by the Army and Air Force for engaging enemy forces deep behind the front battle lines.[1] Army TACMS will be used to attack those enemy forces which are in a position to have an immediate or directly supporting impact on the close-in battle, but are beyond the range of cannon and rocket artillery systems. It is intended to delay, disrupt, neutralize, or destroy targets such as second echelon maneuver units, missile sites, and forward command posts. The Air Force has a complementary program to develop an aircraft launched missile primarily for targets beyond the reach of the Army system such as enemy airfields and refueling sites.

Army TACMS will consist of a surface-to-surface ballistic missile that can be launched from and controlled by the same equipment used to launch and control the existing Multiple Launch Rocket System (MLRS). The system will be fielded initially with an "antipersonnel/antimaterial warhead" for attacking stationary targets. A warhead containing individually guided submunitions which would be effective against moving targets such as tank formations is to be developed later as a product improvement.

Army TACMS will be deployed in composite battalions with the nuclear Lance systems and the conventional MLRS. The composite battalions will contain three firing batteries one Lance and two MLRS. The Lance batteries will provide a nuclear capability while the MLRS batteries will provide conventional firepower using both MLRS rockets and Army TACMS missiles. Personnel spaces for the composite Lance/MLRS battalions will be obtained by reorganizing the pure Lance battalions in the current force structure.

System Origin and History

Army TACMS is the culmination of several efforts aimed at providing Army corps commanders with a weapon they can use to implement the deep attack strategy in the Air Land Battle doctrine. A series of studies conducted from 1975 through 1979 defined the operational concept for the Air Land Battle doctrine and documented the need for a weapon system that corps commanders could use to strike targets deep behind the front battle lines.

[1] Army TACMS was formerly known as the Joint Tactical Missile System, Army (JTACMS-A)

but according to the chief of the project office procurement branch (an official who participated in the process), the team worked together to identify eight alternative strategies, analyzed the costs and benefits of each, and recommended the preferred strategy. This official told us that the system development office representatives played the lead role in formulating the alternative strategies; however, the recommended strategy was a consensus decision.

The recommended strategy provided for the competitive award of the full-scale development contract to a single developer The development contract, however, would include provisions to permit application of a leader-follower concept for the missile during the production phase. The development of this second production source would permit competition for a substantial portion of the missiles expected to be produced.

According to Army documents used to brief officials on the proposed strategy, that approach was recommended because it (1) most nearly fit the funding profile in the Army's then current Program Objective Memorandum, (2) provided the lowest total program cost, (3) would allow fielding the system earlier than would be possible with multiple development contractors, and (4) provided an acceptable degree of competition during production However, because of subsequent changes in the program such as a reduction in the number of missiles needed, this strategy was never officially adopted.

First Project Manager Appointed

The joint project office was provisionally established and the first project manager was appointed in March 1983.[2] This official was an Army colonel who had previously served as the deputy director of the Corps Support Weapon System special task force and the project manager designee for that system The project manager had a Bachelor of Science from the U.S. Military Academy and a Master of Business Administration from the University of Pennsylvania. He had also completed the Defense Systems Management College's 20-week program management course In addition to serving as the special task force deputy director, the project manager's previous assignments included several positions in systems acquisition, such as product manager of the Army's Cannon Artillery Weapon System

[2]The Army refers to program managers as project managers

December 1981, Headquarters, U.S. Air Force, directed the full-scale development of a Conventional Standoff Weapon. The Air Force released a request for proposal to 13 contractors in March 1982 for full-scale development and initial production of the system. Two proposals were received Before contracts could be awarded, however, the Under Secretary of Defense for Research and Engineering directed the Army and Air Force to combine their development programs.

Establishment of Joint Program

The similarity of the two services' operational needs—a missile to attack second echelon and deep interdiction targets—suggested that a single system might satisfy both requirements. Although the Army system would be ground launched and the Air Force's air launched, in most cases the targets would be identical, differing only in their location or accessibility. By memorandum of June 1982, the Under Secretary of Defense designated the Army as the lead service for the development program The Under Secretary's memorandum directed the Army to select a program manager and stated that "on an expedited basis the program manager and his staff must develop the joint requirements, acquisition strategy and program plan."

