Operational Testing Matters

Ensuring the equipment is ready for the mission

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It is late, dark, cold, and wet. You are fatigued from exposure to the elements, tired of planning, and anxious to begin. You and your fellow Marines are on edge; adrenaline has kicked in, your senses heightened. What you are about to do is dangerous, but you have planned and trained—you are as ready as you will ever be. Will your equipment work? Will you get the mission done?

We have all been on that precipice where we ask these same questions or, at the very least, assume they have already been asked—and answered. When it comes to your equipment, you do not want to be the first one to try this mission using this particular piece of equipment. The real question is: Will your equipment enable you to accomplish your mission?

You begin the operation. It is off to a rocky start but still heading in the right direction. You and your fellow Marines work together to bring all the elements of planning and training to life, in realtime, thinking, adapting, and dealing with the challenges. Then comes the moment of truth: it is time to employ the system. Your success or failure now depends on this piece of equipment to help you accomplish the mission goals and bring you and your fellow Marines back safely. Will it live up to the hype? Is your trust and confidence in this system misplaced? Have the people who bought this system on your behalf done their due diligence and fielded a system that is effective, suitable, and survivable? Now would be a bad time to find out the answers to these important questions for the first time, which is why *operational testing matters*.

When the time came for you to employ the system, it worked. But have you ever asked yourself why? Or why did it help you succeed when you needed it? Often, we do not ask these questions. We just expect that it will, and when it does, we are not surprised—even if we do not really know why. When it works, it is because the acquisition and test professionals made certain in a series of tests beginning during the development of the system in the laboratory all the way to the operational test conducted by Marine Corps Operational Test and Evaluation Activity (MCOTEA)—by Marines, for Marines in an operationally realistic environment.

Your success in the mission was no accident.

When it came time for you to pull the system off-the-shelf and out of the armory, motor pool, or warehouse, it was ready because the system availability was evaluated to ensure that it could respond to a mission that could be called for at any time. The system did not break down during your mission because the prior operational test

Future transformational resupply capability, Unmanned Logistics System-Air, undergoing operational testing by MCOTEA at Yuma Proving Grounds, Yuma, AZ. *(Source: MCOTEA.)*

stressed the system's reliability in the field for thousands of hours, miles or rounds under realistic mission profiles.

When you encountered enemy threats, like the persistent threats from a cyberattack, your system was resistant. The weeks spent doing penetration testing and red team adversarial assessments during operational testing made sure the system was sufficiently hardened, so the attacks could not undermine the mission.

Your training that prepared you to use the system and navigate controls were easy to follow and intuitive because the Marines in the operational test pointed out human factors concerns that were fixed before it was put in service in the fleet.

Your equipment was compatible with the system and interoperates well because the operational test put your system together with the other equipment in an austere environment, just like you would.

Operational testing of your system considered doctrine, tactics, threats, transportability, maintainability, vulnerability, safety, manpower supportability, logistics supportability, documentation, environmental effects, and training requirements. Looking at this range of characteristics makes the evaluation more comprehensive in nature.

For you to have confidence in your system, the operational test that evaluated your system had to be comprehensive, but it also had to focus on what matters to you—how well you can accomplish the mission using this system. You have to have the confidence in your equipment for you to win, which is why at MCOTEA, we look at the combination of performance, suitability, and survivability characteristics with a focus on direct measurement of the result—mission accomplishment.

MCOTEA puts together an operational test for your system, or any Marine Corps system for that matter, by combining the Marine Corps Planning Process (MCPP) with the Scientific Method. MCPP is central to planning an operational test because the operational test is a military operation that requires military planning, but it must be done rigorously. The rigor is required to produce credible and defensible results. This is done by applying elements of the scientific method like experimental design techniques, appropriate sample size estimation, and specifying the level of statistical confidence needed for credible results. This combination of methods produces operationally realistic test results that are not due to error or random chance.

Joint Light Tactical Vehicle debarking from Landing Craft Utility boat to demonstrate transportability during operational test at Camp Pendleton, CA. *(Source: MCOTEA.)*

MCOTEA's diverse group of civilian and Marine professionals combine MCPP with rigorous science to make an operational test. It takes Marines from the fleet with the right MOSs, the Marines at MCOTEA with operational

Amphibious Combat Vehicle engaged in a mission during operational testing at the Marine Corps Air Ground Combat Center, Twentynine Palms, CA. *(Source: MCOTEA.)*

and analytical experience, and civilians with experience in operations research, statistics, data management, test management, live fire, and cybersecurity to work together as a team. It takes this kind of diversified team to evaluate the new and transformational capabilities of the Marine Corps.

The Marine Corps is modernizing as part of *Force Design 2030*, which means new and transformation capabilities are on the horizon.

The program managers acquiring these new capabilities also have new tools as the result of updated acquisition policies to expedite the fielding of new systems. The new policies focus on tailoring acquisition strategies that promote speed and cost reductions. The intent is for program managers to deliver *Force Design 2030* capabilities as fast as they can while using good judgment and mitigating risk. But going faster does not mean cutting corners. Even with the latest changes, one thing remains constant: the need for Marines to have systems that are effective, suitable, and survivable. The operational testing done by MCOTEA is the perfect venue to measure, analyze, and evaluate a system's capabilities in its native environment from the Marine users' perspective.

MCOTEA's mission is to ensure you can have confidence that your system will work ...

The operational tests, including Quick Reaction Assessments for rapid prototyping and rapid fielding, are designed to answer critical questions about the system under evaluation. Tailoring of these test events, by length and scope, is based on the type of system and selected acquisition pathway. MCOTEA's typical analysis and reporting occurs within a few short weeks but not longer than 45 days after completion of the event to ensure important information gets in the hands of decision makers as quickly as possible. The rapid testing and delivery of information is just one of the ways MCOTEA is supporting the fielding of transformational capabilities that Marines will need to win in future combat operations.

Like the focus of the operational test result, what matters is that you accomplish your mission. If the system does not help you accomplish your mission, it is not ready for your trust and confidence. MCOTEA's mission is to ensure you can have confidence that your system will work when you and your fellow Marines need it to. That is why *operational testing matters*.