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General Accounting Office  
Washington, D.C. 20548

National Security and  
International Affairs Division

B-277394

July 30, 1997

The Honorable Togo D. West, Jr.  
The Secretary of the Army

Subject: Multiple Launch Rocket System: Range Less Than Needed and  
Sustained Rocket Production Not Ensured

Dear Mr. Secretary:

During our review of the Multiple Launch Rocket System's (MLRS) improvements, we noted that although the extended range rocket meets its requirement to provide longer range capability, it will not satisfy the Army's stated needs concerning range. In addition, we noted that the Army approved limited production of extended range rockets about 1 year ago, but one of the rocket's five critical performance requirements has not yet been met—the number of hazardous, unexploded submunitions left after firing.

We also observed that planned Army procurements of extended range rockets will not sustain the production of affordable, qualified rockets during fiscal years 1998 - 2001 and that foreign military sales expected to fill the production gap have not yet materialized. In addition, although the Army prefers the more capable follow-on guided rocket, Army funding actions are delaying guided rocket production and requiring extended range rocket production a year longer than planned.

The purpose of this letter is to summarize issues raised during our review, express our concerns, and elicit your views and perspectives on the matters.

#### BACKGROUND

The MLRS is designed to attack enemy indirect fire weapons, air defenses, personnel, and light materiel at ranges up to 32 kilometers. The system's self-propelled launcher can fire 12 rockets in 60 seconds. Each rocket dispenses 644 submunitions, which are designed to detonate upon impact. The Army's inventory of about 419,000 basic rockets were purchased at an average price of \$6,424 each.

The Army is developing two improvements to the MLRS launcher, and it has begun producing an extended range rocket that is expected to (1) increase the rocket's maximum range from 32 to 45 kilometers and (2) decrease the submunitions' hazardous dud rate by incorporating a self-destruct fuze.<sup>1</sup> The Army approved limited production of the extended range rocket in May 1996; it awarded a contract in July 1996 for 1,326 rockets at an adjusted price of about \$16,931 per rocket; and it awarded another contract in February 1997 for 1,500 rockets at a price not to exceed \$21,533 per rocket.<sup>2</sup> Fiscal year 1997 budget documents showed that the Army planned to buy about 2,000 or more extended range rockets each year from fiscal years 1998 - 2001. However, the Army later revised its plans, and it now plans to buy a total of 1,590 extended range rockets during that period.

The Army plans to begin developing a guided rocket in fiscal year 1998 to increase the range to 60 or 70 kilometers and to improve accuracy. Guided rocket production is currently scheduled to begin in fiscal year 2002.

EXTENDED RANGE ROCKET WILL NOT FULLY SATISFY ARMY'S NEEDS

The extended range rocket will not fully meet the Army's stated need for maximum rocket range because some of the artillery and rocket systems available to potential adversaries have longer ranges—50 to 80 kilometers compared to the extended range rockets' 45-kilometer range. Therefore, according to a user official, the Army needs an even longer range rocket to (1) reach more targets, (2) permit engagements of the enemy's longer range artillery and rocket systems, and (3) reduce the vulnerability of MLRS launchers by firing rockets when positioned farther away from possible counterfire. He is currently revising the Army's requirements to document that need.

Army officials believe that the planned guided rocket will meet the Army's needs. According to a user official, the guided rocket is to have a 60- to 70-kilometer range and is expected to permit engagement of the enemy's longer range targets. Also, because the guided rocket is to be more accurate, fewer rockets per target will be required, thereby reducing the amount of time the system is exposed to enemy counterfire.

Even though the enemy may have longer range capabilities, MLRS project management and user officials told us that the extended range rocket will provide a tactical benefit that is currently not available because it has a longer

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<sup>1</sup>A hazardous dud is a submunition that does not explode or disarm itself within 6 minutes of impact. The self-destruct fuze is to detonate unexploded submunitions or make them inoperable.

<sup>2</sup>The final price has not been determined.

range than the basic rocket. According to a user official, commanders in one region have already requested the rockets to assist in countering a potential enemy's longer range weapons deployed there.