The Army had previously established a special task force at Fort Sill, Oklahoma, to evaluate corps support indirect firepower requirements and conduct exploration, analysis, and selection of alternative Corps Support Weapon System concepts. The Army Missile Command provided four permanent representatives to this task force. In addition, as the development agency, the Missile Command had established a provisional project office that was later changed to a system development office to manage the system.

The special task force together with representatives of the Air Force's Tactical Air Command began working to draft a "Joint System Operational Requirement." The Missile Command's Corps Support Weapon System Development Office provided technical support to the special task force in the areas of system acquisition procedures, system design and analysis, contractual matters, cost estimation, risk analysis, and life-cycle material management.

Origination of Acquisition Strategy

Representatives of the system development office, working as a team with the contracting officer and officials of other Missile Command functional organizations, developed an acquisition or contracting strategy in September 1982. There is little documentation of this process

make it more acceptable, the officials objected to the "the basic nature of the document." According to these minutes, the document was more in the nature of a system specification than a requirements document The board concluded that the document, as written, would leave the developer no flexibility to design and build the most cost effective and affordable system

Also in May 1983, the Missile Command formally advertised its intention to award contracts for "engineering development assessments" of system concepts The advertisement specified that multiple contracts would be awarded and that only contractors selected to participate in these pre-full-scale development analyses would be permitted to compete for the follow-on system development A total of 31 companies obtained copies of the request for proposal but only three submitted proposals.

In July the acquisition plan for the joint program was finalized. This plan documented the proposed acquisition strategy for development of a common Army-Air Force missile. Under the strategy contained in this plan, competition would effectively end with award of the full-scale development contract unless the "teams approach" was judged to be cost effective

The acquisition plan was signed by the project manager and the director of the Missile Command's procurement and production directorate. The Missile Command's Commanding General transmitted the plan to the Army Materiel Command for approval This plan was approved by the Army Materiel Command in October 1983, but it was never implemented because the joint program was dissolved.

Also in July 1983, the pre-full-scale development contracts were awarded to the three companies that had submitted proposals· Boeing Aerospace Company, Martin Marietta Corporation, and Vought Corporation (now LTV Aerospace and Defense Company). Each contractor was to perform a capabilities and requirements evaluation of its proposed concept The contract scopes of work referenced most of the specifications from the draft requirements document which the Missile Command had earlier termed "restrictive." However, the contractors were permitted to conduct trade-off analyses to determine whether or not it would be cost effective to attempt to meet each of the requirements and to propose alternatives.

Finalizing the Acquisition Plan

According to the chief of the Army TACMS project office procurement branch, before the first acquisition plan was prepared the Training and Doctrine Command had reduced the estimate of the number of missiles which would need to be produced.[3] As a result, the project office had to reanalyze the alternative acquisition strategies. The new analysis showed that the savings from competition would not likely offset the additional cost of establishing a second production source for the lower quantities

Also, before approving the proposed strategy, the new project manager directed his staff to consider yet another alternative—a "teaming" approach. Missile Command officials who had participated in the identification and analysis of alternative acquisition strategies assembled again in April 1983 to obtain a briefing on the Navy's use of contractor teaming in its Airborne Self-Protection Jammer program. Under this approach, each proposer would join with another contractor to perform the development While the two would act as a single entity during design, development, and testing, they would be potential competitors during production

According to the chief of the Army TACMS project office procurement branch, the Army did not have sufficient data to fully evaluate the teaming strategy at that time. As a result, officials decided to have the firms which would be competing for the development contract evaluate the costs and benefits of teaming. The acquisition plan for the joint program states that both contractors and in-house personnel would be assessing the viability of the teams approach and that a decision on this strategy would be made at a later date

In early 1983, the project manager's staff reviewed the draft requirements document for the joint system. This review concluded that the document was too specific and would preclude trade-offs necessary to optimize the system for its mission and cost effectiveness. In May 1983, the Missile Command's Systems Requirements Review Board also met to review the requirements document.[4] This board also raised objection to the document's specificity. The minutes of the meeting showed that although the Board believed specific changes could be incorporated to

