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U. S. GENERAL ACCOUNTING OFFICE

STAFF STUDY

{ LANDING FORCES ASSAULT AMPHIBIAN VEHICLE }

AMTRAC

DEPARTMENT OF THE NAVY

AGC 00001

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SYSTEM DESCRIPTION AND STATUS

The Landing Forces Assault Amphibian Vehicles--popularly known as AMTRACs--are a family of vehicles designed for use in tactical amphibious and land operations by the ^{DLG 05395} Fleet Marine Force. The personnel carrier (LVTP7) is the primary vehicle in the AMTRAC family which also includes two special-purpose vehicles: a command vehicle (LVTC7) and a recovery vehicle (LVTR7).

The mission of the personnel carrier is to transport landing forces and their supplies and equipment from ship to shore, to travel through open seas and high surf zones to inland objectives, and to support tactical operations ashore. The vehicle has a crew of three and will accommodate 25 seated and fully equipped troops or 10,000 pounds of cargo. The personnel carrier has a land speed of about 40 miles per hour and a water speed of about 8 miles per hour.

The command vehicle will be used to provide a mobile command post for communications with infantry, support, air, and logistic units during the ship-to-shore movement and combat operations ashore.

The recovery vehicle will be used for the recovery of similar or smaller size amphibians from the open sea, surf, and swamps. It will also provide basic maintenance equipment to permit performance of organizational and field maintenance and repair of similar amphibians in the field.

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There were four types of vehicles within the AMTRAC family. The mine clearance vehicle (LVTEZ) was recently deleted from Marine Corps requirements in expectation of a breakthrough in the development of a more flexible and economical means to accomplish the mine clearance mission.

All of the vehicles are presently in the production phase. The first production personnel carrier was delivered on August 26, 1971. Delivery of the first production command vehicle and the first recovery vehicle is expected in October 1972.

This is our third study on the program. A complete resume of the program history is included in our initial staff study dated February 1971. This study describes the status of the program at June 30, 1972, and discusses the major accomplishments and changes that have occurred in the program during the fiscal year ended June 30, 1972

COMING EVENTS

Deployment of the personnel carrier to Fleet Marine Forces began in August 1972 and is to be completed by July 1973. Initial deployment of the command and recovery vehicles is planned for April and March of 1973, respectively.

COST

The current estimated program acquisition cost of the 1,003 planned vehicles at June 30, 1972, is \$187.4 million, a decrease of \$14.6 million from the June 30, 1971, estimate of \$202.0 million.

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The decrease is primarily due to a recent major reduction in the number of vehicles to be procured. A comparison of the current estimates and planned procurement quantities at June 30, 1971, and June 30, 1972, is presented in the following table.

| <u>Program acquisition cost</u> | <u>Current estimate 6/30/71</u> | <u>Current estimate 6/30/72</u> | <u>Increase (Decrease)</u> |
|---------------------------------|---------------------------------|---------------------------------|----------------------------|
| | - - - - - \$ millions - - - - - | | |
| Development | \$ 28.5 | \$ 31.0 | \$ 2.5 |
| Procurement | 170.6 | 153.5 | (17.1) |
| Construction | <u>2.9</u> | <u>2.9</u> | <u>- -</u> |
| Total program acquisition cost | <u>\$202.0</u> | <u>\$187.4</u> | <u>(\$14.6)</u> |
| Additional procurement cost | \$ 13.0 | \$ 6.9 | (\$ 6.1) |
| Total program cost | <u>\$215.0</u> | <u>\$194.3</u> | <u>(\$20.7)</u> |
| Procurement quantities | 1,133 | 1,003 | (130) |

The apparent increase in development cost resulted from discovery of a reporting error uncovered during a reexamination of Marine Corps records used as a basis for previous Selected Acquisition Reports. The error, resulting from inadvertent transposition of figures, had caused a lower figure to be reported for AMTRAC development cost while a higher figure was being reported for general amphibian development.

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Decrease in
procurement cost

The substantial decrease in procurement quantities and their associated acquisition cost can be attributed to two major decisions from within the Marine Corps. ^{AGC 00098} First, reduction of the combat active replacement factor for the personnel carrier from 8 percent to 6 percent decreases the procurement requirement by 67 vehicles. This decision effected a potential savings of \$8.7 million in procurement cost. Second, cancellation of the requirement for 63 mine clearance vehicles resulted in a \$10.3 million decrease in procurement cost.

The combat active replacement factor is used to calculate the number of reserve vehicles needed to meet combat losses. Continuing in-house review determined that a reduction in the combat active replacement factor would provide adequate quantities of reserve vehicles. Marine Corps officials also informed us that reducing the combat active replacement factor provided a means to fill additional requests from U.S. allies for personnel carriers without contracting for additional vehicles.

The requirement for the mine clearance vehicle was cancelled in expectation of developing a fuel air explosive system for minefield breaching which would negate the need for a special-purpose vehicle. According to a Marine Corps official, a fuel air explosive system has already been proven to be technically feasible. Current efforts are aimed at determining an appropriate delivery system.