EXTENDED RANGE ROCKET HAS NOT MET A  
CRITICAL PERFORMANCE REQUIREMENT

The Army has not yet demonstrated that the extended range rocket meets the required submunition hazardous dud rate—one criterion for beginning limited production. Recent tests showed improvements, but the Army has not demonstrated that the rockets will (1) achieve an acceptable dud rate in hot temperatures or (2) consistently meet the dud rate requirement under other conditions. Therefore, according to a project management official, the Army has not yet authorized self-destruct fuze production, and extended range rocket deliveries may be delayed.

The Army's requirements document specifies that the extended range rocket is to have a hazardous dud rate of less than 1 percent. Demonstration of the required dud rate was one of five criteria established for beginning limited production. However, prior to the start of limited production, the demonstrated dud rate was about 2.6 percent, and the rocket has not achieved the required dud rate in tests conducted to date.

March 1997 tests showed improvements in the dud rate for rockets at mid-range (ambient) and cold temperatures, but the Army reported the submunition dud rate as "quite unacceptable" for the rocket conditioned to hot temperatures.<sup>3</sup> Additional tests, done in May 1997, to verify the cause for the hot rocket dud rate and further evaluate the self-destruct fuze, scored dud rates of 0.7 percent and 1.3 percent for ambient and cold conditioned rockets, respectively; and a July test scored a 0.4 percent dud rate for an ambient rocket. However, heat-conditioned rockets failed in both the May and July tests—preventing reassessments of the submunition dud rate.

A project management official said that the recent tests showed that the dud rate can be achieved, but he agreed that because of the small number of tests, the results do not demonstrate that the rocket will consistently meet the required dud rate even for ambient and cold conditions. An Army report of the May test results acknowledged that questions remain about the self-destruct

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<sup>3</sup>These tests included three rocket firings at different operating temperatures—one ambient (about 68°F.), one conditioned to cold temperatures (-25°F.) and one conditioned to hot temperatures (140°F.). The tests were done without the self-destruct fuze in order to verify submunition enhancements. The dud rate for the rocket exposed to hot temperatures was 21.6 percent—a rate that, according to a project management official, would not reduce to 1 percent, even with a highly reliable self-destruct fuze.

fuze; but a project management official said that the July tests showed improvement in the fuze. However, as a result of the uncertainties, the Army has not yet authorized fuze production.<sup>4</sup>

According to a project management official, the delays in developing and producing an acceptable fuze probably will prevent the Army from meeting its schedule for delivering submunitions to the contractor. As a result, the Army probably will suffer a late penalty. This situation may also cause late delivery of the extended range rockets to the Army.

PLANNED FUNDING AND FIRM FOREIGN ORDERS PROBABLY WILL NOT SUSTAIN PRODUCTION OF AFFORDABLE ROCKETS

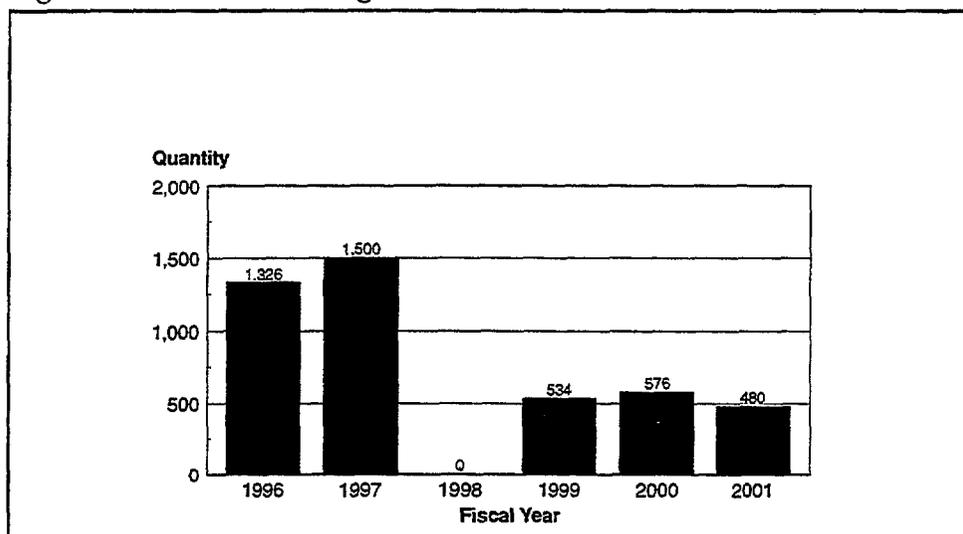
Although extended range rocket production was accelerated to prevent a break in production, sustained production is not ensured at this time. Project management officials told us that, based on contractor cost information, about 1,500 rockets must be procured each year to sustain affordable production of qualified missiles. But, the Army's planned procurements are significantly less than that.