[3]The exact quantity of missiles to be produced is classified

[4]The Systems Requirements Review Board is composed of senior representatives from a number of Missile Command organizational elements It provides an independent assessment of requirements documents to ensure that the requirements are technically feasible, producible, affordable, and supportable The official who coordinates the board's activities told us that one of its primary objectives is to keep the requirements document as performance oriented as possible

Breakup of Joint Program

The nuclear warhead prohibition prompted the Army to reconsider its requirements. Up to this point, the Army had envisioned the system as a nuclear weapon. It was to be a replacement for, or a modification of, the existing nuclear Lance system After the congressional prohibition, the Army reconsidered its decision to remove Lance from the force structure. According to the deputy project manager, with Lance still in the force, it would be difficult to support the new system within Army end strength limits.

In December 1983, the Air Force issued a "Request for Information" on systems available to meet its standoff weapon requirement. This action appeared to enhance the possibility that the Army and Air Force would select different missiles and thereby substantially reduce the extent of commonality

In March 1984, the Under Secretary of Defense for Research and Engineering testified that the analyses necessary to make an informed selection of the system delivery vehicle had not been done at the time the Congress limited the Army's selection to either the T-16 or T-22 missile According to this official, limiting the selection had been a mistake.

The Army, in March 1984, established a Deep Attack Project Office to reevaluate its contribution to the Air Land Battle doctrine and serve as a focal point for cooperation with the Air Force. This office was to review the planned system development program and provide direction and guidance to ensure synchronization of the Army's participation in the deep attack mission.

Second Project Manager Appointed

In April 1984, the system project manager was reassigned to another Missile Command project The reassignment was part of a larger restructuring of personnel at the Missile Command. The new project manager for Army TACMS was a colonel and possessed a Bachelor of Science in Physics from Fordham University and a Master of Science in Engineering from the University of Alabama This official had previously held several acquisition positions, most recently as the Pershing project manager. He had completed the Defense Weapons System Management Course at Wright Patterson Air Force Base and the executive refresher course in systems acquisition at the Defense Systems Management College

The first system project manager told us that he believed the emphasis on using Assault Breaker technology affected the concepts proposed. This official noted that although Martin Marietta and Vought had proposed systems using the T-16 (Patriot) and T-22 (Lance) missiles, respectively, the contractors thought other delivery vehicles would be more cost effective. According to the project manager, these missiles were used in the Assault Breaker demonstration only as a matter of convenience. Neither was considered optimal for use by both services.

The scopes of work also directed the contractors to evaluate the teaming approach. In September 1983 the contractors submitted reports containing their analyses of acquisition approaches. One of the contractors concluded that the teaming approach would be cost effective for a production quantity of about 3,500 missiles, but did not provide data to support the conclusion. The other two contractors concluded that production quantities of from 7,000 to 10,000 missiles would be needed to economically justify the teaming strategy assuming that competition resulting from teaming would reduce production costs by 15 percent Based on these analyses together with an in-house evaluation, the project manager decided not to pursue the teaming strategy [5]

Congressional Direction in Fiscal Year 1984

The Army requested $50 million to initiate full-scale engineering development of the system in fiscal year 1984 and the Air Force requested an additional $10 million. The Congress authorized the full funding request. However, the fiscal year 1984 authorization act restricted use of the Army's funds to evaluation and selection of either the T-16 (Patriot) or T-22 (Lance) missile airframes as the delivery vehicle for the system. According to the authorization conference committee report, conferees believed that requiring the selection of an existing airframe would allow the Army to field the system at the earliest opportunity. The conference agreed that the Air Force should concentrate on development of a common missile or a derivative of the missile jointly selected by the Army and the Air Force However, the act did not preclude the Air Force from considering other candidate vehicles

The Congress subsequently appropriated the requested funds. However, the 1984 Defense Appropriation Act prohibited using the funds for development or production of a nuclear warhead for the system.

