

GROUND WARRIOR

THE MARINE CORPS GROUND AND NAVAL EXPEDITIONARY WARFARE SAFETY MAGAZINE

**AAV MISHAP:
WHERE DO WE
GO FROM HERE?**

**TACTICAL VEHICLE
RISK CONSIDERATIONS**

**JLTV Crew Visibility:
Height Matters**

*Accountability for All:
Lessons Learned
from Loss*

*The story of
LANCE CORPORAL
JASON ROTHER*

**+MORE
SAFETY
INFORMATION
INSIDE**



LESS LOSS, MORE SAFETY!

THE MARINE CORPS LOST

20 MARINES IN OFF-DUTY PRIVATE MOTOR VEHICLE MISHAPS IN FY21.

FOR FY22, **23 MARINES** DIED IN MOTOR VEHICLE CRASHES AS OF JUNE 22, 2022.
OF THOSE, **11** WERE KILLED IN AUTO-RELATED CRASHES, AND **9** WERE KILLED IN
MOTORCYCLE CRASHES. ALCOHOL, SPEED, FATIGUE, LACK OF SEATBELT USE
AND IMPROPER VEHICLE MAINTENANCE ARE ALL KEY COMPONENTS TO THE
LOSS OF OUR MARINES IN THESE MISHAPS.



MAKE SMART DECISIONS!

Smart decisions go a long way toward maintaining our
Marine Corps combat readiness.



A Letter from the Assistant Commandant of the Marine Corps



Marines, Sailors, and Civilian professionals of our Navy and Marine Corps team,

The Fall 2022 issue of the *Ground Warrior* magazine is something we all must read, understand, and take to heart. As our Commandant's senior safety representative, I owe you all this very information so that we can collectively build a culture of safety. That culture starts with individual Marines and small units actively searching for ways to make training and operations safer, and it must include higher headquarters taking the risk off of the backs of our Battalions and Squadrons. Safety makes us more combat ready, and is a part of operations. Safety is not a stand alone concept. Please remember that.

This issue tells the story of Lance Corporal Jason Rother who died during a Combined Arms Exercise (CAX) at Twentynine Palms in 1989. I was a rifle platoon commander at the very next CAX, and I vividly remember the requirement to read the full investigation, and the dozens of discussions the leadership of our Battalion had about how we would ensure an event like LCpl Rother's death never happened again. Lance Corporal Rother was left alone at a sentry post, forgotten about, and not known to be missing for almost two days. By the time the search began, he was dead. It was a tragic and completely preventable death. We are all obligated to ask ourselves, "how could this have happened?" For those who think this can't happen again because our training and technology is better now, think again. Incidents like the death of LCpl Rother happen when we "normalize deviation." Anytime we, as ground warriors, accept something that is less than the standard, we move closer to another senseless death.

As you read the story of LCpl Rother, you can see a phenomenon known as the "Swiss Cheese model." Problems from one area begin to line up with problems in another area, until there is a hole all the way through the safety process. In this case, it was a 1st Lt who violated the order to post sentries in pairs, followed by a failure to do a roll call, followed by confusion from the weapons custodian about what "up" meant. The company commander asked if the custodian was "up." To him it meant, "do you have all weapons in the armory?" To the custodian it meant, "I have a weapon in the slot or I have the proper 10520 rifle card." Therefore a "YES" to the company commander meant that all hands were safely back at base camp, whereas the custodian assumed that LCpl Rother was still out on a mission. How did we get there?

Please take a minute to read this tragic story and ask yourself what YOU can do to ensure that this never happens again. What YOU can do to make sure that no live fire range results in a death. What YOU can do to make sure that no Marine is killed in a vehicle rollover. And what YOU can do to stay true to our safety culture and never accept deviation from the standard. When the next war comes, and it will, we need to cross the Line of Departure (LOD) with as many Marines and as much warfighting equipment as possible. If we take losses before we even get to the fight, then we are not the warfighting professionals we claim to be. Think about that for a minute. It's our duty to never let another LCpl Rother incident happen. I challenge you to read this edition of *Ground Warrior* and discuss it with your unit. We need your help.

Semper Fidelis,

**General Eric M. Smith,
Assistant Commandant of the Marine Corps**

Features

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Front Cover: U.S. Marine Corps Lance Cpl. Robert Iglesias Jr., a combat engineer with 1st Battalion, 3d Marines, 3d Marine Division conducts urban breaching training during a demolition range at Camp Hansen, Okinawa, Japan, March 10, 2022. (U.S. Marine Corps photo by Sgt. Micha Pierce)

Back Cover: A U.S. Marine with III Marine Expeditionary Force Information Group (III MIG) walks across a rope bridge during an endurance course at Jungle Warfare Training Center (JWTC), Camp Gonsalves, Okinawa, Japan, March 24, 2022. (U.S. Marine Corps photo by Cpl. Colton K. Garrett)

Ground Warrior Magazine is a forum where Marines and Sailors can share safety-related experiences, thereby providing valuable lessons learned to others within the community. Input from the fleet is crucial in improving safety culture, conducting safe operations, and thus, maintaining readiness. Ground Warrior is published jointly between the Commandant of the Marine Corps Safety Division and the Naval Safety Command. Content within Ground Warrior does not necessarily represent the official views of, nor is it endorsed by, the U.S. government, Department of Defense, U.S. Navy or U.S. Marine Corps. Photos and artwork may be representative and not necessarily show the people or equipment discussed. The Ground Warrior editorial staff reserves the right to edit articles for readability. Reference to commercial products does not imply endorsement. Unless otherwise stated, content may be reprinted without permission by giving proper credit to the magazine, author and photographer when applicable.

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A Look Inside NAVSAFECOM Mishap Investigations

By Capt. Ryan Joyner, Naval Safety Command

The Commandant of the Marine Corps Safety Division (CMC SD), with headquarters in Arlington, Virginia, is one of several staff agencies comprising Headquarters, U.S. Marine Corps. The CMC SD is led by a colonel who reports directly to the assistant commandant of the Marine Corps and serves as the commandant's principal advisor on Marine Corps safety matters.

The Safety Division implements policy and directs Marine Corps risk management, safety and occupational health programs. The CMC SD also oversees the development of training for safety programs, conducts safety surveys, program reviews and major mishap investigations, along with ongoing analysis of mishap data to eliminate mishap recurrence.

People also may not know that the CMC SD oversees a detachment of Marines and civilians with the Naval Safety Command (NAVSAFECOM) in Norfolk, Virginia. This integration with the NAVSAFECOM helps improve coordination and identify safety trends across the naval enterprise. Let's explore what the Marines and civilians of the NAVSAFECOM's Mishap Investigations Directorate do to support the mission.

The Mishap Investigations Directorate consists of three components: Aviation, Afloat and Ashore and USMC Ground. This being the Ground Warrior Magazine we will concentrate on the USMC Ground investigations component. The ground investigations section is comprised of six Marines and two civilians. Of the six Marines, there is an even split between enlisted and officer subject matter experts (SMEs). The enlisted SMEs serve as experts and analysts in ammunition handling, motor transport maintenance and operations and assault amphibian operations. They are responsible for assisting in investigations, reviewing safety training procedures and analyzing trends in their respective areas.

The three officers are from different communities: infantry, logistics and artillery. They serve as mishap investigators and advisors for safety investigations boards (SIB) involving Class A mishaps and all live-fire mishaps throughout the Marine Corps, with assistance from in-house SMEs.

A Class A mishap is defined as any fatality or permanent total disability that resulted from a reportable injury or illness; or a total cost of damages for Department of Defense (DoD) or non-DoD property of \$2.5 million or more. Among other duties, the ground investigations civilians cover down on two important roles on either side of the investigations process. One civilian is responsible for the quality control of all Marine Corps ground safety investigation reports submitted in the Risk Management Information Streamlined Incident Reporting (RMI SIR) system.

Our other civilian employee is key in the creation, maintenance and teaching of the Ground Mishap Investigation Course (GMIC). The GMIC provides battalion and squadron-level safety officers, safety managers and civilian safety and occupational health (SOH) employees instruction in root cause analysis techniques. For more information on RMI, go to <https://www.safety.marines.mil/Reporting/RMI-SIR/>.

The target population for GMIC includes Marine Corps and Navy E-6 to E-8 and O-1 to O-5 or General Schedule civilian equivalent, appointed in writing as their command's ground safety officer or ground safety manager. As GMIC-trained investigators, these professionals provide a critical link in the unit-level mishap investigations that do not require a formal SIB. This is a key component of the safety reporting structures as a vast majority of mishaps, incidents and near misses occur below the SIB threshold. If you are interested in attending this course, search for the GMIC MARADMIN online.

For more information on the CMC SD or NAVSAFECOM, go to <https://www.safety.marines.mil/> or <https://navalsafetycommand.navy.mil/> >>>

Ground Mishap Investigation Course

The Ground Mishap Investigation Course is designed to aid battalion and squadron-level personnel assigned as safety officers or safety managers as well as civilian Safety and Occupational Health practitioners in closing a skills gap of root cause analysis techniques. For all leaders, the goal is to enhance risk management strategies through effective mishap analysis, hazard identification, hazard abatement and increased hazard reporting. This 40-hour course incorporates the use of a real-world mishap case study that challenges each attendee's critical thinking and problem solving skills in an experiential learning environment for the adult learner.





Sailors assigned to the 2nd Battalion, 1st Marine Division, explain to the subject matter experts how they are treating a patient during Operation Firebreak, June 19, 2022. (U.S. Navy photo by Mass Communication Specialist 1st Class David Kolmel)

Planning training?

By Capt. Colin Bishop, Naval Safety Command

Cycles offer a framework for thinking about many instances in day-to-day life. We roll out of bed when the rooster crows, show up to formations on a schedule and know that every six months our bodies need to perform a fitness test, although this is no excuse to get out of shape in between.

In the tactical safety world, we are not exempt from this cyclical construct. Looking at this idea through the lens of tactical training-related mishaps, the cycle shapes up roughly as follows for the summer and fall seasons:

Summer and fall tend to be what we call, “peak mishap season.” More units are out training, more structured large-scale exercises occur, we hike more and we shoot more. What variable did I fail to mention? Heat. With temperatures added to the mix, it is no wonder why we see more Marines and Sailors sidelined during these months.

It might seem a tall order to mitigate every risk while training during peak mishap season. Do we look at the issue as simply, the cost of doing business in this line of work? We shouldn't. If you are planning training, take a step back and ask yourself a few questions such as:

- What risks are associated with conducting a convoy operation for nighttime through unfamiliar terrain? How can we plan to better equip our Marines and Sailors to succeed?
- What risks are associated with planning a hike or martial arts course during the heat of summer in the middle of the day?
- What can we do to best prepare for a live fire and maneuver range at Twentynine Palms? Does one range brief cut it?

These examples should have obvious answers; conduct quality rehearsals, either don't hike in the middle of a 105-degree

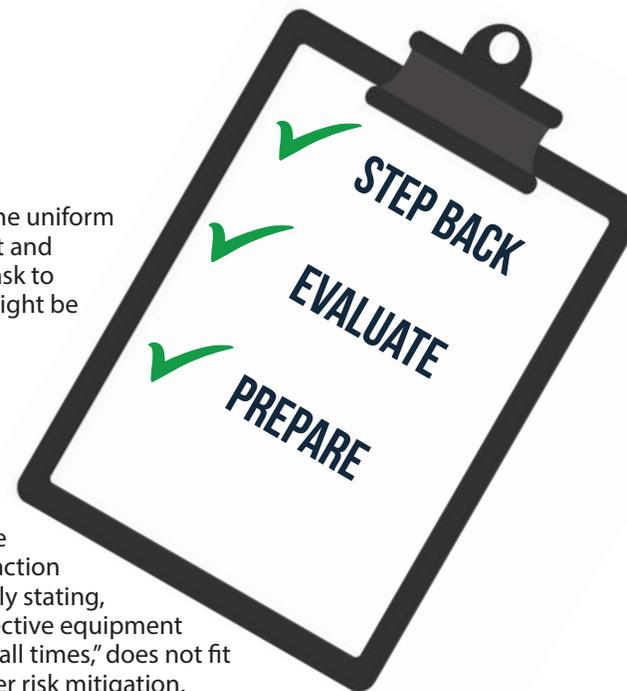
day, or adjust the uniform accordingly, eat and hydrate. Your task to plan training might be more complex.

Again, take a step back. Ask someone who has planned and executed before what the best course of action might be. Simply stating, “personal protective equipment will be worn at all times,” does not fit the bill of proper risk mitigation.

If you are participating in the training, you might be told, “Every Marine or Sailor is a safety officer.” In many instances, during peak mishap season we see mishaps that could have been mitigated with a tactical pause and a buddy from the pair calling cease-fire. Learn to recognize when to take a step back during training and make the call before the hazards associated with training become extreme. It might just keep someone off the sidelines.

That said, Navy and Marine Corps units do a tremendous job at mitigating training hazards. We train to fight, and we do it well. I challenge each and every one of you to look at your own training evolutions through a safety and risk management lens and see where practices might be shored up.

If it helps keep even one service member off the sidelines, that's one highly trained Marine or Sailor who stays in the fight. »»»



Accountability for All: Lessons Learned from Loss



By Mike Del Favero, Naval Safety Command

There are seminal events in history that alter the way we think and operate. The aircraft mishap and fire aboard USS Forrester during the Vietnam War was one of these events. The near sinking of a ship due to an errant rocket caused us to rethink how we approach naval aviation safety. For Marine Corps ground safety, that seminal event didn't come for another 20 years.

This event was the death of 19-year-old Lance Cpl. Jason Rother at the Marine Corps Air Ground Combat Center (MCAGCC) Twentynine Palms, California, when he was forgotten and left behind at a road guide post in the Mojave Desert during a training exercise in 1988. This tragedy and the reflections of then-Commandant of the Marine Corps Gen. Al Gray forced the Marine Corps to reevaluate how Marines make decisions and accept risk at various echelons of leadership.

