

# GROUND WARRIOR

The Marine Corps' Ground Safety Magazine



**Dead Man's Curve**  
**Tank Smacks LAV - Twice!**  
**Waterbulls 3, Marines 0**

Summer 1999

# GROUND WARRIOR

The Marine Corps Ground Safety Magazine

Summer 1999, No. 3

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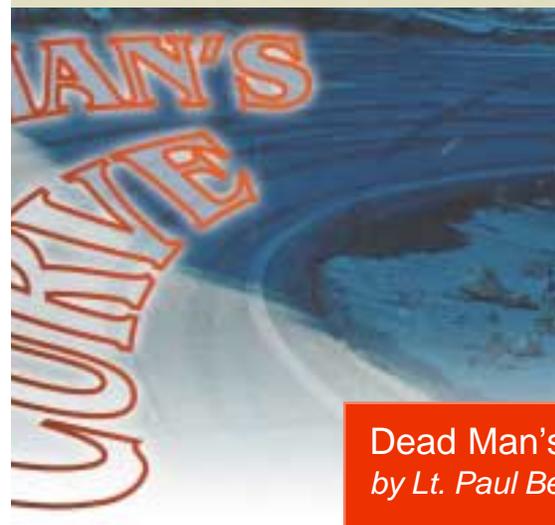
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*by Lt. Paul Berthelotte*

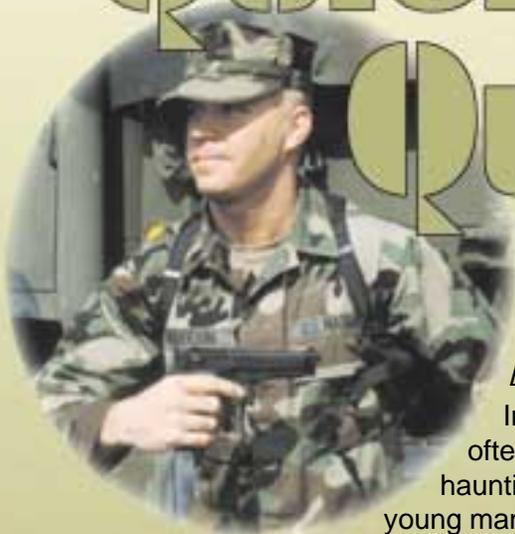
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# Quick Draw Quick Death



*By GySgt. Bobby Blackwell*

In war movies, you often are left with the haunting image of a young man dying in his buddy's arms. This tragedy is understandable during war. But when a young Marine dies in his buddy's arms while standing guard duty, you wonder how such a thing could happen.

A Marine died this way last December. He had been standing watch as Corporal of the Guard—a post he had stood numerous times. He asked another Marine standing nearby to take over while he made a head call. When he returned, he didn't resume his duties. Instead, both Marines started to play "quick draw." Each Marine drew his 9mm pistol from his shoulder holster, aimed at the other Marine, and pulled the trigger.

After a few contests, the first Marine decided it was finally time to return to his post. He reinserted a loaded magazine into his pistol and holstered it.

As he started to turn and walk away, the second Marine couldn't resist just one more draw. The first Marine, seeing what the other was doing, simply reacted. He drew, cycled and fired his loaded pistol at his friend. The round tore through the Marine's neck.

The Marine ran to his buddy and tried to stem the flow of blood. When another Marine who heard the shot arrived, the corporal told him to call an

ambulance, which arrived four minutes later—and too late. His friend died in his arms.

Interviews with junior Marines revealed this so-called game is a common practice when standing Corporal of the Guard and Armory Custodian. Not one Marine saw the need to stop this dangerous and unsafe act, much less report it to the Sergeant of the Guard. Junior Marines weren't the only culprits. A sergeant had been seen playing the same game earlier.

Time after time, NCOs in the chain of command saw this breach of discipline, but no one took responsibility as a leader to stop this practice. By failing to correct it, they gave tacit approval for the deadly game to continue.

I've read many mishap reports that describe Marines who disregard safety procedures, but such a flagrant case alarmed me. A weapon never should be treated as a toy, and Marines standing guard should concentrate on the security of their post. The reason they are armed is not because Hollywood gunslingers are going to assault the base.