[5]The project office did not actually perform an in-house cost analysis of the teaming approach until May 1984 after we pointed out to the project manager that the analysis had not been done

degrees in public administration. He had served in government acquisition positions since 1969

Revised Acquisition Strategy

In December 1984, the Defense Resources Board approved full-scale development of the Army system using a ballistic missile and an antipersonnel/antimaterial warhead. The following January, the acting project manager submitted a revised acquisition plan. This plan was for an Army only system. The requirement for this system was contained in a new draft Required Operating Capabilities document. This document describes the need for a missile which can be launched from and controlled by existing MLRS ground support equipment. The requirements document also specifies that the system will be deployed in and supported by composite Lance/MLRS battalions. The Training and Doctrine Command also informed the project office that revised estimates of production quantities were much lower than previous estimates.

The revised acquisition strategy provided for the full-scale development effort to be split into two contracts: one for developing a missile and launch container and the other for integrating the missile with existing MLRS ground equipment. The chief of the project office procurement branch told us that the decision to split the effort into two contracts was made to preserve a degree of competition in the program. According to this official, once the decision was made to use the MLRS launcher and ground support equipment, the only way to avoid selecting the MLRS developer as the sole source for the Army TACMS development was to split out the missile and launch container effort. The revised strategy provides that the contract for developing the missile will be awarded to one of the companies that performed the earlier concept analysis studies.

To maximize leverage while competition still exists, the development contract will include options for the first two years' production. These options will be negotiated with "not-to-exceed" prices and will cover about 20 percent of the total anticipated missile production. The chief of the project office procurement branch told us that exercise of these production options will be tied to the contractor's successful demonstration of operational and performance parameters, completion of development and operational tests, and Department of the Army approval to proceed with limited production of the system. Proposers also will be required to prepare plans for developing multiple production sources for high cost components and subassemblies.

Joint Program Dissolved

In May 1984, the Army and Air Force signed a Memorandum of Agreement which stated that the program would be restructured to provide for complementary systems rather than a common one. The Memorandum of Agreement called for the services to develop a joint statement of need for the complementary systems. The joint statement, issued in August 1984, specified that the Army's system would be oriented to attacking forces which could exert an immediate or directly supporting impact on the close-in battle. The Air Force's system was to be focused on targets further behind the lines of battle such as airfields.

Congressional Action on Fiscal Year 1985 Budget

For fiscal year 1985, the Army requested $79 million in research, development, test, and evaluation funding. The Air Force requested $35 5 million. The Congress approved the Army's request but denied the Air Force's. According to the Senate Armed Services Committee report, the Air Force's request was denied because the Air Force was evaluating advanced technology concepts rather than proceeding into development Funding for advanced technology efforts was included in another part of the Air Force's budget and the $35.5 million was therefore considered duplicative

The fiscal year 1985 authorization and appropriations acts both had strings attached to funding for development of the Army system. The 1985 Defense Authorization Act directed the Secretary of the Army to proceed with the competitive development of a system having design goals of a maximum range of 200 kilometers and a 1,000-pound payload at the maximum range. The act also requires the Army to make maximum use of proven missile system technology with the objective of completing the competitive full-scale engineering development phase by July 1, 1987. According to the deputy project manager, since these provisions were stated as goals, they would not affect the system contracting strategy Furthermore, the Army is currently interpeting the law in such a way that a competitive award of the full-scale development contract to a single contractor would meet the congressional goal of competitive development. The fiscal year 1985 appropriations act continued the prohibition on development or production of a nuclear warhead for the system

Third Project Manager (Acting) Appointed

In November 1984, the second project manager was promoted to brigadier general and reassigned The civilian deputy project manager was named as acting project manager. This official possessed a Bachelor of Science in Mechanical Engineering and both master and doctorate

transmitting the drafts invited prospective offerors to evaluate and challenge any element of the request including, but not limited to, the government's planned contract type. Comments were received in early February and according to the chief of the project office procurement branch, a number of changes were made to the draft as a result of this process

In February 1985, the Missile Command requested approval to limit competition for the missile development contract to the three firms which had performed the earlier concept assessment studies To open the competition to other firms at this time would, according to the request letter, delay the program by 1 year The request letter also stated that such a delay would be inconsistent with congressional intent to proceed as expeditiously as possible with a goal of completing the full-scale development program by July 1, 1987 According to the chief of the project office procurement branch, reopening competition would also have increased development costs and been a breech of faith with the contractors who had responded to the earlier competitive solicitation.

