



mishap

LESSONS LEARNED

MISHAP SUMMARY

Mishap
AAV Sinking

Damage
\$530,396.85

Injury
One (1) fatality.

Operation
AAV Water Ops

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Amphibious Assault Vehicle Mishap

BACKGROUND



While conducting basic water operations, the accelerator pedal on an Amphibious Assault Vehicle got stuck in the depressed position. The vehicle's bow plane was not deployed. The driver made unsuccessful attempts at returning the pedal to a neutral/idle position and the vehicle's nose began to "plow in" to the water. Water rushed over the nose of the AAV and into the driver's hatch due to the excessive speed. The vehicle began to submerge and the driver and Marine in the troop commander's (TC) hatch were pinned to their seats from the force of the rushing water. The crew chief in the UGWS/turret dropped down in his hatch and informed the crewman in the troop compartment (mishap victim) to turn off the fuel shut-off lever and to prepare for evacuation of two other passengers. The crew chief exited the AAV as it submerged further.

CONCLUSIONS

Over the past three years, the AAV community has experienced six AAV sinkings.

The last AAV sinking fatality 17 years ago shares similarities with the most recent fatality:

- Bow plane was retracted when AAV's were being operated in the water.
- Vehicles traveling too fast in the water with bow plane retracted and driver's hatch open.
- Inexperienced personnel driving the vehicle.
- Drivers did not meet minimum swim qualifications.
- Pre-launch checklist not adhered to and checked by a supervisor. (The checklist was completed but the actions specified in the checklist were not followed.) Inadequate supervision at multiple levels that allowed vehicle to be operated not in accordance with operator's manual TM 09674A-10.

Key points from the most recent fatality include:

- The risk assessment for this evolution misidentified the severity/probability of an AAV sinking assigning an initial RAC of 4 for a potentially catastrophic event before controls were identified.
- Mishap victim was not wearing required PPE: mishap victim wore a hardhat vice CVC helmet or kevlar which limited communications and lead to head injuries.
- Launching procedures not followed.
- Positive communications were not established or maintained between mishap vehicle and RSO/safety vehicle on shore during training operation.
- The safety vehicle on standby was degraded/deadlined due to a leaking mid ship bearing.
- Maintenance management processes were lacking: Vehicle Log book was not current. Throttle control linkage joints on mishap vehicle were rusted and did not move freely, resulting in excessive sticking of the acceleration pedal. The lock-out linkage had come apart and was no longer attached to the lower throttle control bracket. Mishap vehicle had discrepancies that should have deadlined the vehicle.
- Vehicle driver had an invalid swim qualification and a fear of water which inhibited his ability to react to orders during the mishap.

CONSIDERATIONS

- This fatality was preventable if supervisors enforced compliance with established AAV qualification, maintenance and operations procedures and regulations.
- The lessons learned from this mishap are not new. The 1994 fatality revealed that “without the bow plane modification, an empty AAVP7A1 assumes a nose-down attitude which is aggravated as water speed increases. When engine speed exceeds 2200 RPMs, the situation becomes critical and all hatches must be closed to prevent an excessive amount of water from entering the vehicle. After the hatches are closed, the nose-down attitude causes water to pour over the vision blocks obscuring the driver’s visibility and diminishing his ability to operate the vehicle. To regain visibility the driver must significantly reduce the vehicles forward speed. When the bow plane is extended (raised), this prevents the vehicle from assuming the bow-down attitude allowing the driver and others a better operational field of vision. In higher sea states the bow plane effectiveness increases.
- Recent “plow in” testing conducted by the Amphibious Vehicle Test Branch (AVTB) confirms the lessons learned from 1994 and Amphibious Assault units are strongly encouraged to review this data.
- The AAV community has been gradually returning to its amphibious roots after multiple protracted deployments in support of OIF/OEF land based operations. Emphasis on identifying and mitigating risks associated with AAV water operations is more critical than ever especially when the community has Marines who have limited experience operating in an amphibious environment.