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In addition to the \$19 million decrease due to the reduction in the number of vehicles, there was an additional \$.6 million decrease in procurement cost of tools, kits, and manuals for the personnel carriers and command vehicles. Cost increases of \$.8 million in procurement cost of the recovery vehicles and \$1.7 million in provisioning and vehicle design contractor services costs held the net decrease in procurement cost to \$17.1 million.

Additional procurement costs

The current estimate for additional procurement costs decreased by \$6.1 million during fiscal year 1972 to \$6.9 million. The major portion of the decrease in this estimate is attributable primarily to the reduction in vehicles. The other portions are the result of the use of actual cost data for repair parts in lieu of estimating formulae, refinements of estimates, and changes in rail and ocean transportation rates.

Allowance for price escalation

We were advised that the June 30, 1972, current estimate contains no allowance for price escalation since all vehicles are currently in production under fixed-price incentive contracts. The June 30, 1972, current estimate of vehicle cost is based on the current contract target price of the vehicles as negotiated in their respective contracts.

STATUS OF FUNDING

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As of June 30, 1972, \$116.2 million has been appropriated for the AMTRAC procurement funding. Of this amount, \$97.2 million has been obligated and \$33.3 million expended. The procurement funding includes about \$1.8 million for 13 vehicles under the Military Assistance Service Funded program.

In addition, the Research, Development, Testing and Evaluation (RDT&E) current program funding is \$31.0 million. Of this amount, \$31.0 million has been obligated and \$29.2 million expended. RDT&E funds are not specifically appropriated by line item to the AMTRAC program.

CONTRACT DATA

On June 4, 1970, the Navy awarded to the FMC Corporation, San Jose, California, a multiyear fixed-price incentive contract for the production of 942 personnel carriers for delivery during the period August 1971 to March 1974. The current contract price of \$96,788,965 represents a net cost increase of \$18,306,235 over the initial contract price.

The difference between the current and initial contract price resulted primarily from incorporation of the .50 caliber weapon station at an increase in target price of \$17,962,841, and the addition of four vehicles under the Military Assistance Program.

The June 30, 1972, Government estimate for price at completion of the personnel carrier production contract is \$107,105,088. The estimated increase in contract price of \$10,316,123 is primarily due to the addition of repair parts, special tools, and engineering change proposals.

A multiyear fixed-price incentive contract for the production of the 58 recovery vehicles and 84 command vehicles was awarded to the FMC Corporation on October 29, 1971. The initial contract price of \$20,297,312 has not changed since that date. The June 30, 1972, Government estimate for price at completion is \$22,169,608. The estimated

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price increase of \$1,872,296 to the original contract price is based on Government estimates of the net effect of Government-directed changes.

Production under these contracts includes 85 vehicles for U.S. allies, at a combined target price of \$9.1 million. Accordingly, these costs have not been reported as part of the AMTRAC program.

The FMC Corporation's cost management system which is keyed to work breakdown structure costs is being used as a basis for Government surveillance of the AMTRAC production contracts. The contractor provides a monthly cost performance report to the Government for comparison with the projected work breakdown structure costs submitted by the contractor. Because these contracts with FMC are fixed-price contracts, the requirements for management control systems specified in DOD Directive 7000.2 are not applicable.

PERFORMANCE

A comparison of the operational and technical characteristics reported for the AMTRAC vehicles at June 30, 1971, and June 30, 1972, shows that none of the characteristics have experienced variances during fiscal year 1972.

PROGRAM MILESTONES

The scheduled milestones for the AMTRAC command and recovery vehicles are approximately 2 years later than estimated in the planning estimate. We were informed, however, that this delay will not have an adverse effect on Fleet Marine Forces. No significant variances occurred in the reported milestones

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during fiscal year 1972. A comparison of the 1964 planning estimate and the 1972 current estimate for initial deployment of the AMTRAC vehicles follows:

| <u>Vehicle</u> | <u>Deployment to Fleet Marine Forces</u> | |
|--------------------|--|-------------------------------------|
| | <u>Planning estimate 1964</u> | <u>Current estimate 6/30/72</u> |
| Personnel carriers | March 1973 | August 1972 |
| Command vehicles | June 1971 | April 1973 |
| Recovery vehicles | June 1971 | March 1973 |

RELATIONSHIP TO OTHER SYSTEMS

The AMTRACs will replace the LVTP5 family of vehicles which have been in use since 1955. In addition to being significantly lighter in weight, the Marine Corps reports that extensive test operations of prototypes have convincingly demonstrated the superiority of the AMTRACs over the LVTP5s with respect to armor protection, maintainability, and handling characteristics.

As previously stated, the Navy is currently developing an air-launched fuel air explosive system with a follow-on development of a ground-launched system for minefield breaching. The Marine Corps plans to retain the LVTE1 vehicle, which is a member of the LVTP5 family of vehicles, in a protective war reserve status pending development of better methods of breaching minefields. The LVTE1 possesses similar mission performance capability as the LVTE7 but is obsolete and, therefore, less economical to operate and maintain.