The revised acquisition plan was approved by the Army Materiel Command in February 1985. According to the chief of the project office's procurement branch, the Army Materiel Command did not make any significant change in the proposed strategy.

In March 1985, the Missile Command's System Requirements Review Board completed its formal review of the draft requirements document for the Army-only system. The Board recommended some changes to the requirements document

Fourth Project Manager Appointed

The fourth project manager for the system was appointed in March 1985 This official had both a bachelor's and a master's degree in business administration He had two previous assignments in Missile Command project offices—one of them as the Chief of the Logistics Management Division in the Lance Project Office and the other as the Chief of the Army's Infantry Man-Portable Anti-Armor Assault Weapon System Project Office. His prior assignments also included other acquisition-related positions such as the Commander of Crane Army Ammunition Activity as well as several operational commands and staff positions This project manager had not attended the Defense Systems Management College's program management course but soon after his

The strategy envisions the sole-source award of a multiyear contract for any remaining production of the missile. Army and DOD cost analyses have shown that anticipated production quantities are too small to warrant development of a second production source for the Army TACMS.

The contract for integration of the missile with existing MLRS launch and control equipment will be awarded sole source to the LTV Aerospace and Defense Company, the developer and producer of the MLRS. According to the Army, no other contractor is considered capable of performing this effort.

The strategy further provides that the Army will begin full-scale development of an improved warhead and submunition for the missile in fiscal year 1986. Unrestricted competition is planned for the submunition development and two full-scale development contracts are to be awarded. After about 2 years of development, a single contractor will be selected to complete the program.

The Missile Command's Program Advisory Council reviewed the new strategy in January 1985 and concurred in principle with it. The Council, however, recommended that a fixed-price contract be used only if all key program variables are pinned down prior to release of the request for proposal. This Council expressed the opinion that a cost reimbursement contract could be more advantageous to the government if the possibility exists that requirements could change substantially after contract award.

According to the chief of the project office procurement branch, the acquisition plan, the requests for proposals for the full-scale development contracts, and the source selection plan were prepared simultaneously. Both this official and the contracting officer told us that the project manager's staff originated the system specific portions of the requests for proposals such as the scopes of work, the system specifications, and the data requirements lists. The contracting officer determined the general provisions to be included and coordinated production of the document. The officials told us that the project manager's staff and the contracting officer jointly developed the business terms and conditions. According to these sources, the project manager's staff took the lead in preparing the source selection plan. The contracting officer was an advisor to the project manager's staff in preparing this plan.

The Missile Command sent the draft requests for proposals to the three potential competitors for their comment in January 1985. The letter

Evaluation of Roles and Acquisition Strategy

Roles and Responsibilities

The project manager's staff played the lead role in a management team which originated development of the first acquisition strategy. The strategy development began before the project manager was actually assigned. The project manager and his staff played a lead role in finalizing the strategy. Project office personnel played the lead role in revising the strategy after the joint program was dissolved. The contracting officer participated as an influential advisor throughout the process of developing the acquisition strategy and making subsequent revisions, according to both the project manager's staff and the contracting officer

External Influences

The system's military users, the Department of Defense, and the Congress all have provided technical direction to the program. If this direction had been continued, it would have limited the project manager's flexibility and restricted competition for the system development. In late 1984, however, the joint Army/Air Force program was dissolved and the Army changed the system concept and requirements. As a result, the technical direction did not have a lasting effect on the program according to the deputy project manager. More recent congressional direction has been stated in terms of "design goals."

Department of Defense and Users Provide Technical Direction

According to the first project manager, the emphasis placed by the Department of Defense on using one of the two missiles from the Assault Breaker demonstration inhibited early design concepts. This official told us that because of this emphasis, Martin Marietta and LTV proposed system concepts using the T-16 (Patriot) and T-22 (Lance) missiles as the respective delivery vehicles even though other concepts costed by these contractors appeared to be more cost effective. According to the deputy project manager, the T-16 and T-22 missiles were used in the Assault Breaker program only as a matter of convenience.

