EX-171 Extended Range Guided Munition (ERGM)

The EX-171 Extended Range Guided Munition (ERGM) is a 5-inch diameter, precision-guided, rocket-assisted, naval gun projectile. It uses a special high-energy propelling charge intended to achieve a threshold range of 41 nautical miles from the MK 45 Mod 4, 5-inch/62-caliber gun. The ERGM uses a coupled Global Positioning System–Inertial Navigation System for guidance and aerodynamic flight control surfaces to steer the projectile to the pre-selected impact point.

The ERGM is intended to provide highly responsive naval gunfire in support of U.S. Marine Corps (USMC) and U.S. Army ground combat forces operating ashore, prior to the establishment of organic fire support assets, and to supplement organic field artillery once it is ashore. Naval Surface Fire Support (NSFS) is critical to support USMC war fighting concepts of Operational Maneuver from the Sea and Ship to Objective Maneuver.

The ERGM Operational Requirements Document (ORD) and Test and Evaluation Master Plan (TEMP) were approved in FY96, prior to a Milestone II decision that also occurred that year. The program has encountered significant technical hurdles, which have delayed development. The program notified the acquisition executive that it expected to breach the acquisition program baseline in FY98. The program was restructured, and a new acquisition decision memorandum was issued in FY00. During FY02, the program office began redesign of the ERGM warhead from the developmental submunition configuration to a new unitary warhead with height of burst (HOB) and point detonating (PD) fuze capabilities. The ERGM ORD is currently undergoing revision to reflect the change to a unitary warhead. A revised TEMP has not been submitted for approval since the program was placed on DOT&E oversight in FY01.

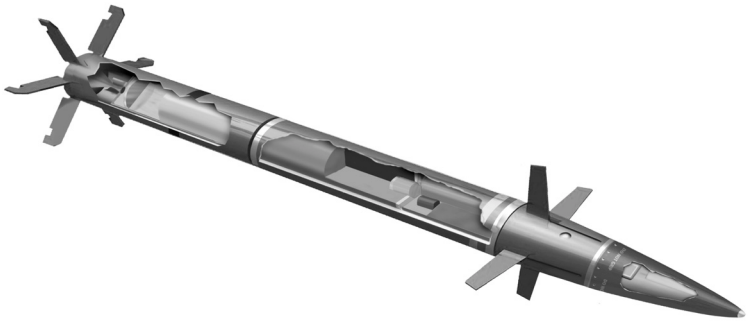
TEST & EVALUATION ACTIVITIES

ERGM is currently conducting developmental testing. During FY02, testing included the launch of a control test vehicle and the launch of a guided gunfire round. The guided gunfire test was the first firing at the tactical gun launch acceleration of 10,100 G's. Both test vehicles achieved their goals.

FY02 developmental testing associated with system lethality included static arena tests of two prototype unitary warhead configurations. The program office has met with DOT&E several times to discuss the TEMP and the scope of testing necessary to support the lethality evaluation of the unitary warhead.

TEST & EVALUATION ASSESSMENT

The redesign of ERGM to a unitary warhead allows a telemetry package to be included in the round. In FY02 DOT&E helped draft a Memorandum of Agreement between the Central Test and Evaluation Investment Program (CTEIP) Element Manager, Hardened Subminiature Telemetry and Sensor System (HSTSS) Project, and the Naval Surface Fire Support (PMS-529) Program Office to integrate a warhead-compatible HSTSS into the ERGM projectile. The CTEIP will fund the engineering and development required to integrate HSTSS into the ERGM operational evaluation rounds. If the HSTSS approach proves successful, it will enhance the evaluation of specific operational test events (successes and failures) and may reduce the number and cost of separate tactical and instrumentation rounds required for operational evaluation.



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The system lethality testing assessment has not been completed. Discussions with the program office have identified the fundamental data

requirements for the ERGM Live Fire Test and Evaluation (LFT&E). The importance of demonstrating the effects of the HOB fuze function variation, terrain, and projectile angle of fall for this relatively small warhead were also discussed. The program office understands these concerns, and expects to complete a draft LFT&E Strategy in early FY03.

At-sea naval gunfire range safety limitations allow ERGM to engage targets only at mid and maximum ranges (beyond 35 nmi) because of the large hazard footprint. DOT&E is examining alternative analytical evaluation approaches proposed by the Commander, Operational Test and Evaluation Force as well as continued development of the Virtual At Sea Training (VAST) system. VAST is a set of hydrophone buoys that can be set up at sea as a mobile firing range. The buoys can score the fall of shot on a virtual range based on the sound the shot makes entering the water. Although promising, there are still several challenges VAST must overcome to be effective in evaluating an over-the-horizon gunfire support system such as ERGM.