SELECTED ACQUISITION REPORTING

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DOD Instruction 7000.3 was revised on September 13, 1971, to provide new guidelines for those programs required to be reported

under Selected Acquisition Reports. The instruction states that Selected Acquisition Reports will be required on those programs whose total cumulative financing for research, development, test, and evaluation is in excess of \$50 million or whose cumulative production investment exceeds \$200 million. Other systems not meeting these dollar guidelines may be designated for **Selected Acquisition Reporting by the Secretary of Defense.**

The AMTRAC program does not meet the above cost criteria as established by the new Selected Acquisition Report guidelines. Accordingly, the Assistant Secretary of Defense (Comptroller) approved a Marine Corps request for removal of the program from the Selected Acquisition Report system. The last Selected Acquisition Report for the AMTRAC program was dated June 30, 1971.

AGENCY COMMENTS

A draft of this staff study was reviewed by Marine Corps officials associated with the management of this program and comments were coordinated at the Headquarters level. The Marine Corps' comments are incorporated as appropriate. As far as we know, there are no residual differences in fact.

SCOPE

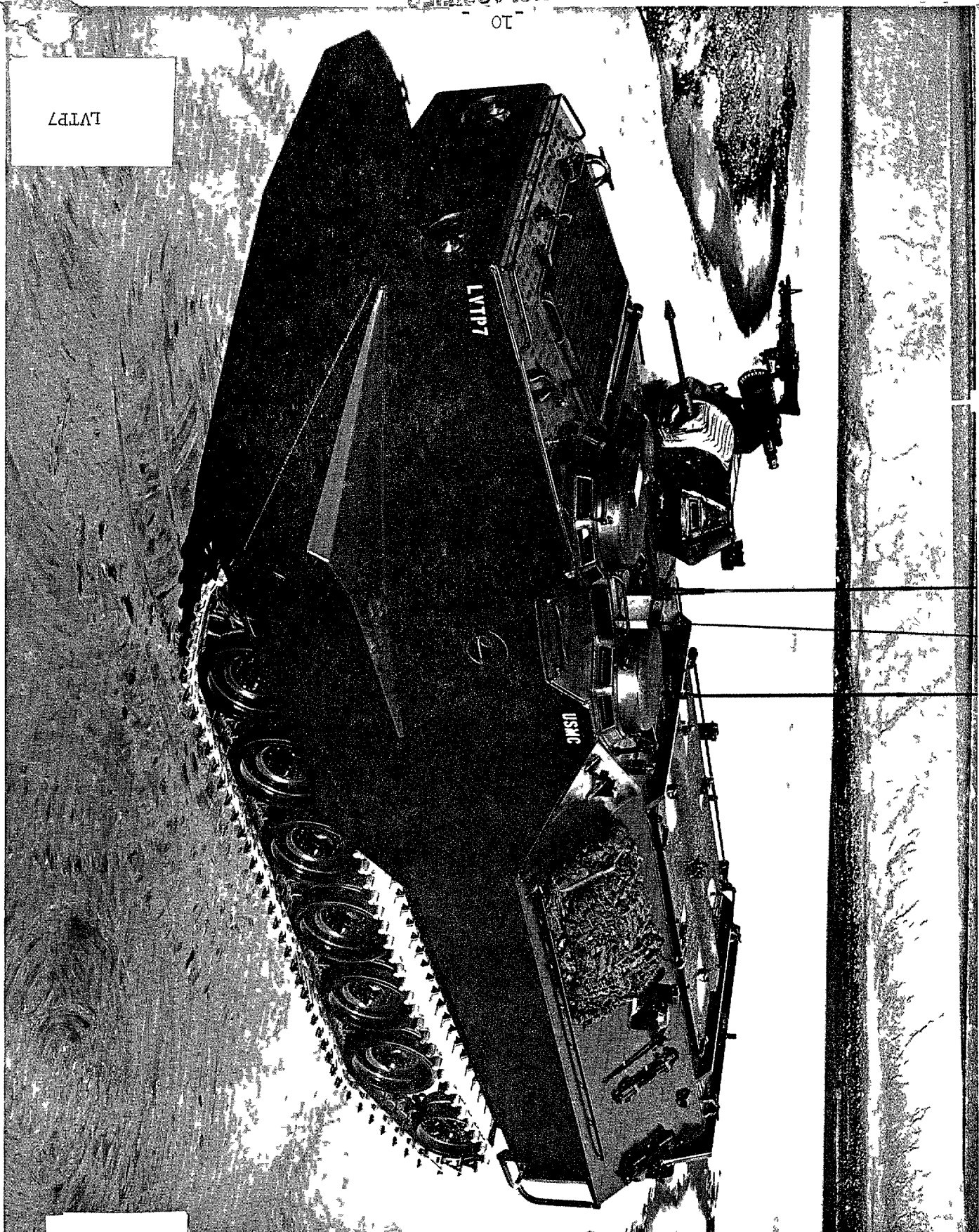
The primary basis for information in this study was a June 30, 1972, status report for the system. This report was prepared by the Department of the Navy in response to a General Accounting Office request. We obtained additional information by reviewing plans, reports, correspondence and other records, and by interviewing Department of the Navy officials. We did not make detailed analyses or audits of the basic data supporting program documents.

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