Anyone who has trained in this inhospitable environment should have heard of Rother in their desert survival brief. But, as time passes, fewer and fewer Marines have been to Twentynine Palms and learned about this unfortunate event. And many of those Marines familiar with the reference may still not know the full story.

If we allow the details of events like this to be forgotten, we doom ourselves and our Marines, to the risk of similar events reoccurring. We must continue retelling the story of how this young Marine was left behind.

Road March Planning

This incident occurred during a Combined Arms Exercise (CAX), the precursor to the current Integrated Training Exercise (ITX). The Battalion Landing Team (BLT) conducted various training events leading up to the culminating CAX event. Just as ITX is now, these events were physically demanding, but up to this point in the exercise there had been no serious incidents. Reports note that Rother experienced a state of mild heat exhaustion during the unit's platoon live-fire attack but was deemed fit for duty by a hospital corpsman and continued training.

After 12 days of training, the battalion consolidated for the three-day CAX. On the first day, Aug. 30, they attacked and seized a strong-point position. On the afternoon of the second day, the unit received a Fragmentary Order (FRAGO) to conduct a motorized movement to set up a deliberate defense against a likely enemy attack.

The battalion commanding officer (CO), Lt. Col. Robeson, had the route planned and then issued his own FRAGO to his companies. His intent was to emplace road guides at four positions along their movement route. After deliberating with key leaders, he tasked his four companies, India, Kilo, Lima and Bravo (a tank company attachment) to provide two Marines each for road guides and, except for India, two additional Marines to serve as a quartering party in the next assembly area. India was an exception since they were being helicopter lifted to the area and would not need a quartering party. Fourteen Marines were required for the road guide and quartering party detail.

At the FRAGO meeting, the heavy weapons platoon Commander, 1st Lt. Allen Lawson, was tasked with conducting route reconnaissance and emplacing the road guide detail. The motor-transport (Motor-T) platoon commander, 2nd Lt. Fossett, was tasked with picking up the road guides as the end of the convoy passed. The BLT logistics officer, Capt. Edwards, briefed this plan, but there was no clear guidance or decision on how the Marines would be returned to their parent companies once the road march was complete. The command investigation found each company assumed their Marines would be dropped off, but there was no coordination of who would be responsible for ensuring that task was done and personnel accounted for.

As the leaders left the FRAGO meeting, the confusion grew in the difficulty of hastily executing a battalion road march at night. Immediately after the FRAGO issuance, the adjacent artillery battalion commander, Lt. Col. Spain, met with the BLT commander to discuss their respective motor marches and they identified the potential problem of mingled road guides since a portion of their routes overlapped. They agreed to travel on separate axes of the Main Supply Route (MSR) and to have a 20-minute interval between their convoys. Spain met with Edwards to discuss this agreement and brief him on the marking plan for the artillery battalion road guides to prevent confusion when each unit's Marines were picked up. Edwards did not recall this meeting, however, and this information was not relayed to the BLT Marines assigned to collect the road guides.

Further friction was caused as the road guide and quartering party detail was put together. The Bravo Company Commander, Capt. Sheehan, sent his gunnery sergeant to ensure the Marines were properly handed off and tasked, but he thought he only needed to send two Marines for his quartering party, despite the extended discussion that each company also needed to send two Marines for road guides.

The Lima Company commander identified four Marines for the detail as required, but when his executive officer (XO) attempted to deliver them to Lawson, he could not find him. He instead entrusted them to the battalion adjutant, believing he would bring them to Lawson.

**First names not provided are unknown.*

However, the adjutant never made contact with Lawson and kept the Lima Company Marines with him during the movement. The two India Company Marines were assigned and reported to Lawson. Kilo Company's four Marines were assigned, but were delivered two at a time and were the last Marines to report to Lawson. At this point only eight of the 14 Marines required for the road guide and quartering party detail were present. Lawson never did a collective brief for this detail before they departed because the Marines came in fragmented groups. He instead briefed them individually as they were posted along the route.

Road Guide Placement

At Lawson's designated departure time, 7 p.m., Aug. 30, only two Marines for the detail had reported. Ten minutes later the BLT XO, Maj Holm, confronted Lawson to ask why he had not left yet, since they were quickly losing daylight. At 7:20 p.m., with only eight of the 14 Marines needed for the road guide and quartering party detail (four from Kilo, two from Bravo, two from India), Lawson decided to depart. In his haste to set off, he neglected to provide a roster of road guides to the BLT logistics officer as he had requested, so Edwards was never aware the number of Marines to be picked up was different than planned. The BLT commander was also never notified Lawson left with fewer than the prescribed number of Marines.

Ten minutes after departing, Lawson's convoy reached an intersection that did not appear on his map or designated route. He directed his vehicles to turn off the MSR and encountered a fork, where he took the left route which most closely followed the MSR. Lawson continued for another mile and stopped at a prominent rock feature on the side of the road that was approximately 400 meters from the intersection marked as BLT Checkpoint 1. He posted Rother from Kilo Company at this location. Lance Cpl. Key, also from Kilo, got out of the vehicle to post with Rother, but was told to re-board the vehicle to post at a separate position. Their fellow Kilo Company Marines pointed out they were directed by their company leadership to post in pairs, but Lawson responded with, "I'm the lieutenant, and you're the lance corporal."

Key and Lawson reboarded the vehicles and moved 400 meters down the road to the intersection marked on the map as Checkpoint 1. It was here that Key was posted. Key tried to reiterate they were supposed to be posted in pairs, but Lawson replied he knew what he was doing. Neither Key nor Rother received guidance on how they were to be picked up or returned to Kilo Company.

Key was posted 20 minutes after sunset near the end of evening nautical twilight. The remainder of the route recon and posting of road guides was conducted in darkness. Lawson

At this point Lawson seemed to have realized to some degree that something was wrong, because he decided to send his navigator to backtrack along the convoy route and ensure the road guides knew to get on the last vehicle of the convoy.

continued to BLT Checkpoint 2, where he found the artillery unit had selected the same spot for their Checkpoint 2 and already posted their personnel there. Lawson decided to continue without posting any of his detail in that location.

As he continued, Lawson determined the northern axis of the MSR was too overgrown and that the BLT should use the southern axis. He was likely unaware the BLT commander had intended for the BLT and artillery unit to use separate axes. Due to Lawson's decision, both units used the same MSR axis.

When Lawson's platoon reached Checkpoint 3, he posted the two Marines from Bravo Company, despite their company leadership's intent for them to be used as their quartering party. Lawson told them they would be identified by their chem-lights and the last vehicle in the battalion convoy would stop to pick them up. He then continued to Checkpoint 4 and posted the two India Company Marines, giving them the same guidance. Since Lawson lacked the full 14-man detail that was planned, he only had the two remaining Kilo Company Marines for quartering parties. He posted these Marines in the battalion assembly area to serve as a quartering party to the lead element of the battalion convoy, but there were no quartering parties for the individual companies.

At this point, Lawson seemed to have realized to some degree that something was wrong, because he decided to send his navigator to backtrack along the convoy route and ensure the road guides knew to get on the last vehicle of the convoy. He further emphasized that the navigator needed to ensure the guides at Checkpoint 1 (Keys with Rother another 400 meters further along) knew to link up with each other at whichever position the convoy passed.

In theory, those instructions could have averted what ended up occurring, but unfortunately, the navigator left to backtrack the route only 30 minutes before the battalion convoy began the road march. The navigator made it to Checkpoints 3 and 4 before encountering the lead element of the BLT convoy, at which time he turned back to the final assembly area. He never reached the Marines at Checkpoints 1 and 2.

There are conflicting reports from Lawson and his navigator about what was reported upon his return. The navigator stated he reported his inability to reach Checkpoint 1, but Lawson's recollection was that his navigator said the Marines had already been picked up by the convoy when he reached Checkpoint 1. Regardless, they had not been picked up.

Road Guide Pickup

While Lawson emplaced the road guide detail, the rest of the BLT prepared for the road march. Edwards briefed Motor-T Commander Fossett on the details of the convoy and guidance on picking up the road guides. He stated they would be marked with chem lights at the pre-selected checkpoints in pairs and recommended Fossett put his best driver in the pick-up vehicle. He further emphasized to ensure all Marines with chem lights were picked up, as Lawson had not provided a road-guide roster. However, Edwards did not address the artillery battalion convoy that would be following them, thinking there would be no conflict.

Edwards also briefly discussed keeping custody of the road guides until the morning when Motor-T would refuel the companies, but there was no specific direction on how this was



U.S. Marines with 3d Battalion, 1st Marine Regiment, 1st Marine Division, engage an objective with an M240B machine gun during Integrated Training Exercise 3-22 at MCAGCC, Twentynine Palms, California, April 27, 2022. (U.S. Marine Corps photo by Cpl. Jacob Yost)

to happen. Fossett assumed the road guides would remain in the supply vehicles and return to their parent companies the following day.

Fossett subsequently conducted his own planning, assigning a driver and assistant driver – Lance Cpls. Kimble and Barrett to the pick-up vehicle and briefed his Marines on the plan. Barrett was present for this briefing and understood he was supposed to pick up pairs of Marines who would be identified with chem lights but did not know the number of Marines he was expected to collect. He was also unaware of the separate artillery convoy, as Fossett was likewise unaware. Kimble was not present for the brief and received his brief by Barrett minutes before departing. From this brief, Kimble believed their vehicle would be the last opportunity for any road guide to be picked up.

After final preparations, the BLT convoy departed with Barrett's truck at the rear followed only by Staff Sgt. Dozier, the Motor-T chief in a Humvee. The first complication with the road guide pick up occurred 10 minutes after the convoy started when they encountered the artillery unit's first checkpoint, also on the BLT's route and before their own first checkpoint. As Barrett passed the artillery unit road guides, he and Kimble convinced them to board the vehicle, believing this was the last opportunity for the road guides to be picked up, as they were unaware of the other artillery convoy.

The next issue occurred at BLT Checkpoint 1. The battalion convoy didn't turn onto the fork Lawson did during his route recon and road guide posting, so they never passed Rother's position on the side road. When they reached Key's position at Checkpoint 1, Barrett stopped to pick him up. Reports about this pick up were conflicted.

Barrett and Kimble stated all road guides they collected were in pairs and they were never told of another Marine that needed to be picked up. Conversely, Key was clearly alone at his post and stated that as he boarded, he told the pick-up

vehicle drivers there was another Marine that needed to be picked up. He encountered the artillery unit Marines onboard, who stated they had been picked up by the wrong vehicle. Key then assumed one of the artillery vehicles would pick up Rother. Regardless of the accuracy of their statements, the reality was Rother was never picked up from his post.

Barrett followed the convoy and stopped at BLT Checkpoint 2, which was also the artillery Checkpoint 2, and where Lawson had not posted Marines. The artillery road guides climbed into the truck, but upon learning it was not from their convoy, they climbed down. The first two artillery road guides that had been erroneously collected also climbed down. In the trailing Humvee, Dozier noted the Marines getting off the truck. Barrett then continued following the convoy.

At Checkpoint 3, they collected the Bravo Company Marines, who later reported the high speed of the pick-up vehicle and their impression Barrett was concerned about losing sight of the vehicle in front of him. One of them was physically dragged onto the vehicle as it was moving.

Adding to the confusion, Barrett's recovery vehicle did not stop to pick up the India Company road guides at Checkpoint 4. The investigation report does not explain why they were overlooked. When the rear element of the convoy reached the assembly area, Lawson went to Dozier to ask how many road guides were picked up. Their interaction seemed to add to the confusion of who had been picked up.

According to the report, Dozier stated six road guides were picked up; he likely included the artillery Marines. Lawson asked if two were road guides who were left down the road, to which Dozier said yes. It is unclear if he meant the artillery Marines that dismounted or the India Marines who were never picked up. Lawson then tried to clarify if only four Marines had been picked up, since he posted six road guides, to which Dozier said "right." It seems clear the two did not understand each other. Lawson must have realized this, because after

the battalion was posted, he returned to Checkpoint 4 with a vehicle, picked up the India Marines, and returned them to their company the next morning.

Accountability

The BLT completed its road march at approximately 2:30 a.m., Aug. 31, and performed actions to prepare for the defense evolution in the morning. Once the entire convoy was staged in the assembly area, Barrett reportedly parked his vehicle and went to sleep, not believing it was his responsibility to get the road guides back to their units. He and Kimble assumed the road guides dismounted and returned to their unit, unaware the two Bravo Company Marines and Key remained and slept in the bed of the truck.

Shortly after dawn, a Bravo company leader sought out the logistics train to locate their Marines from the road-guide and quartering-party details. He found Barrett's vehicle and collected his two Marines. Barrett woke after this and realized Key was still in the back of his truck. Key asked if Rother had been picked up but was told he (Key) was the only one in the area. As neither Barrett nor Key had any instructions for Key's return to Kilo Company, Key stayed in the truck for the remainder of the exercise.

Early that same morning, Lawson clearly still suspected something may be wrong, because he approached the BLT XO, Holm, to inquire if any company reported missing Marines. The XO replied no one had given him reason to believe a road guide had not been picked up. Regardless, three heavy-machine-gun vehicles were sent to retrace the convoy route back to Checkpoint 1. They stopped at the intersection and the Marines in the turret checked the area, but no one observed a Marine at the position. Rother's post was 400 meters further down the intersecting road.

At the end of the exercise, around noon, elements of the BLT began returning to Camp Wilson. While Barrett's vehicle was in an assembly area, the BLT XO saw Key and asked what

he was doing. Key stated he was a road guide and no one had told him what to do. Holm told him to board an assault amphibious vehicle to return to Camp Wilson and rejoin his platoon. Key arrived before the rest of his company and waited in his platoon's berthing area until his platoon commander and sergeant arrived at approximately 4 p.m.

While Key was en route to Camp Wilson, the majority of Kilo company was preparing for a helicopter lift back to Camp Wilson. At roughly 12 p.m., while they were organizing their heli teams, 2nd Lt Christopher Johnson, Rother's platoon commander, asked Sgt. Clyde, his platoon sergeant, where Rother was. Clyde stated he was still with the road guide detail. This did not unsettle Johnson, because Key from the adjacent platoon had not returned either.