Missile Command officials also believed that the draft operating requirements document prepared for the joint program would, if approved,

appointment, he attended a 3-week program management workshop at the college.

Two of the Potential Contractors Team for Full-Scale Development

In April 1985, two of the potential competitors for the full-scale development contract decided to team for the competition. Under the teaming arrangement, Martin Marietta did not submit a proposal for the development effort but will act as a subcontractor to LTV Aerospace and Defense Company. The Assistant to the Army's General Counsel subsequently investigated this teaming arrangement to determine if it violated antitrust laws. That official tentatively concluded that the arrangement is not an attempt to improperly limit competition. A memorandum for the record resulting from the review states that Martin Marietta had decided not to compete for the contract even before it reached the agreement with LTV. According to the memorandum, this decision was based on the company's conclusion that its competitive position had deteriorated because of the Army's decision to use the MLRS launcher and that Martin Marietta could not develop an alternative missile in time to be competitive

Request for Proposals Released

In June 1985, the system acquisition plan was approved at the Department of the Army level without any substantial change. That same month, the Missile Command issued the request for proposals for full-scale development.

Boeing Announces Then Retracts Decision Not to Compete

In July, Boeing notified the contracting officer that it would not submit a proposal for the full-scale development contract. According to the chief of the project office procurement branch, Boeing officials had previously requested some changes in the proposal evaluation criteria which would be to their company's advantage.[6] When the Army declined to make the changes, Boeing decided not to propose. A Boeing official told us that this decision had also been influenced by the teaming arrangement between LTV and Martin Marietta. However, in August Boeing notified the contracting officer that it had reconsidered the earlier decision and requested a 45-day extension to permit additional time to prepare a proposal. The contracting officer extended the proposal due date to October 10, 1985, and on that date proposals were received from LTV and Boeing.

[6]The nature of the requested changes is classified

authorization act also requires the Army to establish certain system design goals: a maximum range of 200 kilometers and a payload at maximum range of 1,000 pounds. Published committee reports do not specify the reason for these requirements. The acting project manager told us, however, that since these were stated as goals rather than requirements they would not inhibit design tradeoff flexibility or limit competition.

The Design Competition

Department of Defense Directive 5000.1 encourages competitive design work up to the full-scale development phase or beyond, if cost effective. This directive, however, does not contain criteria for determining when it is cost effective to maintain competition during full-scale development.

Competition in the Army TACMS program will effectively end with award of the full-scale development contracts.[7] Army and DOD cost analyses have shown that production quantities will be too small to recover the added costs of dual development contracts or development of a second production source for the missile system.

The system contracting strategy provides for two development contracts. One contract will be for development of the missile and launch container; the other will be for integrating the missile and launch container with existing MLRS ground support equipment. The system integration development contract will be awarded sole source to LTV Corporation—the MLRS developer. The missile development contractor will be selected from among those which performed the earlier concept analysis studies. Because two of these three firms recently teamed up for the competition, the competition was between only two proposers.

The chief of the project office procurement branch told us that in deriving the acquisition strategy, the staff considered alternatives which would have provided for multiple competing missile development contracts. These alternatives were not selected because (1) the additional costs to carry two contractors in full-scale development could not be offset by savings resulting from competition during production and (2) technical risks were not considered high enough to require multiple developmental approaches.

[7]The full scale development contract will contain options for long lead time items, initial production facilities, and initial production quantities

have unduly restricted the system design and perhaps limited competition The Missile Command's review board concluded that the document was a system specification defining what the system must "be" rather than an operational requirement specifying what it should "do." The review board further concluded that as written, the document would leave the developer without the flexibility needed to design and build the most cost effective and affordable system. The joint system requirements document, however, was never approved and, therefore, had no lasting effect on the program. After the joint program was dissolved, the Army drafted a new requirements document.