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<sup>4</sup>The Army independently contracts for self-destruct fuze development, production, and assembly into the submunitions, and the Army will supply the submunitions as government-furnished material to the rocket contractor.

Figure 1 shows the Army's procurements of extended range rockets for fiscal years 1996 and 1997 and those planned for fiscal years 1998 - 2001.

Figure 1: Extended Range Rocket Procurement



Source: MLRS Project Office.

Project management officials believe there are other alternatives for sustaining production, but those alternatives have not yet materialized. For example, the Project Manager told us that he believes sufficient quantities will be sold to foreign customers to fill the gap between the U.S. quantity and the affordable production quantity. However, our review indicates that although foreign customers are considering buying the extended range rocket, no quantities have been firmly agreed upon at this time.

Project management officials also told us that if foreign sales did not fill the gap, there are other alternatives, such as maintaining a "warm" production line.<sup>5</sup> However, according to Army and contractor studies, maintaining the line would cost between \$11 million and \$17 million a year, and the Army requested fiscal year 1998 funding of only \$2.9 million for extended range rockets. The Project Manager stated that Army reprogramming or congressional increases are possibilities for funding a "warm" production line or for funding sufficient rocket production to sustain the line.

<sup>5</sup>A "warm" line would produce a limited number of rockets to ensure that the production facility retains its qualification by maintaining critical skills, equipment, and processes.

PLANNED ARMY FUNDING ACTIONS LENGTHEN  
EXTENDED RANGE ROCKET PRODUCTION

According to project and user officials, the Army plans to minimize production of extended range rockets, pending availability of a more capable guided rocket. However, recent funding actions have delayed guided rocket production and added another year of extended range rocket production.

The Army previously reduced funding planned for the extended range rocket program in order to fund guided rocket development. Army plans showed funding of \$19.3 million in fiscal year 1998 and \$22.3 million in fiscal year 1999 for the guided rocket development program. Based on this funding, the Army had planned to begin guided rocket production in fiscal year 2001. However, the fiscal year 1998 budget request includes only \$11.2 million for guided rocket development and shows planned funding of \$19.2 million for fiscal year 1999. As a result of the funding decreases, the Army currently plans to delay guided rocket production until fiscal year 2002 and produce 480 more extended range rockets in fiscal year 2001.

REQUEST FOR DOD PERSPECTIVE  
ON OUR CONCERNS

In summary, we are concerned that the Army is procuring the extended range rocket although the rocket does not fully meet the Army's needs, and it has not yet met all of the criteria for beginning limited production. We are also concerned that the program may be overly dependent on foreign military sales to sustain affordable production of the weapon, and Army funding actions may delay production of the more capable follow-on weapon.

In light of these concerns, we would appreciate your insights on the following issues:

- (1) Are there any plans to modify the number of extended range rockets to be procured in light of their performance to date and the Army's desire to buy only a minimal quantity until a more capable rocket is available?
- (2) From your vantage point, what are the nature and extent of the risks of producing the extended range rocket before tests show that it meets all criteria for entering limited production? How do these risks compare with the benefits of continued production over the long term?
- (3) To what extent is the Army relying on foreign military sales to sustain affordable production of extended range rockets? What is the Army's back-up plan if the level of foreign military sales is not sufficient to sustain production?

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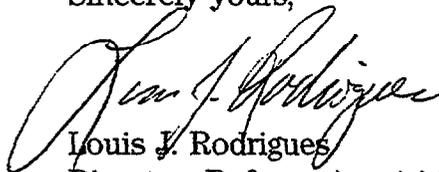
(4) Is it feasible to accelerate guided rocket development and buy fewer extended range rockets?

We would appreciate receiving your response within 30 days.

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If you or your designee have any questions, please call me at (202) 512-4841 or Lee Edwards, Assistant Director at (205) 650-1411. Major contributors to this assignment were Wayne Gilliam and Angel Sharma.

Sincerely yours,



Louis J. Rodrigues  
Director, Defense Acquisitions Issues

(707211)



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