The company's helo lift began at 1 p.m., with the majority of the company dropped off by 4:30 p.m. Part of the company remained behind with the company gunnery sergeant to count and secure unexpended ammunition. Upon arrival at Camp Wilson, the majority of Kilo Company turned to cleaning weapons and gear, while another element of the company was at a different ad-hoc range continuing training and firing extra ammunition. At 5 p.m., another element of the company was tasked to provide an ammo working party. The company did not rejoin fully intact at Camp Wilson until roughly 7 p.m. The company did not conduct a formal muster during this period since they were fragmented across these different areas. Instead, platoon sergeants verified accountability informally with squad leaders.

Rother's squad's verification took place between 5 p.m., and 6 p.m. His fire team leader, Lance Cpl. Paulate, reported the presence of three of the four fire team members to the squad leader, Sgt. Turnell. It is uncertain if or how the squad leader reported numbers to the platoon sergeant. What further complicated accountability was Turnell's departure from the base that evening to visit local family members. He did not return until the next evening. The platoon sergeant was aware of Turnell's departure and placed another fire team leader, Cpl. Harbinson, as the acting squad leader in Turnell's absence. The platoon commander and other company leadership did not know of Turnell's departure and no special liberty request was provided.

At 6 p.m., Johnson asked Clyde the status of the personnel and he replied the squad leaders reported everyone was accounted for. At 8 p.m., the company gunnery sergeant, Staff Sgt. Eisenback, received a thumbs up from all platoon sergeants regarding personnel accountability.

At 7 p.m., the armory opened for weapons turn in. The armory was considered in a "thumbs up" status if all weapons were accounted for by a weapon physically present in the armory or by the possession of a custody receipt card of a checked-out weapon. Based on that criteria, the company armory reported to the company gunnery sergeant that the armory "was up" at 8:30 p.m., since he had a custody card for Rother's weapon.

At 8:30 p.m., Aug. 31, roughly 24 hours after Rother was dropped off, Kilo Company Commander Capt. Michael Henderson returned from a battalion meeting where the BLT



U.S. Marines with Co. B, 3d Light Armored Reconnaissance Battalion, 1st Marine Division, convoy to defensive positions during an exercise at MCAGCC, Twentynine Palms, California, Dec. 7, 2020. (U.S. Marine Corps photo by Sgt. Stephanie Cervantes)

CO stressed he wanted strict accountability of personnel, weapons and classified material before anyone went to bed. The company commander looked for the rest of the company leadership to hold a meeting. The rifle platoon commanders were celebrating at the beer garden, so the meeting was held with just the company CO, XO, first sergeant, gunnery sergeant and weapons platoon commander. Henderson related the BLT CO's words on accountability and stated he assumed the platoons were accounted for, since the platoon commanders were out. The company first sergeant confirmed personnel accountability and the gunnery sergeant confirmed the armory was "up." The company commander and rest of the company secured at 11:30 p.m. under the impression accountability criteria had been met. Their impression was wrong.

The next morning, Sept. 1, the Kilo Company officers departed to the main base for CAX debriefs. At the same time, the company gunnery sergeant and first sergeant held a formal formation and received an "All Present" report from the platoon sergeants despite the fact Rother and his squad leader were not actually present. The company was then broken into three working parties to conduct a range sweep, vehicle wash-downs and ammunition loading. There were no noon-time or afternoon formations because of these ongoing working parties.

At approximately 5:30 p.m., Harbison, the acting squad leader, realized he had not seen Rother all day and asked the platoon sergeant, Clyde, where he was. It was at this point Clyde approached Eisenback with "a problem." He reported he thought Rother was assigned to the range sweep detail, but had not been seen all day. Eisenback asked who his squad leader was and was the first person above the platoon sergeant to learn Rother's squad leader had left the base the night before and had not yet returned.

Eisenback and Clyde then briefed the company first sergeant together, who then briefed the company commander.

Henderson spent five minutes gathering facts and asked the platoon commander, Johnson, if he knew where Rother was. This was the first time Johnson became aware of Rother's absence. The company commander then sought out the BLT commander to inform him of the issue. The BLT commander immediately reported Rother's unaccounted-for status to the Regimental Landing Team (RLT) commander who assumed responsibility for the search efforts.

It wasn't until this moment, nearly 48 hours since Rother was supposed to have been picked up at his road guide position, almost 24 hours since the rest of his company had returned to Camp Wilson and taken accountability, and nearly 12 hours since a formal company formation was held and his platoon reported "All Present," that the search effort for Rother began.

Search and Rescue Efforts

Within an hour of Rother's status being reported to the RLT commander, vehicles and aircraft from adjacent units began to sweep the previously known location of the BLT. This initial search discovered a stone arrow pointing generally east and thermal devices were used to scan the area, but there was no other sign of Rother. Over the next few days, more aircraft and search parties were added to the effort and the search area was continually broadened to no avail.

While the field search was beginning on the evening of Sept. 1, the unit called the base provost marshal's office and local civilian law enforcement requesting assistance. The next day, they sought support from civilian agencies with search dogs. This had to be requested through the California Office of Emergency Services, who offered to make available other state search and rescue (SAR) resources, but the watch officer making this coordination indicated they were only requesting the search dog assistance. In the late evening of Sept. 2, the dog teams arrived along with a SAR expert. They began search efforts at about 3:45 a.m., Sept. 3.

On the morning of Sept. 3, a desert survival advisor from the National Park Service provided a survivability estimate indicating that, based on the 107-degree average temperature, and if Rother was fully rested and hydrated at the time he was posted, he would not survive beyond the evening of Sept. 3. When provided more accurate information of Rother's physical condition at the time of his posting, this estimate was recalculated and showed Rother could have traveled between nine and 27 miles, depending on when he left his original position, but that he likely would have suffered heat stroke and death between 4 p.m. and 10 p.m., Aug. 31— a full day before his unit even identified his absence.

The initial search for Rother continued until 1 p.m., Sept. 4, at which time the search mode was changed from an active effort to a passive one that would occur during normal training through the conclusion of CAX and the unit's return to their home base.

The active search did continue beyond the estimated reasonable survivability timeline for Rother. This search between Sept. 1- 4 included, but was not limited to: 139.9 flight hours in helicopter and fixed wing aircraft, approximately 1,758 persons from the ground combat element and combat service



U.S. Marines with 2d Light Armored Reconnaissance Battalion attached to Task Group 61/2.4, march to their outpost near Saaremaa, Estonia, May 22, 2022. (U.S. Marine Corps photo by Sgt. Dylan Chagnon)



U.S. Marine Corps photo by Lance Cpl. Samwel Tabancay

support detachment, professional assistance from four park rangers from Joshua Tree National Monument, and seven dog teams from the California Rescue Dog Association. This effort was unsuccessful in locating Rother.

It wasn't until two extensive follow-on searches were conducted in subsequent months that the skeletal remains of Rother were found 17 miles from his last known position on Dec. 4, 1988.

Rother's Final Days

The following is a summary of the probable events of Rother's demise, based on the nature of his belongings and surroundings, as determined by the SAR experts who located his body.

- We cannot know at what point Rother decided his unit wasn't coming back for him or when he started walking to find help, but we know he backtracked to his unit's last known position and left a stone arrow indicating his intended movement. As identified by the investigating officer, this was "the behavior of a Marine intent on being found."
- Rother then made it 17 miles in average 107-degree temperatures before trying to make a sun shelter to get out of the heat. He appeared to have tried to build this shelter by spreading his poncho liner over a creosote bush, but it is believed this attempt may have had an opposite effect and actually created an "oven" that

accelerated his dehydration.

- After a period of time, he left his shelter in a likely state of delirium and, in classic heat-stroke behavior, shed his clothes and traveled roughly 100 meters before losing consciousness and expiring from dehydration.
- The Sheriff's Department deputy chief who led the team that found Rother's remains stated, "We always advise that anyone in the desert or mountains stay put. But once he decided to move, he moved with direction and purpose. He made it to less than a mile from old Highway 66 near a community. He made a heroic effort and he almost succeeded ... He had to see the highway. You can't miss it. It was simply too far to make it."

We're sometimes inclined to point at a single person or action as the cause of a mishap, but Gray's reflection on this incident encourages a more comprehensive approach.

"When a Marine is killed or injured while training, more than the immediate environment of the occurrence must be examined: The quality of leadership at every echelon of the organization, its overall level of training, the degree of supervision of those directly involved and organizational SOPs are among the matters which must be closely and carefully investigated."

- Gen. Al Gray, then-commandant of the Marine Corps

Key Takeaways

With this guidance in mind, we encourage the following actions and considerations in hopes of preventing another avoidable tragedy like this one.

◇ Personnel accountability comes first

There were egregious oversights and violations in this event, but there were also simple mistakes that present-day leaders can easily repeat. It is easy to get too focused in an operation or distracted by friction, but we must make the effort to deliberately plan for accurate accountability and take tactical pauses to self-evaluate how well we are executing the plan.

◇ Ensure risk management is included in the operational planning process

As witnessed in the initial FRAGO meeting, leaders were focused on the operational aspects of the mission, and none took time to consider hazards and risks. Incorporating risk management would have enabled them to identify the lack of personnel accountability planning and other issues.

◇ Is it your risk to accept?

A number of times in this incident, individuals accepted risk that was above their paygrade to accept. One of the key tenets of risk management is to “accept risk at the right level.” Change is the mother of all risks. When you see a risk – particularly when plans are changing and there is evident confusion – raise it to the right level for decision or mitigation.

◇ Have an effective lost-Marine plan

This applies both to the guidance we give our Marines and the response taken by a command when a Marine is lost. In our safety briefs we must explain the exact actions Marines should take if they are separated from the unit. Do they stay in their last known position? Do they move to the nearest road or landmark? Given the vast desert, Rother stood almost no chance of making it to safety on his own. Had he remained in place, his chances of being located were much higher. We must consider the best course of action for a lost Marine specific to the environment they are training in and ensure every Marine understands the plan.

◇ Have a plan in place

At the command level, SAR experts commended the Marine Corps for the amount of manpower and resources it put into finding Rother, but also criticized the organization for the “lack of a search and rescue preplan ... and general ignorance of professional search and rescue techniques” and delaying and under-using civilian professionals. A unit should not be trying to figure out a search plan after a Marine is lost. Have a plan in place at the start, tailored for the environment and resources.

◇ Leaders: Never let your rank outweigh wisdom

The first lieutenant’s dismissal of the accurate protests by his junior Marines was a link that could have broken the chain of events to this mishap. We have a responsibility to respect inputs from our subordinates, especially when it comes to safety.

◇ Every Marine is a safety officer

Like the principles of crew resource management, every Marine has the responsibility and power to take action. When something isn’t right – especially when lives are endangered say something. While it was not Key’s duty to ensure Rother was picked up, it is every Marine’s duty to look out for one another. When Key or others did not see Rother after they were collected, they should have demanded assurance he was picked up.

◇ Effective communication means both sides understand the same thing

Effective communication includes backing up, supportive feedback and acknowledgement that personnel correctly understand. The conversation between Lawson and the Motor-T chief at the end of the convoy movement was a clear breakdown in communication in which neither understood each other nor took action to clarify or report the issue to battalion leadership.

◇ Take desert survival classes seriously

Given his absence went unnoticed for almost 48 hours, Rother’s chances of being found alive were low from the start. But, had he heeded the desert survival training he received before CAX, he may have improved his odds slightly. Given the vast nature of the desert, there was almost no chance of successfully walking to safety. According to the “survival rules” briefed in his training, walking 3.5 miles in 110-degree heat sacrifices a half-day of survival time. Regardless of when he began moving, given the distance he walked, Rother sacrificed a significant amount of hydration, shortening his survival time. Leaders, ensure your Marines understand their survival training and take it seriously.

ROTHER'S EXACT ACTIONS AND FINAL THOUGHTS CAN ONLY BE SPECULATED, BUT WHAT WE KNOW ABOUT HIS FINAL DAYS IS THAT WHILE HIS PLATOON AND COMPANY RETURNED TO CAMP WILSON, ROTHER WAS ALONE IN THE DESERT.

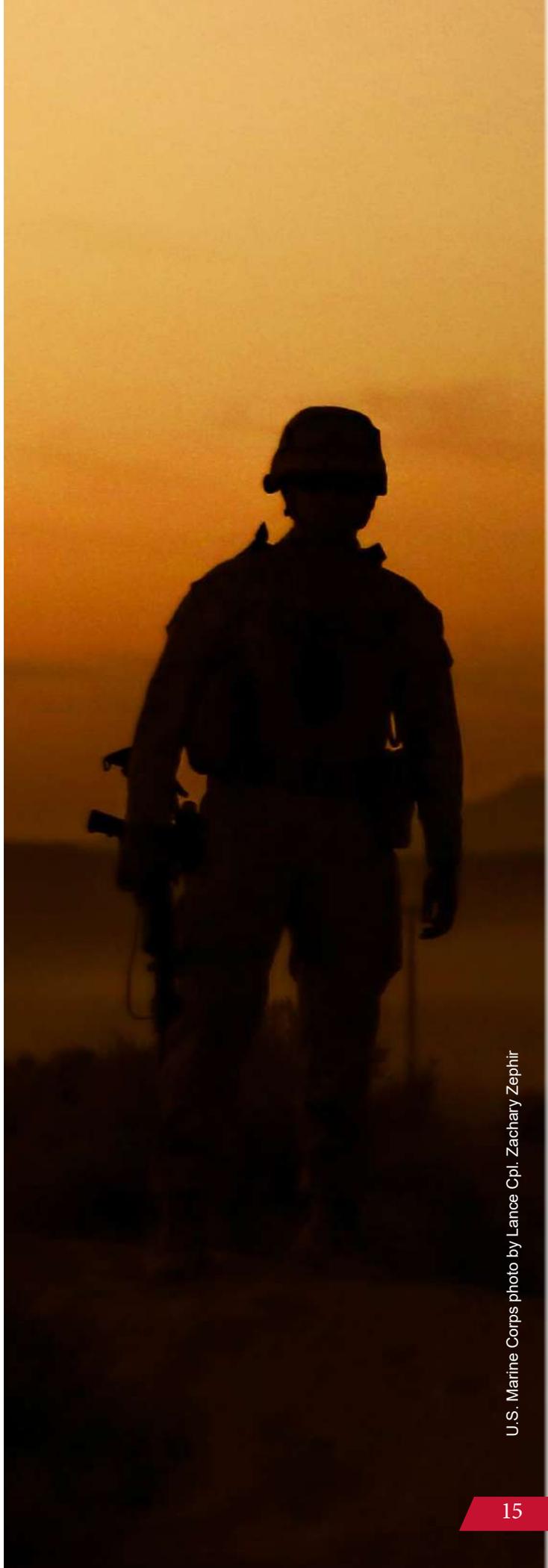
WHILE HIS FELLOW MARINES CLEANED GEAR AND "TOOK ACCOUNTABILITY," HE WAS ALONE IN THE DESERT.

