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REPORT BY THE
COMPTROLLER GENERAL
OF THE UNITED STATES

CRITICAL CONSIDERATIONS IN DEVELOPING IMPROVED CAPABILITY TO IDENTIFY AIRCRAFT AS FRIEND OR FOE

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D I G E S T

Systems to identify friendly or enemy air targets are installed on various types of weapons to avoid the risk of mistakenly attacking friendly aircraft. Identification systems can be categorized as

--cooperative, which depend on the deliberate participation of the target aircraft to provide information that can be used for identification or

--noncooperative, which do not require the overt participation of targets to obtain identification data.

Primary users of these systems are tactical aircraft with an air-to-air mission, air defense surface-to-air missiles, ships, and certain elements of the command and control system. (See pp. 1 and 2.)

GAO conducted this review to provide the Congress with information on the Department of Defense programs to improve U.S. capabilities to identify aircraft as friend or foe. These programs, for which the Congress will be asked to provide funds, could potentially involve significant expenditures.

LIMITATIONS OF EXISTING COOPERATIVE IDENTIFICATION SYSTEMS

The primary systems in use today by the United States and some other forces in the North Atlantic Treaty Organization (NATO) are the Mark (MK) X and XII cooperative systems. Current U.S. capability to identify aircraft is limited.

Consequently, missiles with capabilities of attacking targets beyond visual range cannot be used to their full potential. Aircraft, for example, that could ordinarily stand off at relatively safe distances to fire these missiles, frequently have to close within

visual range to positively identify air targets. Not only is some of the missile's effectiveness lost, but the launch aircraft are rendered more vulnerable to enemy fire. Better identification would permit relaxing current restrictive rules of engagement which have been instituted to minimize the risks of mistakenly attacking friendly aircraft. (See pp. 5 to 7.)

PLANS TO IMPROVE EXISTING CAPABILITY

There are plans to improve the MK XII. The improvements are in two categories--those involving minor changes and others expected to provide considerable enhancement. (See pp. 7 and 8.)

DEVELOPING NEW SYSTEMS

Also under consideration is the development of the next generation identification system, the MK XV. There are several matters to resolve, the principal one being the frequency band in which the MK XV should operate. Other NATO countries are working on a new identification system and are coordinating their efforts with the Department of Defense. Up to now, however, the NATO countries have been unable to agree on a common frequency band.

There are problems of interference with existing telecommunications and traffic control systems to consider, as well as questions of affordability. (See pp. 8 to 14.)

In addition the MK XV, certain other technologies appear to have the potential of contributing to the overall improvement of U.S. identification capability.

However, several of these technologies are in the early stages of development and have not been tested to determine their performance. Overall, progress has been slow. (See pp. 15 to 19.)

The total investment in identification systems is difficult to calculate because several are in the early stages of development and costs are spread over numerous accounts. The investment will be substantial, however, as evidenced by the MK XV program whose 15-year life-cycle costs are estimated to approach $4 to $5 billion. The Department of Defense plans to spend about

$48 million for researching and developing identification technologies in fiscal year 1982.

CONCLUSIONS

There are several major issues to be considered. A key consideration is the time it will take to develop and deploy the next generation MK XV system as it relates to MK XII improvements. If the MK XV will not be available for another decade, it could justify MK XII improvements. On the other hand, if a MK XII improvement program could not be completed until shortly before the MK XV can be made available, a major investment in MK XII improvements--such as type B modifications--is of a doubtful value.

There is also the difficulty up to now of obtaining agreement among the NATO governments on a common frequency band allocation to promote effective military operations. The divergent requirements of the United States and its NATO allies and other influencing factors, such as affordability and interference with other systems--both military and civilian--are difficult to reconcile.

RECOMMENDATIONS

GAO recommends that the Secretary of Defense should make the amount to be invested in MK XII improvements contingent on how soon the MK XV can reasonably be expected to become available. We also recommend that the Secretary determine the priority that the MK XV interoperability with other identification systems in NATO should have relative to the other factors to be considered in selecting the frequency allocation band in which the MK XV is to operate.

VIEWS OF PROGRAM OFFICIALS

GAO did not request official comments on this report because of the need to issue the report in time for congressional consideration of the fiscal year 1983 defense budget request. GAO did, however, discuss a draft of the report with high level officials associated with the management of the program and they agreed with the facts presented. Their views are incorporated as appropriate.