Congressional Direction

The Congress also provided technical direction to the program in both fiscal years 1984 and 1985 The 1984 Defense Authorization Act restricted the Army's use of fiscal year 1984 funds appropriated for the development program to selection of either the T-16 Patriot or T-22 Lance missile as the system's delivery vehicle. According to the House Armed Services Committee report, the Committee included the provision in its bill because it became concerned that the services would spurn the already demonstrated Assault Breaker technology and initiate new and independent programs. House and Senate conferees included the provisions in the act because they believed selection of an existing airframe would speed up fielding of the system

Since the Army did not enter full-scale development in fiscal year 1984, it did not make a design selection. According to the acting project manager, however, if full-scale development of the system had begun in fiscal year 1984, the restriction contained in the authorization act would have limited system competition One of the contractors—Boeing— proposed a concept using a 20-inch missile. This proposal could not be considered under the provisions of the 1984 act.

In March 1984, the Under Secretary of Defense for Research and Engineering testified that the analyses necessary to make an informed booster selection had not been performed at the time the Congress imposed the restriction. According to this official, limiting selection to the T-16 or T-22 missiles had been a mistake.

The Congress did not mandate a similar restriction on use of fiscal year 1985 funds. The fiscal year 1985 authorization act, however, requires the Army to "make maximum use of proven missile system technology with the objective of completing the competitive full-scale engineering development of the system by July 1, 1987 " The fiscal year 1985

the completion of our work in October 1985, the Secretary of Defense had not yet made the certification.

Management Approval

The acquisition strategy for the joint program was approved by the Army Development and Readiness Command (now the Army Materiel Command) with no substantive changes It had to be revised, however, when the joint program was dissolved and the Army changed the system operating concept and requirements. The revised strategy has been approved by the Assistant Secretary of the Army for Research, Development, and Acquisition The strategy was approved by the Department of Defense in February 1986.

Present Status

At the completion of our work in October 1985, the Army TACMS system was still in the concept formulation phase of the acquisition process. The Army Materiel Command awarded the full-scale development contracts on March 27, 1986, to LTV Aerospace and Defense Company

Multiple contracts are planned for a later effort to develop an infrared terminally guided submunition for use with the Army TACMS missile. The strategy is to award two contracts for this higher risk development. The parallel contracts will continue for about 2 years, at which time a single contractor will be selected to complete the development.

The Production Competition

The decision not to develop a second source for the Army TACMS production phase was based on costs. Missile Command analyses showed that the anticipated production quantities are too low to justify the cost of establishing the alternate production source. The most recent break-even analysis performed by the Missile Command showed that a production run of 4,348 missiles would be needed for the savings from competition to offset the cost of establishing the second production base.[8] Production quantities are expected to be well below that level

Even though the Army is not considering a second source for production of the entire missile and launch pod container, the the request for proposal for the development contract requires proposers to identify components and subassemblies for which it will be cost effective to develop multiple production sources.

Compliance With Public Law 98-473

Section 8083 of Public Law 98-473 (The Department of Defense Appropriation Act, 1985) requires the Secretary of Defense to (1) provide the appropriations committees a plan for developing multiple production sources for any major acquisition due to begin full-scale development or (2) certify that the system or subsystem will not be produced in sufficient quantities to warrant development of multiple sources. The Secretary must provide the plan or certification before using any of the funds appropriated by the 1985 act to initiate full-scale development on any major acquisition program.

This provision is applicable to the Army TACMS program since the Army planned to award full-scale development contracts in March 1986 using a combination of fiscal year 1985 and 1986 funds. The Missile Command has provided to the Department of the Army the information needed to certify that the missile will not be procured in quantities sufficient to warrant development of two or more production sources However, at

[8]An earlier analysis had shown that a quantity of 11,000 missiles would be needed to justify a second production source