WHILE HIS PLATOON SERGEANT VISITED FAMILY AND HIS PLATOON COMMANDERS CELEBRATED THE END OF CAX, HE WAS ALONE IN THE DESERT.

WHILE HIS COMPANY LEADERSHIP WAS BEING DEBRIEFED ON THEIR ACTIONS DURING CAX, ROTHER HAD LIKELY GIVEN UP ON ANYONE COMING BACK FOR HIM AND DESPERATELY BEGAN A 17-MILE TREK TO TRY TO FIND HELP BEFORE HE DIED, ALONE IN THE DESERT.

DON'T LET THE LESSONS FROM ROTHER'S DEATH GO UNLEARNED.

This article is derived from the Safety Awareness Division: 22-06, "Marine Left in Desert – Fatality," <https://navalsafetycommand.navy.mil>



U.S. Marine Corps photo by Lance Cpl. Zachary Zephir

JLTV Crew Visibility: Height Matters

As Joint Light Tactical Vehicles (JLTV) replace the High Mobility Multipurpose Wheeled Vehicle (HMMWV) and become more prevalent in the Navy and Marine Corps, the Naval Safety Command (NAVSAFECOM) has identified an increase in mishaps involving the JLTV.

NAVSAFECOM investigators identified a lack of visibility for drivers and crew as the leading contributing factor to JLTV and up-armored vehicle mishaps.

By Capt. Louis Steinhaus, Naval Safety Command

One of the main factors affecting visibility, and the most common, is the driver's height. In the JLTV, a 4-foot-11-inch tall (fifth percentile female) driver has a blind spot in front of the vehicle that extends 2 feet, 9 inches farther from the bumper than the distance for a driver who is 6 feet, 2 inches tall (95th percentile male).

Similarly, a vehicle commander of the same height has a blind spot 5 feet, 4 inches farther for a fifth percentile female than that of a 95th percentile male. While this is an extreme height difference between a 4-foot-11-inch driver and a 6-foot-2-inch driver, the disparity stands when looking at data obtained through a mishap investigation involving an armored tactical vehicle.

Following a vehicle-rollover mishap where a 5-foot-4-inch driver was operating an armored tactical vehicle, investigators conducted a test which involved placing cones at the start of

the forward blind spot for an individual who was 6 feet tall and another who was 5 feet 4 inches tall. The results showed that for a driver who was 6 feet tall, the blind spot extended in an arc from 23 feet overlooking the driver's side of the hood of the vehicle to 46 feet when looking over the passenger's side.

In comparison, the blind spot for a 5-foot-4-inch tall driver extended in an arc from 54 feet out overlooking the driver's side to 70 feet overlooking the passenger side, almost double the distance of the taller driver. In other words, the size of the 5-foot-4-inch tall driver's blind spots was nearly double that of the size of the blind spots for the 6-foot tall driver. See **Figure 1** below.

When conducting the same study with 4-foot-11-inch and 6-foot-2-inch tall drivers, this time examining the blind spot from the flanks of a JLTV, visibility is similarly affected. **Table 1** (see Page 17) indicates the distance from the door which,

Figure 1 illustrates a test conducted by placing cones at the start of the forward blind spot for a 6-foot-tall driver (dark green area) and then for a 5-foot-4-inch-tall driver (light green area).

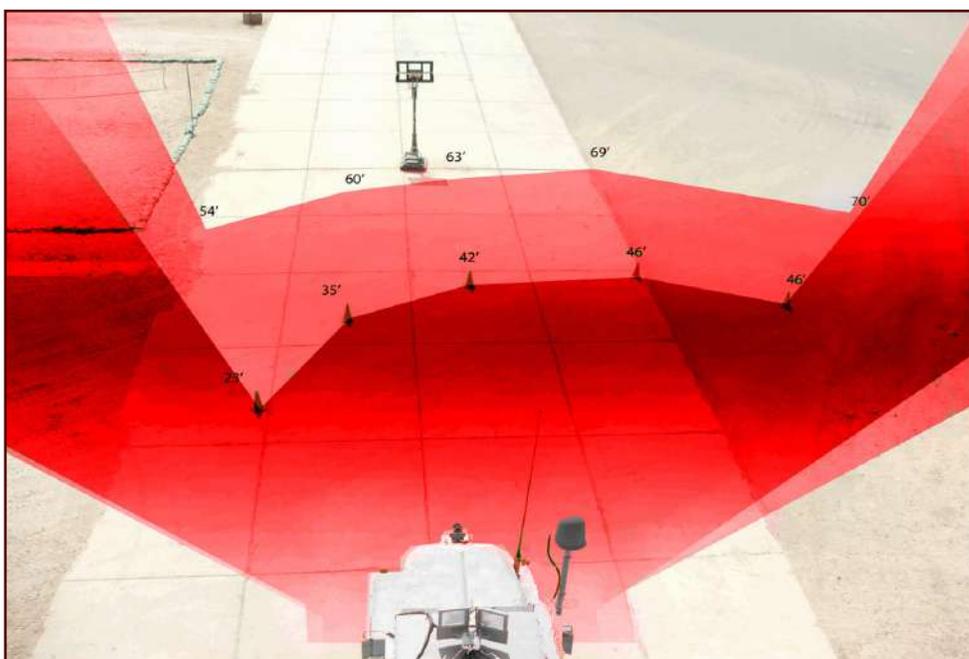


Figure 1

without the aid of mirrors or cameras, is not observed by the JLTV's driver, commander and rear passengers.

As illustrated, the shorter individual has a much more restricted view in comparison to the taller one. As a result, the operator of the JLTV must rely more heavily on the use of mirrors and cameras as compared to the taller individual, but this does not mean the taller person can forego their use either. Additionally, the shorter driver had a field of view several degrees narrower compared to that of the 6-foot-tall driver.

When examining field of view, the driver's height also affects the size of blind spots from inside the crew compartment. On the JLTV, the unaided field of view (without using mirrors or cameras) for a driver is 12 degrees less for a 4-foot-11-inch individual compared to a 6-foot-2-inch individual. The total unaided field of view for the shorter crew was 25 degrees less than that of the taller crew.

Overall, when conducting vehicle operations, especially in up-armored vehicles like the JLTV, operators and leaders must be cognizant of the differences in height of all members of a vehicle's crew, and recognize that objects or dismounted personnel close to the vehicle may not be visible to those inside.

Unobserved Distance from Door	
4'11" compared to 6'2" driver	
Driver	1" less
Commander	11'9" more
Rear Passenger	19'2" more

Table 1

As such, when training or conducting convoy operations, considerations must be made for the safety of those operating around these types of vehicles. >>>

Below: A joint light tactical vehicle is driven off of a landing craft, air cushion from the Kearsarge Amphibious Ready Group and embarked 22nd Marine Expeditionary Unit in Saaremaa, Estonia, during the Estonian Exercise Siil (Hedgehog) 22, May 20, 2022. (U.S. Marine Corps photo by Chief Warrant Officer 4 Izzel Sanchez)



Acute Mountain Sickness Can Be Deadly

Article courtesy of the Expeditionary Warfare Directorate, Naval Safety Command

Altitude sickness is a group of symptoms that can hit you when you climb or are working at any altitude over 8,000 feet. As you go up in altitude, the barometric pressure around you drops and the air gets thinner. Altitude sickness can hit anyone no matter what shape you are in and is more common in younger people. Altitude sickness affects over 200,000 people annually in the United States.

The three types of altitude sickness are Acute Mountain Sickness (AMS), High Altitude Pulmonary Edema (HAPE) and High Altitude Cerebral Edema (HACE). The first type, AMS, is the mildest form. Symptoms include dizziness, muscle aches, nausea, fatigue, vomiting, ataxia and headache. A more serious form is HAPE, which results from a buildup of fluid and blood in the lungs and can be fatal. The most severe form is HACE, which is caused by an increase of fluid on the brain. Symptoms include neurological deficits. While there are drugs that can help with the symptoms, including diuretics (acetazolamide) and steroids (dexamethasone) for more severe illness, the only definitive cure is to descend to a lower altitude.

While training in Colorado a few years back, a group planned to climb two peaks over 14,000 feet to become familiar with the considerations for high-altitude operations. The group started out at about 12,000 feet and descended to around 11,000 feet. They then ascended to the first peak at 14,000 feet before descending several hundred feet and ascending to a second 14,000-foot peak.



U.S. Marine Corps Cpl. Jeremy Good, a signal operator with 31st Marine Expeditionary Unit, moves toward the objective during an air assault training exercise on Combined Arms Training Center Camp Fuji, Japan, March 9, 2022. (U.S. Marine Corps photo by Cpl. Malik Lewis)

It was during the first ascent that one member of the group, Member 1, started feeling ill and vomited several times. He was feeling the effects of altitude sickness with symptoms including headache, nausea, vomiting and fatigue.

At about the same time a second member of the group, Member 2, began feeling very fatigued and slowed down considerably. To treat Member 1, Member 2 and another member of the party immediately descended to a lower altitude by going down a steep rockslide into a bowl.

As Member 1's symptoms started to subside, they realized there was no way out but to go back up the way they came, crest the ridge and descend the other side back to safety. Member 1 descended with a non-medical team member while Member 2 stayed on the ridge. Medics 1 and 2 assessed Member 2, who was OK, and left him with the team while they descended to Member 1 and the non-injured team member.

While climbing down to Member 1's position Medic 2 became symptomatic. Medics 1 and 2 climbed out of the bowl with the two people of Member 1's group. Medic 2 then continued off the mountain with Member 1 and Medic 1 rejoined the group with the other member.

As the group continued, it became necessary to treat Member 2 with acetazolamide to relieve some of his symptoms and help him continue. Acetazolamide, also known as Diamox, is a diuretic. Patients with altitude sickness experience a shift in body fluid from inside the vasculature to other spaces because there is less pressure on the body to hold fluid in. That is why those afflicted end up with fluid in the lungs and excess fluid exerting pressure on the brain. See **Table 1** for guidance on treating and preventing AMS.

When you give a patient a diuretic to help them deal with the excess fluids keep in mind that they are still exerting themselves and may have several miles to go until they can descend. Be prepared to treat dehydration when a safe altitude is reached.

The **Lake Louise Scoring System, Figure 1**, is a self-assessment to help determine if you or someone in your group is experiencing AMS. The best way to operate in a high-altitude environment is to try to acclimate yourself before you begin the operation. If possible, conduct training at altitude before you go out to get used to what you will see or to identify any problems you may have; it will benefit you greatly.

Another consideration is to prophylactically treat with a low dose of Diamox. If you know high-altitude operations are going to be in your deployment area of responsibility, you may need to request dexamethasone before departure for emergency treatment. >>>>

**IT'S BETTER TO BE SAFE THAN SORRY.
ALTITUDE SICKNESS CAN BE DEADLY.**

Treatment	Nonpharmacologic	Pharmacologic
Mild	Rest; descend 500-1,000 m if rest did not improve symptoms	Analgesics and antiemetics as needed Acetazolamide 250 mg po bid
Moderate-to-severe	Descend to lowest possible altitude as soon as possible; administer oxygen or use hyperbaric bag until descent is possible	Dexamethasone 4 mg po, IV, or IM q6h with or without acetazolamide 250 mg po bid
Prevention	Nonpharmacologic	Pharmacologic
Low risk	<i>Altitude:</i> Gradual ascent; rest day after every 600-1,200 m of ascent; sleeping altitude no more than 300-600 m higher than previous day <i>Lifestyle:</i> Maintain adequate hydration; limit activity; avoid alcohol and other depressants	Medications are not necessary
Moderate-to-high risk	Same as low risk (above)	Acetazolamide 125-250 mg po bid-tid or dexamethasone 8 mg po daily in divided doses

AMS: acute mountain sickness. Source: References 1, 3, 4, 6, 8, 11-15, 18, 19.

Table 1. Treatment and Prevention of AMS

Symptom	Rating	Score
Headache	None	0
	Mild	1
	Moderate	2
	Severe, incapacitating	3
Gastrointestinal symptoms	None	0
	Poor appetite or nausea	1
	Moderate nausea or vomiting	2
	Severe nausea or vomiting	3
Fatigue or weakness	None	0
	Mild fatigue or weakness	1
	Moderate fatigue or weakness	2
	Severe fatigue or weakness	3
Dizzy/light-headedness	None	0
	Mild dizziness	1
	Moderate dizziness	2
	Severe, incapacitating	3
Difficulty sleeping	Slept as well as usual	0
	Did not sleep as well as usual	1
	Woke many times, poor night's sleep	2
	Could not sleep at all	3

Figure 1. Louise Lake Scoring System for AMS



U.S. Marine Corps Capt. Thomas DeVries, the operations officer for Communication Strategy and Operations Company, III Marine Expeditionary Force Information Group, rappels down a cliff during an instructional course at Jungle Warfare Training Center, Camp Gonsalves, Okinawa, Japan, March 23, 2022. (U.S. Marine Corps photo by Cpl. Lydia Gordon)



DIETARY SUPPLEMENTS: KNOW WHAT YOU'RE TAKING

Article Courtesy of the Operation Supplement Safety Program Office

Before reaching for that dietary supplement on the shelf, Sailors and Marines should be aware of a newly signed instruction governing supplement use by service members. The Department of Defense (DoD) issued a new instruction, **DODI 6130.06, Use of Dietary Supplements in the DoD, March 9, 2022.**

Due to the frequency of dietary supplement use by service members, an overall DoD policy was needed to help ensure safe use and minimize risks to the force of potential life-threatening, adverse events from taking dietary supplements and prevent potential disciplinary actions from taking prohibited supplements.