As leaders at the NCO level, we not only need to ensure all Marines know how to handle weapons, we need to enforce the rules. Don't "let it go" even one time. Stop and take action. When Marines die on duty, they should be heroes – not victims.

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*Navy photos by PH2 Matthew Thomas*

Ground Warrior

# Reader e-mail



Most editors call this section "Letters to the Editor," but, this being the computer age, we received only e-mail responses to our previous issue. Thanks to those Marines who took time to let us know what they thought and what mistakes they caught, and for general feedback.

## **Watch Where You're Pointing**

Re: Friendly Fire Isn't  
Winter 98-99

I found your latest issue of *Ground Warrior* to be full of valuable lessons. Having been an infantry platoon commander for more than two years, I know the importance of weapons safety and applaud your focus on this topic.

Capt. Scarff emphasized communication and coordination between platoons during a live-fire exercise. What disturbs me, however, is the photo that appears on the inside front cover and on page 2. It shows a group of Marines conducting a brief. Some of the Marines were in the act of "muzzling" fellow Marines.

To Marines who work with and around live ammunition and explosives, the photo only reinforces the bad habits that dedicated NCOs and officers constantly are trying to break.

1st Lt. J.R. Allen  
3rd BN 7th Marines

*We have established a more thorough method for screening photos. Weapon-handling procedures never should be forgotten, even when relaxing before an exercise. Several stories in this issue touch on this topic. – Ed.*

## **The Misplaced Finger**

Re: This Cook-Off Can Kill  
Winter 98-99

I take exception to the caption that states, "The gunnery sergeant below is demonstrating the proper method of inspecting the feed

tray..." The photo clearly shows the Marine has his finger on the trigger. I think you'll agree that this is a very unsafe act.

Major S.R. Dinauer  
MSG School, Quantico, Va.

*You're right – Marines never should put fingers on triggers, except when they intend to fire the weapons. Using dummy ammunition and being relaxed during a staged photo shoot is no excuse.*

*As OIC of MSG School, please consider having you and your staff submit articles or ideas for future issues. The level of experience you have at your command would be invaluable.*

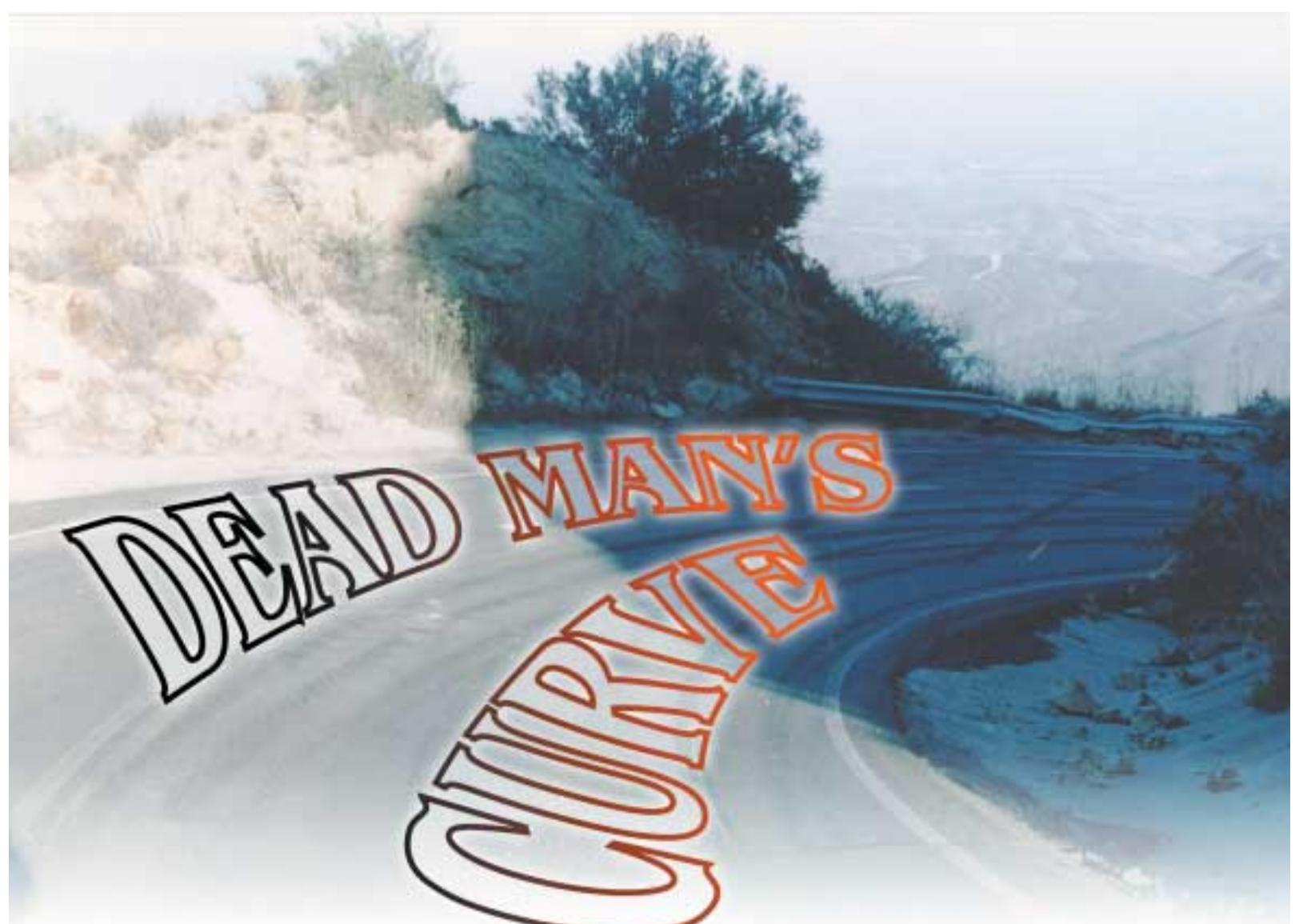
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# DEAD MAN'S CURVE