August 1983	Fiscal Year 1984 Defense Authorization Act limited the use of Army funding to the selection of either the Patriot T-16 or Lance T-22 as the delivery vehicle for the system. The act permitted the Air Force to consider other candidate delivery vehicles.
October 1983	The first acquisition plan approved by the Army Materiel Command
December 1983	Fiscal Year 1984 Defense Appropriation Act (Public Law 98-212) prohibited use of funds to develop or procure a nuclear warhead for the system. Air Force issued "Request for Information" on concepts to meet their system operational requirements.
March 1984	Army established Deep Attack Project Office to provide direction and guidance for its participation in the deep attack mission pursuant to the Air Land Battle doctrine.
April 1984	Second project manager appointed.
May 1984	Army and Air Force announced that program will be restructured to provide for complementary systems rather than a common one.
August 1984	Army and Air Force issued a "Joint Statement on Need for the Joint Tactical Missile System"
October 1984	Fiscal Year 1985 Defense Authorization Act (Public Law 98-525) directed the Army to proceed with the competitive development of a system with certain specified design goals. The act also directed the Army to make maximum use of existing technology and establish an objective of completing the competitive development by July 1, 1987. Fiscal Year 1985 Defense Appropriations Act (Public Law 98-473) continued the restriction on development or production of a nuclear warhead for the system.

Chronology of Events

1975-1978	Army studies identify the need for a weapon Corps Commanders could use to engage second echelon targets in the deep battle area
1978-1982	"Assault Breaker" technology demonstration program conducted by Defense Advanced Research Projects Agency (DARPA).
January 1981	Contracting officer assigned.
April 1981	Office of the Secretary of Defense approved the Mission Element Needs Statement for the Army's Corps Support Weapon System.
December 1981	Air Force approved development of a Conventional Standoff Weapon.
June 1982	Under Secretary of Defense for Research and Engineering directed the Army and Air Force to combine the development programs.
March 1983	Joint Army-Air Force project office established at the Army Missile Command. First project manager appointed Draft Joint Statement of Operational Requirements received at Army Missile Command.
May 1983	Army Missile Command System Requirements Review Board nonconcurs in draft Joint Statement of Operational Requirements.
July 1983	The first acquisition plan for the system approved by the Commander, Army Missile Command Contracts awarded for engineering development analyses of system concepts (pre-full-scale development contracts).

August 1985	Boeing Aerospace Company notified the contracting officer that it had reconsidered the earlier decision not to submit a proposal and requested a 45-day extension on the due date for receipt of the proposal. Contracting officer extended proposal due date to October 10, 1985.
October 1985	Proposals received from LTV and Boeing.
March 1986	Full-scale development contracts awarded to LTV Aerospace and Defense Company.

November 1984	Third (acting) project manager appointed.
December 1984	Defense Resources Board approved full-scale engineering development of the Army system.
January 1985	Acquisition plan number 2 approved by Army Missile Command. Draft requests for proposals for full-scale engineering development contracts sent to industry for comment.
February 1985	Army Materiel Command approved acquisition plan number 2.
February 1985	Army Missile Command requested approval to negotiate contracts for other than full and open competition pursuant to Public Law 98-369.
March 1985	Army Missile Command System Requirements Review Board reviewed draft JTACMS-A Required Operating Capabilities (ROC) document. Fourth project manager appointed.
April 1985	Martin Marietta Corporation and LTV Aerospace and Defense Company sign agreement to team in the competition for the full-scale development contract. Martin Marietta will act as a subcontractor to LTV.
June 1985	Acquisition plan number 2 approved at Headquarters, Department of the Army. Requests for proposals for full-scale development contracts issued.
July 1985	Boeing Aerospace Company notified the Army that it would not submit a proposal for the contract.

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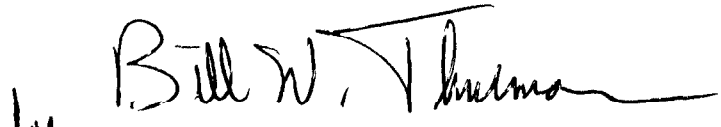
Preface

The Chairmen of the Senate Committee on Governmental Affairs and its Subcommittee on Oversight of Government Management asked GAO to examine the capabilities of the program manager and contracting officer in weapon systems acquisition. As part of this study, GAO examined 17 new major weapon system programs in their initial stages of development. These case studies document the history of the programs and are being made available for informational purposes.

This study of the Army Tactical Missile Program focuses on the role of the program manager and contracting officer in developing the acquisition strategy. Conclusions and recommendations can be found in our overall report, DOD Acquisition: Strengthening Capabilities of Key Personnel in Systems Acquisition (GAO/NSIAD-86-45, May 12, 1986).



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