The instruction applies to all military departments and DoD components, so it is important for Sailors and Marines to review and understand this instruction to determine how it relates to them and any use of dietary supplements.

The DoD instruction specifies dietary supplement education is required for all service members and those who provide health-related services to the military. This includes healthcare personnel, health promotion specialists, fitness leaders, athletic trainers and strength and conditioning specialists.

The instruction also establishes:

- The **Operation Supplement Safety (OPSS) program** within the Consortium for Health and Military Performance at the Uniformed Services University as the go-to program for dietary supplements. It also states that OPSS will maintain the official DoD Prohibited Dietary Supplement Ingredients list.
- The **DoD Prohibited Dietary Supplement Ingredients list**, available at www.opss.org/dod-prohibited-dietary-supplement-ingredients, currently includes more than 800 ingredients, plus roughly 1,700 "synonyms" that might appear on a dietary supplement label. The ingredients on this list include controlled substances, substances on the World Anti-Doping Agency list, sections S0 through S5, and many drugs that have been found in dietary supplements.

Per the DoD instruction, Sailors and Marines cannot use any product on the prohibited dietary supplement ingredients list.

Sailors and Marines should check the prohibited list each time they consider consuming a dietary supplement, because the list is periodically updated when Food and Drug Administration action occurs or when new scientific information becomes available regarding dietary supplement ingredients.

For more information on OPSS, go to:
www.opss.org/

**OPERATION
SUPPLEMENT
SAFETY | OPSS.ORG**

Prohibited List Check Your Supplement A-Z Index Ask the Expert

USU | **CHAMP**
Uniformed Services University | Consortium for Health and Military Performance

The OPSS website also provides Sailors and Marines with evidence-based information through informative tools to help them make dietary supplement decisions, including:

- **The OPSS interactive scorecard.** This resource features seven questions to help screen supplements for safety —after establishing the product does not contain a prohibited ingredient. Go to: www.opss.org/screen-your-supplement-safety-read-label-your-supplement-and-answer-these-questions
- **An A-Z ingredient index.** This list provides facts and links to articles about individual dietary supplement ingredients. Go to: www.opss.org/az-index
- **Educational articles, videos, infographics and handouts.** These cover topics such as pre-workout supplements, selective androgen receptor modulators (SARMs), creatine, weight-loss products, brain-health supplements and more.

If more help is needed to evaluate a product for safety or to reduce the risk of inadvertently testing positive on a drug test, service members can submit a confidential question through the OPSS website “Ask the Expert” portal at www.opss.org/ask-the-expert.

Additional information, updates and resources are available through OPSS social media platforms: Facebook, Instagram, Twitter and YouTube, by searching “Operation Supplement Safety” or @opssorg, or by signing up for their monthly newsletter via the “Newsletter” tab on the OPSS website.



The opinions and assertions expressed herein are those of the authors and do not reflect the official policy or position of the Uniformed Services University or the Department of Defense.

Using RMI to Sp 🔍 t Unit Trends

By Capt Colin Bishop and Gunnery Sgt. Samuel Lee, Naval Safety Command

As human beings, we tend to be creatures of habit and shy away from change. Learning something new can be daunting at first, but as members of America's elite fighting forces, we need to accept that change is inevitable. We spend countless hours on training, honing our specific crafts to keep this military machine cranking. Then, all of the sudden ... bam! There's a new way to do business, and we have to go back and retrain.

This was the case when the Navy and Marine Corps changed from the Web-Enabled Safety System (WESS) to the Risk Management Information (RMI) system.

The RMI system is a single, integrated system for reporting aviation, afloat, ground, motor vehicle and off-duty mishaps that replaced WESS as the mishap reporting and data program of record for the Navy and Marine Corps. The system, which includes various reporting, management and analysis modules, uses the same digital backbone as the U.S. Air Force's Air Force Safety Automated System.

To gain access to RMI, go to <https://afsas.safety.af.mil>. You will need to request access through your unit's ground safety officer.

The RMI system stores all types of safety reports – from flight to ground, to on and off duty. Any reports previously completed through WESS can still be viewed in RMI, though the user will only be able to view limited data and a brief summary of the incident.

That being said, both WESS and RMI data is available to pull for trend analysis. If you are compiling historical data for trend analysis and need specific WESS or RMI reports, or data that's unavailable on RMI, contact your specific type/model/series analyst, or reach out to your friends at the Naval Safety Command (NAVSAFECOM) for assistance at SAFE-STATSFDBK@navy.mil.

Commanders can use RMI to perform a general search of their unit, pulling multiple types of reports to paint a picture of the risks facing their unit. With that data, the commander could see that data indicates personnel might be likely mitigating risks while performing unit hikes, but for some reason, they are running into major issues when they conduct the obstacle course, or vice versa. Using the data collected, Navy and Marine

Corps commanders can work with their subordinates and develop focal points for solutions.

Do we need more effective training in a specific area? Should we conduct a safety stand-down to huddle the troops so they can see what you see? Does the unit have a problem with teaching technique around the obstacle course? Does the unit need to slow down on use of the obstacle course in favor of a similar physical training evolution?

This same logic can apply to not only physical training, but also to field training evolutions, tactical vehicle convoys, and much more. Sometimes those conducting the training don't see the big picture, and RMI can be a useful tool to help identify risk trends within the unit.

The RMI system can be a useful tool not only for commanders, but also for various program managers. Using the "search investigation" or "data extraction" tools, users can collect very specific data to aid them on research or preparing briefs.

Say you're the motorcycle safety representative for your unit and you have a safety stand down coming up. Safety officers could use RMI to search motorcycle incidents that occurred within your battalion and during a specific time frame, or could perform a search for injuries to identify trends that may need added emphasis in training.

As with everything else, you only get out of RMI what you put into it. If Marines and Sailors fail to report incidents, the picture the data presents is likely inaccurate. When in doubt, inform your command and ground

safety officer of any event that may arise.

As for using RMI, your safety officer should be able to help. Additionally, the NAVSAFECOM has produced a variety of user guides and a representative is always willing to provide assistance. These guides can be accessed via RMI or the NAVSAFECOM CAC-enabled website at www.navalcommand.navy.mil/Resources/RMI/.

Using RMI, along with the other tools available, will allow you to identify similar risks in your unit, learn from others' mistakes, and implement controls to help prevent future accidents. >>>



U.S. Marine Corps photo by Cpl. Israel Chincio



Top's Talk

The Importance of Weapons Handling

From the time a Marine arrives to a Marine Corps Recruit Depot or Officer Candidate School they learn every Marine is a rifleman. Throughout their careers Marines will be trained on weapons systems and be counted on to operate a weapon or work in close vicinity to them while performing vital tasks related to their military occupational specialty.

The importance of weapons handling cannot be overstated, as keeping Marines and Sailors safe and efficient with their weapon during training leads to more combat-ready forces. Many Marines interact with a weapons system on a daily basis, and if they do, can be complacent due to how comfortable they become with their weapons system after initial training.

This complacency is what causes the Marine Corps' continued mishaps every year involving weapons handling. We will never be able to eliminate every risk with weapons when working in the profession of arms, but we can mitigate deadly hazards by returning to the basics.

One example of a weapon-handling mishap or near-mishap that occurs more often than it should is the negligent discharge of the service pistol due to improper clearing procedures.

Current trends reveal Marines conducting duty changeover are improperly executing their weapon clearing procedures and discharging the round in the chamber. A majority of the M9 service pistol negligent discharge mishaps happen at the clearing barrel during duty changeover.

If we can take it back to the basics and remember to visually clear the chamber during changeover with the new duty, we would mitigate this type of negligent discharge. There is nothing wrong with slowing the process down or checking twice. In fact, we recommend it.

Live-fire ranges are also places at high risk of potential mishaps. The mishaps that happen on live fire ranges also tend to be negligent

U.S. Marine Corps 2nd Lt. Nickolas Black, an infantry officer with 2d Battalion, 8th Marines, sets security during a Contested Island Exercise on Okinawa, Japan, Oct. 28, 2021. (U.S. Marine Corps photo by Lance Cpl. Scott Aubuchon)

discharges. In this scenario, it's usually due to a failure of Marines to practice the four basic weapons safety rules.

We can easily mitigate these mishaps if we remember to:

- » **Treat every weapon as if it were loaded**
- » **Never point a weapon at anything you do not intend to shoot**
- » **Keep your finger straight and off the trigger until you are ready to fire**
- » **Keep your weapon on "safe" until you intend to fire**

Certainly, with live-fire ranges it is important we do not become complacent with these basic rules, because the worst outcome of one of these mishaps could be the loss of a Marine. Range safety officers, officers in charge and leaders at all echelons must ensure each Marine is able to articulate and practically apply the four weapons safety rules.

If we focus on the basics as Marines, we will do our part in the Marine Corps to mitigate these mishaps. The ultimate task is to keep our Marines safe and efficient with their weapons systems. By following the procedures learned from the beginning of our careers, we can keep Marines safe and focus on the mission. >>>





RECOGNIZING *Excellence*

FY21 USMC Ground Safety Awards



Warrior Preservation Award (WPA)

This award is presented each fiscal year to the Marine Corps installation that has maintained the most comprehensive safety management system.

Marine Corps Logistics Base (MCLB) Barstow, California

The WPA recipient for FY21 is Marine Corps Logistics Base (MCLB) Barstow, California. Over the year, MCLB Barstow maintained a successful safety management system along with its Voluntary Protection Program star status. MCLB Barstow closed the fiscal year with a 66% below national average Days Away, Restricted, or Transferred / Total Case Incident Rate (DART/TCIR) rate. Exceeding its set goals, the installation reduced lost time cases by 80%. MCLB further experienced zero Class A or B mishaps during the past year, thereby maintaining a safer workforce across the base.

Marine Corps Safety Award - Group

This award is presented to respective command by population grouping that has maintained the most outstanding safety management system. The FY21 group winners are:

Group I (population over 10,000): **No nominations**

Group II (population 5,000 to 9,999): **Marine Corps Air Station, Beaufort, South Carolina**

Group III (population 4,999 to 1,000): **Marine Corps Air Facility Quantico, Virginia**

Group IV (Population below 1,000): **Marine Corps Support Facility, Blount Island, Florida**

Marine Corps Safety Excellence Award (MCSA)

This award recognizes one officer, one enlisted and one civilian who have made the most significant contribution to the Marine Corps safety management system. The respective winners are:



MCSA Officer

1st Lt. Reese L. Ogle, 1st Landing Support Battalion, Camp Pendleton, California,

1st Lt. Reese L. Ogle single-handedly established the unit safety program from the ground up, including the Battalion Safety Order. Ogle's leadership and positive attitude were on full display as he developed an electronic forward thinking safety management tracking tool for the unit. Ogle developed and implemented a training plan that fostered the continuous safety education of 133 Marines in key leadership billets within the unit. With this effort, he has ensured that the 1st Landing Support Battalion maintains a safe and healthy environment, both on- and off-duty, for the unit's 500-plus members.

MCSA Enlisted

Master Sgt. Evan Labounty, Marine Corps Logistics Base, Barstow, California,

Master Sgt. Evan Labounty established himself as an innovative force provider through his efforts and accomplishments in all matters of safety. Labounty had a significant role in safety education and training, the Voluntary Protection Program, mishap and near-miss investigations, facilities program compliance, and safety audits, as well as the Motorcycle Mentorship Program. As an authorized Occupational Safety and Health Administration outreach trainer, Labounty instructed 45 safety-related courses and instructed eight risk management courses.



MCSA Civilian

Mr. Benjamin M. Lebidine, Advanced Infantry Training Battalion, School of Infantry-West, California

Mr. Benjamin M. Lebidine effectively implemented safety controls and measures ensuring Marines, Sailors, joint forces and international partners safely executed physically and mentally demanding training through six high-risk programs of instruction. Lebidine developed, improved and implemented controls that exceed high-risk training requirements resulting in a superior safety margin that produced zero Class A or B mishaps. Lebidine provided oversight and supervision for the Reconnaissance Training Assessment Program and Basic Reconnaissance Course for 960 students through 12 iterations of instruction over the fiscal year training cycle.



2021 GEICO Military Service Awards

GEICO honored six members of the U.S. military with its 2021 GEICO Military Service Awards, including one Marine and three Sailors. This award recognizes service members for their leadership and service in addressing health and safety issues in their local and military communities.

“GEICO has been dedicated to supporting the men and women serving our country since we opened in 1936,” said Jay Snead, director, GEICO Field Representatives. “We are proud to continue this tradition for 33 years now. We salute these honorees not only for their military service but for improving the safety and well-being of others in their communities.”

Each recipient made significant contributions in creating safer environments for their fellow citizens in one of these three areas: Drug and Alcohol Abuse Prevention; Fire Safety and Fire Prevention; Traffic Safety and Accident Prevention. The GEICO Military Service Awards have recognized members of the U.S. military for their contributions since 1988. Packages are due annually in October.

