

**m i s h a p**

LESSONS LEARNED

MISHAP SUMMARY

Mishap

MK-154 Wiring Harness Failure

Damage

Total loss of one (1) AAV and one (1) MK-154 MCLC system

Injury

One (1) fatality; Injuries to three (3) others

Operation

CONUS Training; MCAGCC 29 Palms

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Mechanical Mishap Causes Fatality

SUMMARY

The mishap unit was conducting the Battalion Assault Course during the Integrated Training Exercise (ITX) aboard Marine Corps Air Ground Combat Center (MCAGCC), 29 Palms, CA. The conduct of this assault required an explosive breach to be conducted by a Mine Clearing Line Charge (MCLC) which the Battalion determined to deploy via the MK-154 MCLC system. The MK-154 is a special mission kit that augments the Amphibious Assault Vehicle (AAV) which allows for the amphibious deployment of the MCLC system. Per the scheme of maneuver, the mishap AAV and crew moved into position and requested permission to fire the MK-154 system. It was during the course of raising the MK-154 system into position that there was a premature firing of the rocket, causing one fatality and injuries to three other Marines.



CAUSES

- **Mechanical failure of the MCLC safety systems.** During the investigation it was discovered that over time a failure in the wiring harness can cause a loss of grounding which can lead to electrical current reaching the rocket leads prior to the rocket reaching its appropriate position and the launch button being depressed.
- **The crew did not perform a continuity and stray voltage check.** This may have identified a degraded condition in the electrical system.
- **The entire crew had little to no knowledge of the MK-154 system and lacked proficiency in operating the system.** The crew had only been assembled the week prior to this evolution and a building block approach to training had not been conducted.
- **Lack of training.** Personnel either had no training on the system or it had been considerable time since they had received it. None of the supervisors knew about the requirement to conduct stray voltage checks prior to firing.

- **Lack of proficiency.** Current ammo allocations make it difficult to maintain currency and train new Marines on the MK-154. The Marine operating the control box had not fired a MCLC in over a year.

LESSONS LEARNED

- The firing position of the AAV crewman was previously established to be in the port side aft jump-seat of the AAV. This position placed the crewman in unnecessary danger as the final step in firing the MK-154 is placing the safety pin in the nose of the rocket. Procedures are currently being re-evaluated to place the rear crewman of the AAV in a standing position near the troop commander's position, which is the position from which the MK-154 control box is operated.
- Marines are instructed during the TECOM approved MK-154 qualification course to conduct a stray voltage check on the rocket leads as a part of the pre-firing inspections. This practice is not listed in the AAV common SOP, which should be updated to include this practice.
- Supervision and thorough use of pre-firing inspection checklists can detect early warning signs of failures as well as ensuring the competency and preparedness of the crew.
- The MK-154 is currently listed as a BRAVO TAMCN, despite having the same technical functionality as most ECHO TAMCNS. The recommendation has been made for this system to be reclassified and the requirement for a gun-book or equivalent tracking system to be implemented. This will ensure that we are tracking system usage and that maintenance is conducted at regular intervals at intermediate and depot levels.

MISHAP ANALYSIS

This specific mishap MK-154 system has been in service since 1990. Prior to the mishap there were no requirements listed for the conduct of depot level maintenance on the MK-154 system nor were there any specific intermediate maintenance instructions. It is entirely possible for a MK-154 to go through its entire life cycle without receiving depot-level maintenance/rebuild and inspection of the wiring harnesses. To correct these deficiencies MARCORSYSCOM is in the process of redesigning the MK-154 wiring harness and more clearly defining maintenance requirements to ensure the longevity and safety of the system. Despite this there are multiple measures that we can take as Marines to reduce the likelihood of mishaps such as these. Following this mishap, MARCORSYSCOM suspended the use of the MK-154 MCLC throughout the Marine Corps. The system currently remains suspended. However, there are no directives precluding the use of the trailer mounted MK-155 MCLC and Assault Breacher Vehicle (ABV).