Traffic Safety and Accident Prevention

Gunnery Sgt. Anthony D. Mears, Marine Air Control Group 28, Marine Corps Air Station, Cherry Point, North Carolina

Gunnery Sgt. Anthony Mears is a co-founder and vice president of True Impact Outdoors (Tb), a national 501c3 nonprofit organization that brings veterans and first responders with disabilities into the outdoors. Since March 2016, Mears has logged more than 1,460 hours of volunteer time and community service with not only Tb, but also The Fallen Outdoors, the local Veterans of Foreign Wars and aided in rescue efforts during Hurricane Harvey. Mears participated in, planned, or led multiple fundraising events for disabled veterans, raising more than \$317,000. All proceeds went directly toward the goal of getting veterans outdoors safely and meeting all their disability needs. Mears' contributions enabled all of those he worked with to enjoy their time outdoors without accident.



2021 GEICO Military Service Awards (Con't)

Drug and Alcohol Abuse Prevention Air Traffic Controlman 1st Class Cierra I. Browne USS Carl Vinson (CVN 70), San Diego, California



As Command Drug and Alcohol Program Advisor (DAPA), Air Traffic Controlman 1st Class Cierra I. Browne fosters a substance abuse-free environment for more than 4,800 enlisted Sailors and officers while directly managing 21 departmental assistant DAPAs.

She conducted 72 DAPA screenings and scheduled more than 100 Substance Abuse Rehabilitation Program screenings and seven Early Intervention IMPACT classes. She also facilitated treatment recommendations and placement for 143 cases culminating in the rehabilitation of 33 Sailors with subsequent successful return to full duty.

Browne is a member of Women Veterans Interactive (WVI). The WVI is a nonprofit organization with a mission to meet women at their point of need and support them through advocacy, interaction and outreach. As an active member to the WVI mission, she dedicated more than 100 hours to working groups, webinars and development of programs to assist in stabilizing the lives of transitioning female veterans.

Her outreach efforts include offering assistance navigating veteran benefits for women to receive mental health services, substance abuse treatment, and one-on-one coaching to develop resiliency tools necessary for continued success.

Fire Safety and Fire Prevention Hospital Corpsman 2nd Class Nicole L. Bouscal Beaufort, South Carolina

Hospital Corpsman 2nd Class Nicole Bouscal assisted the safety office in conducting 11 fire drills over the last year. Planning, conducting and evaluating these drills not only ensured the command was within 100% compliance with the joint commission, but also ensures the staff understands the proper procedures during a real-world emergency.

Bouscal spent countless hours training the staff in Code Red (Fire) response with special emphasis on protecting non-ambulatory patients. In addition, she oversaw the inspection of 200 workplace fire extinguishers and demonstrated the use of extinguishers during command safety stand downs.

Bouscal surveyed the command's patient care areas seeking deficiencies that violated life safety and fire codes, and reported those deficiencies to the safety office for mitigation.

She used her fire safety and prevention knowledge to assist the community by volunteering for organizations, such as the Ronald McDonald House, where she volunteered more than 20 hours to supporting their initiative. Additionally, Bouscal supported the local Beaufort Water Festival, where they relied on her expertise to help keep the massive crowds safe over the course of the 10-day festival.



Navy League of the United States Awards

USN (Individual) Naval Aircrewman Mechanical 1st Class Carlos M. Gomez, San Diego, California

Naval Aircrewman Mechanical 1st Class Carlos M. Gomez is an exemplary safety professional in all respects and his knowledge, engagement and supervision of the command safety program has had immeasurable results.

Gomez completed over 700 equipment inspections of automated external defibrillators, portable fire extinguishers and emergency eye wash stations, spearheaded the use and implementation of the Aviation Safety Awareness Program that facilitated the identification of supply deficiencies, flight anomalies and related hazards, managed the safety training for over 250 personnel by tracking all occupational health physicals, general military training, command indoctrination and specialty requirements in the Enterprise Safety Application Management System.

His experience and expertise were evident as an operational risk management instructor, where he taught 11 risk management courses.



USMC (Individual) Mr. Benjamin M. Lebidine, Camp Pendleton, California

**Duplicate recipient; see previous MCSA citation on Page 25.*

USN (Command) Helicopter Training Squadron TWENTY-EIGHT (HT-28), Milton, Florida



USMC (Unit) 1st Radio Battalion 1 Marine Expeditionary Force, Camp Pendleton, California

TACTICAL DRIVING

Recently, the Government Accountability Office conducted a 10-year review of tactical vehicle mishaps within the U.S. Marine Corps and U.S. Army, which highlighted trends associated with mishaps.

RISK CONSIDERATIONS

U.S. Marines with 1st Light Armored Reconnaissance Battalion, 1st Marine Division, engage in Integrated Training Exercise (ITX) 3-22 at Marine Corps Air Ground Combat Center Twentynine Palms, California, April 25, 2022. (U.S. Marine Corps photo by Cpl. Jacob Yost)

The following is an excerpt on Tactical Driving Risk Considerations from the Marine Corps Safety Management System, Marine Corps Order (MCO) 5100.29C dated October 15, 2020.

To help decrease the potential of mishaps and increase unit training readiness, the following are some risks for all those conducting tactical vehicles operations to take into considerations. These considerations can help with the execution of the risk management process and the development of the risk management worksheet.

1. Driver Experience. An inexperienced driver/operator may not have the situational awareness to make timely decisions. They tend to focus immediately on the road in front of them and not fully comprehend all potential hazards. Such a narrow viewpoint can be dangerous, especially on busy highways, unimproved roads, areas with limited/reduced visibility, and during night movements.

2. Adverse Terrain. Negotiating adverse terrain (such as desert, beach/soft sand, mountainous/rocky conditions, forest environment, etc.) with a tactical vehicle is challenging enough for a driver/operator and is compounded when transporting cargo, towing a trailer, and during low light/limited visibility/nighttime conditions. Drivers/operators and vehicle/convoy commanders must therefore adjust their rate of speed accordingly, to ensure the safety of personnel and equipment. Some of the reasons drivers/operators lose vehicle control on adverse terrain include loss of steering, loss of traction, oversteering, and improper braking.

3. Night Driving. Nighttime driving presents increased risks and challenges to tactical vehicle drivers/operators, when compared to daytime driving, which are compounded with night vision devices. Because vision is a significant factor in a



Lance Cpl. Tayiva King, a motor vehicle operator with Combat Logistics Battalion 4, Combat Logistics Regiment 3, 3rd Marine Logistics Group, prepares for a convoy during Mission Rehearsal Littoral Exercise 2022 at Combined Arms Training Center, Camp Fuji, Japan, May 8, 2022. (U.S. Marine Corps photo by Lance Cpl. Sydney Jessee)

Items in the Tactical Driving Risk Considerations category of this chapter can also be considered as "hazards" when developing the Risk Management Work or using the Joint Risk Assessment Tool (JRAT). For more information on the risk assessment process, refer to the Risk Management Volume, Volume 2, of this order.

drivers/operators reaction time while driving, nighttime driving dramatically decreases their ability to effectively respond to potential hazards on the road. In addition, fatigue can be an additional factor associated with nighttime driving.

a. Use of Night Vision Devices. Operators should be trained and familiar on how to use and inspect the equipment before use on a movement.

4. Cargo/Equipment. Transporting equipment and cargo can potentially increase the risk to tactical vehicle operations. The change in handling characteristics, shifting of the vehicle's center of gravity, as well as the change of weight and dimensions of the vehicle, are all factors for consideration. This includes tanks containing liquid that may begin to move inside the container and affect the center of balance thereby affecting the ability of the driver to control the vehicle.

5. Civilian/Other Traffic. Whether a driver/operator is conducting a tactical vehicle movement or conducting an administrative movement, they will have to contend with other vehicles on the road. Tactical vehicle drivers/operators need to consider the proper space between their vehicle and others, as well as utilize defensive driving skills to make safer decisions, anticipate dangerous situations, address unpredictable conditions and reduce potential mishaps while driving.

6. Desert Environment. Traversing a tactical vehicle through a desert environment can have potential impacts on the visibility of the driver/operator. Due to potential decreased reaction time, safety considerations should be made regarding the distance between vehicles. In addition, the desert environment can have a physical effect on tactical vehicles, such as lack of traction, impacts on the steering and handling of the vehicle, and the need for increased braking distance. Drivers/operators should be aware of "brownout" situations, which is a visibility restriction due to dust or sand in the air. During these conditions, the levels of communications between occupants within a vehicle and vehicles within a convoy should increase, in order to ensure increased overall



U.S. Marines with Combat Logistics Battalion 31, 31st Marine Expeditionary Unit, and Japanese soldiers with the 1st Amphibious Rapid Deployment Regiment conduct a convoy for a company-level training exercise on Combined Arms Training Center Camp Fuji, Shizuoka Prefecture, Japan, March 17, 2022. (U.S. Marine Corps photo by Cpl. Grace Gerlach)

situational awareness, and possibly avoid an abrupt maneuver/hard stop braking situation.

7. Heavy Rain. Heavy rain affects a driver's/operator's ability to see through the vehicle's windshield. Even with windshield wipers operating, the splashing of rain periodically blocks vision and can act like a lens that scatters light and distorts the visual scene image. In addition to affecting the visibility of the road for the driver/operator, heavy rain can cause a vehicle's tires to lose traction (this can be exacerbated by speed). When the roadway gets wet, the water mixes with the dirt and oils on the asphalt, making it harder for a vehicle's tires to maintain positive traction to the road. Reroute when feasible or use extreme caution and decrease speed when traveling through roadways that have flooded. Take in to account the wave of water the vehicle will create when driving through flood areas and how it could cause water damage to surrounding vehicles and structures. Heavy rains can also loosen compact ground, which can cause a vehicle's tires to lose positive traction.

8. Limited/Reduced Visibility. Limited or reduced visibility will cause the driver to lose sight of emerging terrain, obstacles, or oncoming traffic. This risk can be caused by blinding light, rain/fog, debris, brownout, etc. Drivers/operators will also need to take in to account visibility restrictions on armored equipment. Ballistic windows on vehicles can skew the view for operators especially when making tight turns. Have the A-Driver and, when feasible, the turret gunner assist with visibility issues. An example of this risk can occur from the headlights of oncoming traffic. Drivers/operators should not look directly into oncoming headlights due to the possibility

of temporary blindness and should watch the right edge of the road until the oncoming vehicle has passed. Once night vision is lost, it takes several minutes to regain it.

9. Sleep Deprivation. Lack of sleep will make a driver/operator less alert and affect their overall coordination, judgment, and reaction time while driving. This is known as cognitive impairment. This will be discussed more in the fatigue portion of this chapter.

10. Cold Weather (Snow/Ice). Cold weather conditions require additional precautions and actions by the driver/operator. The driver/operator must adjust speed, following distance, and driving techniques to counter the hazards of snow, ice, and freezing conditions. In addition, extreme cold weather can have physical effects on the different parts of a tactical vehicle. If available, driver/operator and/or other members of the vehicle should be trained and familiar with how to install snow chains and use block heaters installed on equipment.

11. Hot Weather. Similar to cold weather conditions, hot weather requires its own set of precautions and actions by the driver/operator. Extreme heat can have negative impacts to certain parts of the vehicle (i.e. rubberize parts, engine components, etc.) that can lead to breakdowns, overheating, or other similar events. Depending on the length of the movement, extreme heat conditions can also cause heat-related injuries with vehicle occupants, as protective equipment can increase an individual's body temperature.

12. Alcohol/Prescription Medication/Illegal Drug Use.

The impact of alcohol, prescription drugs, and illegal drugs on tactical vehicle operations can vary based on the kind used. Alcohol, marijuana and other drugs can impair the ability to drive because they slow the driver's/operators coordination, judgment, and reaction times. Cocaine and methamphetamine can make drivers/operators more aggressive and reckless. In addition, some prescription and over the counter drugs can have adverse effects on drivers/operators, such as drowsiness, dizziness, and impaired cognitive functioning. Leadership and convoy commanders must be made aware of operators taking prescription medications that could cause impaired driving.

13. Wildlife. While most of the service's tactical vehicles would be minimally affected by wildlife, it should be a consideration for drivers/operators, as the wildlife could still have some impact on operations. Abrupt maneuvers in an attempt to avoid hitting wildlife can result in rollover or other serious accident and should be avoided. Increased situational awareness and assistance provided by others in the tactical vehicle will help decrease potential mishaps associated with wildlife.

14. Distracted Driving. Distracted driving is any activity that diverts the drivers/operators attention from focusing on the road and driving, including talking or texting on a

cellphone/radio, eating and drinking, excessive communication with others within the vehicle, or focusing on a map or navigation system — anything that takes attention away from the task of safe driving. An example of this is the light from a personal electronic device illuminating the cab of a tactical vehicle and affecting the night vision the driver/operator, which is exacerbated when night vision devices are in use.

15. Outside Continental United States impacts.

Driving tactical vehicles in a foreign country can be tricky and challenging, as each country may have their own specific rules and regulations that differ from the United States, which can negatively impact tactical vehicle operations. Drivers/operators may have to contend with learning how to drive on the other side of the road, determining distances in kilometers, and all of the associated considerations. Host nation drivers may be a factor, as they may have a different style or concept of driving that could present significant challenges to drivers/operators and increase the chances of mishaps. In addition, the terrain and environment of the country may be unfamiliar and the country's infrastructure may not provide adequate roadways and the appropriate safety measures (such as lighting, traffic lights, and signage) for tactical vehicle operations.

16. Condition of Vehicle and Associated Equipment.

Unidentified unserviceable/defective tactical vehicle parts and equipment can negatively impact the overall performance of the tactical vehicle or could be the primary cause of a significant mishap. A driver/operator increases the chances of this risk occurring by not conducting the proper preventive maintenance checklists and services (PMCS) procedures. Equipment that isn't properly secured within the vehicle can add an additional risk to all personnel within a vehicle. This can include ammo cans, fire extinguishers/Kidde Fire Suppression System cylinders, personal pack systems, and other items that should be properly secured within a tactical vehicle. Not using installed or required equipment associated with the vehicle can lead to mishaps, as well. For example, utilize ladders or steps provided on the vehicle to get on/off the vehicle, ensuring to maintain three points of contact.

17. Personal Protective Equipment (PPE). Not wearing the appropriate PPE during tactical vehicle operations can potentially cause a minor mishap to become more severe. Depending on the situation for the movement, the proper recommended PPE is designed to help provide protection for each member of the vehicle and mitigate potential risk. The type of PPE required could vary depending on the



Staff Sgt. Kyle Owens, Combat Logistics Battalion 5, 1st Marine Logistics Group, I Marine Expeditionary Force, shows the wire housing found inside the steering wheel column of the medium tactical vehicle replacements at Marine Corps Base Camp Pendleton, April 29, 2021. When troubleshooting lighting issues, mechanics must often remove the steering wheel to access the wiring. A 10-way slide hammer kit is typically used to remove the wheel, often cracking the column or warping the wheel in the process. Owens designed a tool that prevents damage to the truck while removing the steering wheel. The tool is available from the Marine Corps Systems Command's Advanced Manufacturing Operations Cell. (U.S. Marine Corps photo by Gunnery Sgt. Michele Hunt)



location of the member in the vehicle (i.e., the gunner) or the environment (i.e., garrison vs combat).

18. Personal/Civilian Navigation Systems.

Drivers/operators primary source for navigational information should be the road/strip maps provided by their unit leadership, which may include the following: designated primary/alternate routes, checkpoints, rally points, local medical facilities, potential hazard/danger areas, and destination and rest stop locations. If members of a tactical vehicle are forced to use a personal/civilian navigation system, be aware that the routes provided by these devices may not be accessible by tactical vehicles, especially larger vehicles or those towing items.

19. Amphibious/Embarkation Operations.

Whether conducting beach landings off of a Landing Craft Air Cushion (LCAC)/ Landing Craft Utility (LCU) or offloading from a Maritime Prepositioning Force (MPF) shipping vessel, amphibious and embarkations operations present a variety of challenges for leadership and drivers/operators of tactical vehicles. Ranging from environment and terrain impacts to trafficability in or around staging areas, the opportunities for mishaps to occur could be higher than normal. >>>



Did You Know? ELECTRIC BICYCLES

Personal electric bicycles (e-bikes) are becoming popular

in civilian communities and are starting to make their way on to DoD installations. Electric bicycles are a cost-effective way to travel short distances; however, like other conventional and motorized bicycles, there are risks associated with riding them.

State laws treat most e-bikes the same as conventional bicycles. There are a few exceptions, but for the majority, no license, registration or training is required. **Review the state laws in your area to determine the appropriate requirements for use.**

Marine Corps policy does not restrict the use of e-bikes onboard U.S. Marine Corps installations. E-bike operators will follow the same policy requirements as conventional bicycles, unless otherwise directed by installation traffic safety orders.

Before you consider whether to purchase an e-bike, let's go over some risks and safety tips.

- E-bikes generate more torque than regular bikes, meaning they speed up and slow down faster. In one sense, this is good because you can get where you are going quicker and can stop faster at lights and signs. However, some people may not be used to the torque an e-bike can produce.
- E-bikes tend to be slightly heavier than conventional bikes because of electrical components, such as the motor and drive system. Normally, this weight difference is not enough to cause a noticeable difference when riding, but a heavier bike means more momentum if you crash.
- E-bikes have a higher accident rate because most e-bikes are ridden in urban areas, and typically happen in urban areas. This fact, combined with all the others, explains why e-bikes may be perceived as more dangerous.

It seems any increased risk associated with e-bikes is mostly about how people choose to ride electric bikes, not about e-bikes being inherently more dangerous.

E-BIKE SAFETY TIPS

- Always wear a helmet.
- Know and use your hand signals.
- Put a light on your bike.
- Ride with the flow of traffic, not against it.
- Stay in your lane.
- Keep your tires inflated.

AAV MISHAP: WHERE DO WE GO FROM HERE?



As the Marine Corps ushers in the new Amphibious Combat Vehicle (ACV), the replacement to the long-used Assault Amphibious Vehicle (AAV), *it's beneficial to revisit some of the more significant mishaps from the AAV's time in service and apply those lessons learned to the AAV's final days in the fleet and to its successor.*

An Amphibious Combat Vehicle with the 3d Assault Amphibian Battalion, 1st Marine Division, approaches USS Makin Island (LHD 8) during waterborne training April 10, 2022. (U.S. Navy photo by Mass Communication Specialist 2nd Class Jacob D. Bergh)

During the summer of 2020, a Marine Expeditionary Unit (MEU) was conducting one of several training periods in preparation for their upcoming deployment when they experienced a mishap. On the day of the mishap, Bravo Company of the Battalion Landing Team (BLT) 1st Battalion, 4th Marines (1/4), and their attached Assault Amphibious Vehicle (AAV) platoon conducted a mechanized raid exercise on San Clemente Island, California. After complications with one of the AAVs during the attack, the unit separated into two elements; one would remain on the island to repair the vehicle and the other would return to the ship. During the transit back to the ship, one of the AAVs began to take on water and eventually lost operation of all bilge pumps. Over the next 45 minutes, the vehicle continued to take on water until the crew ordered the other Marines on board to evacuate.

Just as another AAV came to aid in evacuating the Marines, a wave broke over the vehicle's top and water flooded into the top hatches, which had been opened for egress.

The AAV sank to the ocean floor resulting in the death of eight Marines and one Navy Hospital Corpsman.

PRE-MISHAP TRAINING

The AAV platoon was identified to support the MEU in mid-January 2020. In addition to this assignment, the platoon was also selected to support an exercise in the United Arab Emirates (UAE). This decision was made under the assumption that the infantry battalion to which the AAV platoon would be attached during the MEU would be able to participate in the preparatory training for the exercise. However, that infantry battalion did not join the overseas exercise.

The AAV platoon conducted various gunnery exercises and live-fire ranges from January to March until deploying half the platoon for the three-week exercise, however, none of the personnel who participated were the Marines from Bravo Company 1/4.

Once this exercise element returned from the UAE, they were required to execute their two-week Restriction of Movement (ROM) to comply with COVID-19 protocols. As a result of this timing, the first time the AAV platoon and their assigned rifle company trained together was when they executed the Expeditionary Operations Training Group (EOTG) raid package in May.

While the units successfully completed this training, waterborne operations were not part of the evolution, so there was no chance to validate the AAV platoon or rifle company's familiarity with the procedures for transporting troops over water.

During the seven months from when the AAV platoon was identified to support the MEU through the day of the mishap, they conducted only four days of waterborne operations, and again, Marines from Bravo Company 1/4 did not participate. Various issues of concern occurred during that training that should have identified proficiency gaps, but those problems were not effectively assessed.

The AAV battalion commander skipped the evaluation based on his impression that MCCRE standards were generally applied at the company through regiment level, not the platoon level.

During one platoon, night-training exercise, two AAVs struck each other in the surf zone, causing minor damage. While the incident was reported to the MEU and BLT leadership, no investigation or remedial action was performed.

Two of the unit's gunnery exercises were canceled halfway through execution due to maintenance or range issues, resulting in several crews not gaining the required gunnery qualifications.

In addition to not being able to complete these specific gunnery qualifications, the AAV platoon was not evaluated by a Marine Corps Combat Readiness Evaluation (MCCRE), which was required by the Marine Expeditionary Force's (MEF) and division's orders before a unit executed a Change of Operational Control (CHOP) to a MEU.

The AAV battalion commander skipped the evaluation based on his impression that MCCRE standards were generally applied at the company through regiment level, not the platoon level. He thus used platoon-level Training and Readiness (T&R) standards to validate the AAV platoon's combat readiness.

In addition to having limited training time with the AAV platoon, Bravo Company 1/4 had a significant gap in Underwater Egress Training (UET). Before conducting waterborne operations in AAVs, all personnel must complete this training, which involves completing the Shallow Water Egress Trainer (SWET) and then either the Modular Amphibious Egress Trainer (MAET) or the Submerged Vehicle Egress Trainer (SVET).

The MEF requirements state egress training should have been completed before the MEU composite date, but due to ambiguity in the order and misinterpretation of the intent behind the order, the majority of Bravo Company had only completed the SWET.

When the company had trouble getting all their Marines through the SVET due to maintenance, COVID delays, and other factors, they interpreted a line from the MEF order stating -- that if a Marine failed the MAET, they could remediate with the SWET -- to mean the SWET alone could be used to pass personnel as fully UET qualified.

This interpretation resulted in only two of the 13 Bravo Company Marines on the mishap AAV having executed the SVET, the rest had only conducted the SWET.

U.S. Marines with Company B, 3d Assault Amphibian Battalion, currently assigned to 4th Marines, 3d Marine Division and Marines with 3d Battalion, 5th Marines currently assigned to the 31st Marine Expeditionary Unit conduct waterborne operations with assault amphibious vehicles at Camp Schwab, Okinawa, Japan, June 2, 2021. (U.S. Marine Corps photo by Lance Cpl. Diana Jimenez)



Considerations

Decisions made at senior leadership levels hindered the units' ability to train for deployment effectively. Being assigned to a MEU is arguably the most critical assignment a unit can receive. As such, training oriented toward preparing for the MEU must be prioritized.

The decision to assign the AAV platoon to an exercise overseas eliminated vital time to focus on waterborne operations and joint training with their sponsor unit. If the Marines of Bravo Company had been afforded more time to familiarize themselves with AAVs, they would have increased their understanding of egress procedures and waterborne operations.

Bravo Company and the BLT also applied poor logic in their training prioritization. Waterborne operations are clearly one of the most hazardous evolutions conducted in an AAV. The failure to complete the UET training fully demonstrates a lack of appreciation for hazard requirements.

Policies regarding the MCCRE for the AAV platoon, as well as the UET training, confused the purpose behind these requirements. At the organizational level, we must ensure intent is understood and supervisory lower levels must make every effort to complete that intent.

MAINTENANCE BEFORE THE MISHAP



U.S. Marines with Company B, 3d Assault Amphibian Battalion currently assigned to 4th Marines, 3d Marine Division conduct waterborne operations with assault amphibious vehicles at Camp Schwab, Okinawa, Japan, May 24, 2021. (U.S. Marine Corps photo by Lance Cpl. Alyssa Chuluda)

Maintenance on the AAV platoon's vehicles began just before the platoon was supposed to CHOP to the MEU. They were initially told they would be assigned 14 AAVs that had just returned from a previous MEU deployment, and that the vehicles were well maintained and operational. However, due to a battalion reorganization, those vehicles were sent to a different company, so the mishap platoon's AAVs had to be sourced elsewhere in late March.

According to witness statements in the original command investigation, the vehicles identified for the platoon came from what they referred to as an "administrative deadline lot," and many had not been operational for extended periods. Although a follow-on command investigation could not find maintenance system data to confirm this statement, there were apparent problems with the vehicles' serviceability, as identified by the pre-CHOP Joint Limited Technical Inspections (JLTI).

The pre-CHOP JLTI validated concerns on the 14 AAVs' serviceability. Five vehicles were non-operational and seven were missing excessive stock list-level 3 (SL-3) items. Due to the maintenance problems, on April 20, the AAV platoon personnel executed the CHOP without their assigned AAVs and equipment because MEF policy mandated all vehicles and equipment be in condition code A, i.e., fully operational, before CHOP to a deploying unit. This schedule left only two weeks for the platoon to conduct vehicle repairs before the start of the EOTG Mechanized Raid course May 3.

The BLT 1/4, 3rd Assault Amphibian Battalion (AABn), and MEU leadership were briefed on the maintenance deficiencies, and established plans to return the vehicles to operational use. The vehicles were sufficiently repaired for "land-use only" by the start of the EOTG raid course May 3.

From May 8-26, platoon maintenance personnel repaired all vehicles for land and waterborne use. However, the vehicles were not officially CHOPed to BLT 1/4 until August 11, 16 weeks after the original CHOP date and 12 days after the mishap. This delay caused their Force Activity Designator (FAD) not to upgrade, which kept them at a low logistical support priority to obtain ordered parts. From the original CHOP date of April 20 to the July 30 mishap date, 11 of the 14 AAVs belonging to the MEU AAV platoon were in a non-operational status at various points.

Considerations

Just as training to prepare for the MEU should be given priority, so should appropriate vehicle and maintenance assignments. The lack of logistical prioritization the AAV platoon received as they were about to CHOP demonstrated a lack of appreciation at senior levels for the level of training demanded during a MEU work-up and the hazard levels associated with this training.

Appropriate resources must be dedicated to facilitating more complex operations.

With this in mind, we as an organization must be willing to accept – and assert – when mission accomplishment is not feasible. Given the number of maintenance difficulties this platoon faced, whether or not the repairs were sufficient for executing the training is questionable.

Units and their commanders must make realistic assessments of the unit's ability to meet task demands. If they can't, it is better to own that fact than to risk the lives of Sailors and Marines.

PLANNING AND EXECUTING THE EVENT

Amphibious Squadron (PHIBRON) MEU Integration Training (PMINT) started for the AAV platoon when they transited from the Del Mar Boat Basin to the amphibious ship (AMPHIB). During the transit, two vehicles experienced mechanical problems requiring them to complete the movement in “water track mode,” using the tracks instead of water jets for propulsion. Over the next two days, the two AAVs were repaired, and personnel conducted Preventative Maintenance Checks and Services (PMCS) on the rest of the vehicles. During the PMCS, another AAV was identified with having a problem with the digital display monitor not showing engine water temperature, and they decided not to use this vehicle in the mechanized raid.

The day before the mishap, the operations order for the mechanized raid on San Clemente Island was given, planning conducted, and the confirmation brief held. During the brief, participants discussed a variety of risk management factors and it was stated the AMPHIB would provide a safety boat for the evolution while the AAV platoon provided an empty AAV to serve as the second required safety vessel. After the plan was approved, the AAV platoon and Bravo Company conducted a well-deck rehearsal, rehearsal of concepts (ROC) drill, and further preparations. These rehearsals lasted until approximately 1100.

Reveille came for the AAV platoon the next morning at 0300 so the platoon could begin preparations for the designated 0700 launch. This meant the crews were operating on four hours of sleep. The platoon began splash checks at 0530, which are supposed to include a safety brief to embarked personnel that explains the safety and egress/evacuation procedures. The investigation however, found this brief was either not conducted, or not conducted to the necessary standards.

Two safety vessels were required for waterborne evolutions involving six or more AAVs during ship operations. During preparations that morning, the designated safety boat could not launch from the ship because the engine failed to start, and the AAV platoon commander was informed of the inoperable boat. He had already designated AAV 12 as a safety boat, despite the fact it contained embarked personnel, but no other AAV was designated as a second

safety boat, meaning they launched without the mandated safety structure.

At 0745, 13 AAVs launched to conduct the mechanized raid. They reached the island about an hour later and completed the evolution by 0945. Shortly thereafter, one of the AAVs reported they had blown a hub, meaning the bearing inside the road wheel hub had failed and the vehicle couldn't move. After requesting the parts needed to fix the vehicle and determining there would be a delay in getting the parts to the island, the decision was made to leave the immobilized AAV and three others, including AAV 12, on the island and send the other nine back to the ship.

During this same time period, the driver of the mishap AAV noted the transmission oil level was low. The rear crewman inspected the engine and found a leak due to mounting bolts being loose. He tightened the bolts, then he and the driver added 6 gallons of transmission oil to the transmission and notified the driver. This was barely one-fourth of the 23 gallons the AAV transmission requires to operate properly.

Considerations

The lack of adequate safety boats during transit to and from the island was an oversight. Waterborne operations are one of the most hazardous training evolutions conducted in the Marine Corps.

The time-critical risk management to ensure there are mitigations to counter these hazards falls on the platoon and company leadership. It is imperative for the officers and senior NCOs at these levels to provide adequate focus on these factors.

The leadership of the mishap AAV also failed to respond adequately to the transmission oil leak and the severity of the leak was not appreciated.

The vehicle commander should have pushed this information up to platoon leadership, and they should not have put this AAV in the water with so little transmission oil. The lack of transmission oil ultimately resulted in the transmission seizing during transit.

The unit conducted a surf observation report before departing and determined the surf to be at a surf index of 2.1 and conditions beyond the surf zone to be a sea state of 1, but they did not request a sea state assessment from the ship before entering the water as required. Once the AAV column departed the protective cove of the island, the sea state increased in intensity.

At 1645 the nine AAVs began to “splash” for their transit back to the AMPHIB. There was no safety boat in the water when they launched, despite one being available on the AMPHIB at this time. The AAV platoon commander stated he assumed the ship would have safety boats because nobody told him they would not be provided, but he never confirmed the presence of safety boats or specifically requested them. In addition to this oversight, as they left AAV 12 on the island, the platoon commander had no AAVs designated as safety vessel.

After approximately 30 minutes of transit, AAV 3 reported a malfunction and reported that they could not maneuver in the water. The section leader in AAV 1 maneuvered to the disabled AAV, rigged it for tow, and began towing it back to San Clemente Island. They did this with the troops still embarked in the disabled AAV, which violates the standard operating procedures (SOP) for AAV operations.

At approximately 1730, the lead vehicle of the AAV column was between 1,500 and 2,000 meters from the ship. With the existing water conditions – somewhere between sea states 2 and 3 – this distance would have taken approximately 10 minutes to traverse.

The rear crewmember of the mishap AAV notified the vehicle commander that water inside was above the deck plates at the

ATTEMPTED TRANSIT TO SHIP AND SINKING

ramp. This “deck plate level” water met the criteria to begin prepping embarked troops for evacuation. The vehicle commander acknowledged the water, but did not give the command to prep the embarked troops for transfer at that time. At this point, the rear crewmember moved to the A-Gunner position at the front of the AAV because he lost internal radio communication and had to relay information verbally.

Simultaneously, the AAV driver noticed the voltage reading fall from 27 volts to 19 volts. This low voltage degraded the radio output along with the electric bilge pumps’ discharge rates.

By approximately 1739, the water in the AAV rose to ankle level, and the rear crewmember informed the vehicle commander. Per the SOP for AAV Operations, water at the boot-ankle level should have been the trigger to execute all emergency distress signals and evacuate all embarked troops. The vehicle commander climbed out of the turret to stand and began giving emergency distress signals by waving the “November” flag, but again, did not give the command to evacuate troops, nor did he launch the vehicle’s red or white star cluster pyrotechnics, despite receiving no response from his prior attempts to signal their distress.



U.S. Marines with 2d Assault Amphibian Battalion (AABn.), 2d Marine Division, splash during a mechanized amphibious egress exercise on Camp Lejeune, N.C., July 22, 2021. (U.S. Marine Corps photo by Cpl. Patrick King)

At approximately 1755, the other members of the AAV Platoon became aware the mishap AAV was in distress. AAVs 13 and 14 (400+ meters away) began maneuvering to assist. As one of the AAVs worked its way closer, the vehicle commander signaled to position the approaching AAV behind the mishap AAV as they moved within 50-100 meters, and called for a troop transfer.

As AAVs 13 and 14 maneuvered into position, the rear crewmember relayed to the vehicle commander that water had reached calf-level, and they needed to evacuate the troops. At the same time, he heard water impact the generator belt and noted a loud screeching noise. The driver checked the voltage regulator and saw it was not charging. He also observed water spraying out the sides of the engine panel, indicating it was full of water.

At approximately 1807, the vehicle commander returned to the turret and the rear crewmember informed him the water was at the bench-seat level. At this point, the vehicle commander gave the order to open the starboard cargo hatch and have the troops "drop their stuff." It's reasonable to assume this guidance was either ineffectively communicated or not understood because the troops who drowned were found with their plate carriers still on.

The rear crewmember opened the starboard cargo hatch forward handle in preparation to evacuate the troops. The embarked troops attempted to open the rear handle, but

struggled to do so because they had never rehearsed this procedure.

Additionally, they were forced to use personal cell phones for light to find the handle because the Emergency Egress Lighting System (EELS) was not functioning and the AAV crew had not attached the two chemical lights required to mark the cargo hatch handles.

As they worked to open the hatch, AAV 14 had moved into position for troop transfer. AAV 14's driver noted the mishap AAV was sitting only about six inches out of the water. As AAV 14 maneuvered closer, a wave pushed it into the mishap AAV where it struck the mishap AAV's forward starboard side.

Once the cargo hatch was open, the rear crewmember positioned himself on top of the AAV behind the turret to assist the embarked troops exiting the vehicle. At this point, the Marines who had yet to exit the vehicle were still trying to determine if they should drop their gear. The mishap AAV had been pushed into a direction broadside to sea swell and was riding low in the water, making it more vulnerable to the swells and waves.

While the rear crewmember was helping Marines out of the vehicle, a wave swept over the top, rapidly filling the AAV through the open cargo hatch and filling it past its reserve buoyancy.

On board when the AAV sank were:

Pfc. Bryan J. Baltierra, Lance Cpl. Marco A. Barranco, Pfc. Evan A. Bath, Hospital Corpsman 3rd Class Christopher Gnem, Pfc. Jack-Ryan Ostrovsky, Lance Cpl. Guillermo S. Perez, Cpl. Wesley A. Rodd, Lance Cpl. Chase D. Sweetwood and Cpl. Cesar A. Villanueva.

Considerations

The vehicle commander faced a dilemma when, in his decision-making process, he had no pre-designated safety vessel to use in evacuating troops when water initially began filling the vehicle. He was faced with the decision of telling the Marines he was transporting to evacuate into the open ocean or to try to make it to the ship. Regardless, there are reasons behind mandatory evacuation criteria.

Twenty-eight minutes passed from when the water level reached evacuation criteria before the decision was made to begin egress. Had the troops been evacuated when the water reached ankle level, as required by mandated emergency procedures, lives could have been saved.

Inadequate rehearsals put the embarked troops at a significant disadvantage. At their most vulnerable moment, when they were actively attempting to exit the vehicle, the group was ill-prepared to open the cargo hatch and execute the required actions.

Training and Preparation Matter.

CONCLUSIONS

After the service members' remains and AAV were recovered, subject matter experts conducted a post-mishap analysis to determine the technical causes of the mishap. They listed eight specific factors in the command investigation that caused that AAV to fill with water and ultimately, lose its effective buoyancy. They cited not just one discrepancy, but the occurrence of a sequence of mechanical failures.

Mechanical Factor. First, the transmission failed due to leaking oil, which caused reduced momentum. This caused the forward hydraulic pump to become ineffective because of low engine speed. The reduced hydraulic bilge pump capacity allowed water level to increase ultimately submerging the generator, causing it to fail. This forced the AAV to run solely on battery power, further degrading the electric bilge pumps. With this significant reduction in bilge pump capacity, the amount of water coming in the AAV was far greater than the pumps could expel, resulting in adverse conditions leading to the mishap.

These mechanical factors were the result of a much larger picture. As previously stated, there were factors at every level of our organization that led to this sequence of events and the eventual mishap.

At the individual and team level, mistakes were made on the day of the mishap. The vehicle commander's failure to recognize the severity of the situation based on the need to add so much transmission fluid prior to the movement back to the ship denied platoon leadership opportunity to identify the problem that led to the transmission failure and loss of bilge pump capacity. Had this been noted, the AAV may not have even been put in the water.

The failure to adhere to safety procedures such as marking the cargo hatch handles with chemical lights, and evacuating the vehicle at specific waterline criteria, denied those in the AAV the ability to effectively egress from the vehicle. Had these procedures been adhered to, the loss of life would likely have been avoided.

At the supervisory level, the AAV platoon did not adequately adhere to crew rest standards. By only affording their personnel four hours of sleep, the unit leadership imposed fatigue which can degrade decision-making abilities. Additionally supervisors failed to ensure adequate safety briefs were conducted, which limited the rifle company personnel's understanding of evacuation procedures.

There were factors at various organizational levels. By not allocating its best vehicles to a deploying unit and electing to send the MEU platoon to an overseas exercise, the AAV battalion created a dilemma where the platoon had to conduct a significant amount of maintenance with limited time to do it. It also reduced the amount of training time the AAV platoon had with the rifle company to which it would be attached. The battalion landing team's decision to conduct their UET training primarily with the SWET limited their personnel's egress abilities. Depending on one's interpretation of the MEF order, this may have met requirements, but it clearly did not set the Marines up to be as proficient in egressing the vehicle.

Together, all of these factors created a situation where a fatigued crew was placed in an AAV that had been subject to an insufficient maintenance cycle, and where the crew had insufficient waterborne training opportunities with BLT.

They therefore experienced numerous difficulties leading to the AAV taking on excessive water and when faced with a crisis, the crew made decisions that resulted in the vehicle sinking. Because the personnel being transported did not have adequate evacuation training or preparation, when the AAV sank, eight Marines and one Sailor lost their lives.

As noted at the beginning of this summary, the incident was not the result of a singular error. Over the months leading up to the exercise and on the day of, numerous oversights, misjudgments, and critical mistakes made at critical levels led to this vehicle sinking and the loss of nine service members. Training, maintenance, and safety procedures could have limited the risk, and procedures that, if followed, would have saved lives. The following considerations are offered so others may avoid making similar mistakes.



KEY TAKEAWAYS

Don't accept risk that isn't yours to accept.

When orders or instructions list a safety requirement, it's because others before you have performed the risk management for you already. Don't dismiss their work for the sake of expediency. Doing so violates a tenet of risk management to "make risk decisions at the right level." As we saw in this incident in which leaders dismissed the need for a safety vessel, doing so will eventually cost lives. The same can be said by those who interpreted the water egress training requirement without seeking higher-level clarification. If it isn't your risk to accept, don't. Pass it up the chain of command for a decision.

Follow the Emergency Procedures. Whether you are in command of an AAV or one of the follow-on Amphibious Combat Vehicles (ACV), there will be mandatory emergency steps to take if specific criteria are met. In this case, actions were required, when the water reached certain levels. Commanders have to make hard decisions, sometimes in the face of uncertainty. Learn from this lesson that the mandatory steps are there to help you make the right decision. Follow the emergency procedures. This action applies to any platform, including aircraft.

Leaders: Set your units – and your people up for success. Commands above the AAV platoon failed the unit by forming the platoon late and providing them with hardware that was not deployment ready. They placed the burden on the team to ready themselves, even while a low priority for parts handicapped them. The responsibility is on the higher-level commanders to ensure they are providing their subordinate units with all they need to succeed. And the burden is on the unit-level commanders to speak up when they cannot safely meet the mission. Both of those

burdens take courage to carry.

Training matters. From individual drills to large-scale exercises, training prepares us to meet the challenges inherent in military operations. For both the AAV crew and the embarked personnel, their training was clearly inadequate to meet the dangers they faced from a waterborne emergency. Practicing until you get it right is not enough. Repeated and frequent practicing of critical actions until you can't get them wrong is essential to prepare for these challenges.

Placement of leadership matters. The AAV platoon commander, AAV platoon sergeant, and infantry company commander stayed on the island as the AAVs returned to the ship. Regardless of the friction expected for the section staying behind, and irrespective of their confidence in the subordinate leaders overseeing the waterborne movement, commanders and senior enlisted leaders need to distribute themselves to best command and control their units, especially during operations that inherently carry higher risk. The top three individuals most entrusted with leading those Marines and Sailors all removed themselves from a position where they could effectively exert control over events in the water. As the mishap vehicle's troubles slowly unfolded, they were powerless to affect the outcome. While perhaps not all three needed to be in the water that day, all three should not have been back on the island while most of the unit was transiting to ship. >>>

Photo: An Amphibious Combat Vehicle (ACV) with the 3rd Assault Amphibian Battalion, 1st Marine Division embarks the well deck of amphibious transport dock USS Anchorage (LPD 23) during waterborne training, March 11, 2022. (U.S. Navy photo by Mass Communication Specialist 2nd Class Hector Carrera)



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Did You Spot the Dagger?