*By Lt. Paul Berthelotte*

**T**he Marine Corps' light armored vehicle wasn't designed for high-speed turns on hardball pavement. Unfortunately, three Marines found out that "light" is a relative term and that an LAV smashes through guard rails with ease—in this case, a guard rail at the edge of a 400-foot cliff. The mishap left two Marines dead, one with serious multiple injuries, and one totaled LAV-25.

It was a clear, sunny Friday. After a successful live-fire field exercise, the LAR element began the retrograde back to the motor pool. The vehicles would travel on different types of terrain, including a paved road well known for its steep and winding sections.

The column consisted of five LAVs when they started out, spaced so the vehicles in front and behind were within sight of each other. The first three miles of road was packed dirt and gravel.

Because the vehicles kicked up a lot of dust, the drivers spread out so they no longer were in sight of one another. When the vehicles arrived at the paved section, the drivers increased their speed to catch up with the vehicles in front of them.

The paved section of road has a speed limit of 25 mph. This section is very steep and winding down-grade, varying from two to eight degrees. One of the speed-limit signs was clearly visible to the drivers two miles before the fatal mishap.

Without stopping to switch to a lower gear, the driver of the second LAV continued along the road. He had gone only one mile on the paved section before encountering the 90-degree turn. Based upon the speed he was traveling, an estimated 51 mph, the Marine had only a split second to hit the brakes. The LAV skidded 130 feet, crashed through the guardrail, and tumbled over the edge of the cliff.

The second LAV disappeared so quickly that the drivers in front and behind didn't see it happen. The platoon commander was in the lead LAV, a quarter mile ahead of the mishap LAV. He stopped the convoy and requested a radio check after the Marines in his vehicle heard a loud noise. He then noticed a large cloud of dust and smoke in the ravine ahead of them and became concerned. The road was so curved that the mishap LAV actually ended up about 200 feet ahead of the lead LAV by rolling down the mountain.

Some of the crew got out of the lead LAV and approached the mishap LAV. They found the crew members from the wrecked LAV farther up the cliff, where they had been thrown from the vehicle. Marines from the platoon's other LAVs soon arrived and gave first aid. A medevac was immediately called away.

The only Marine to survive the crash had been in the gunner's position. Even though he was the vehicle commander, he had switched to the gunner's position. This switch in position was because of a communications problem with the vehicle commander's normal position. The surviving Marine stated, "We had gone only

one mile on the asphalt portion before we started to slide. It felt as if we were on gravel."

Once he realized they were in danger, he ducked inside the vehicle.

He recalls nothing after that, except waking up in the hospital.

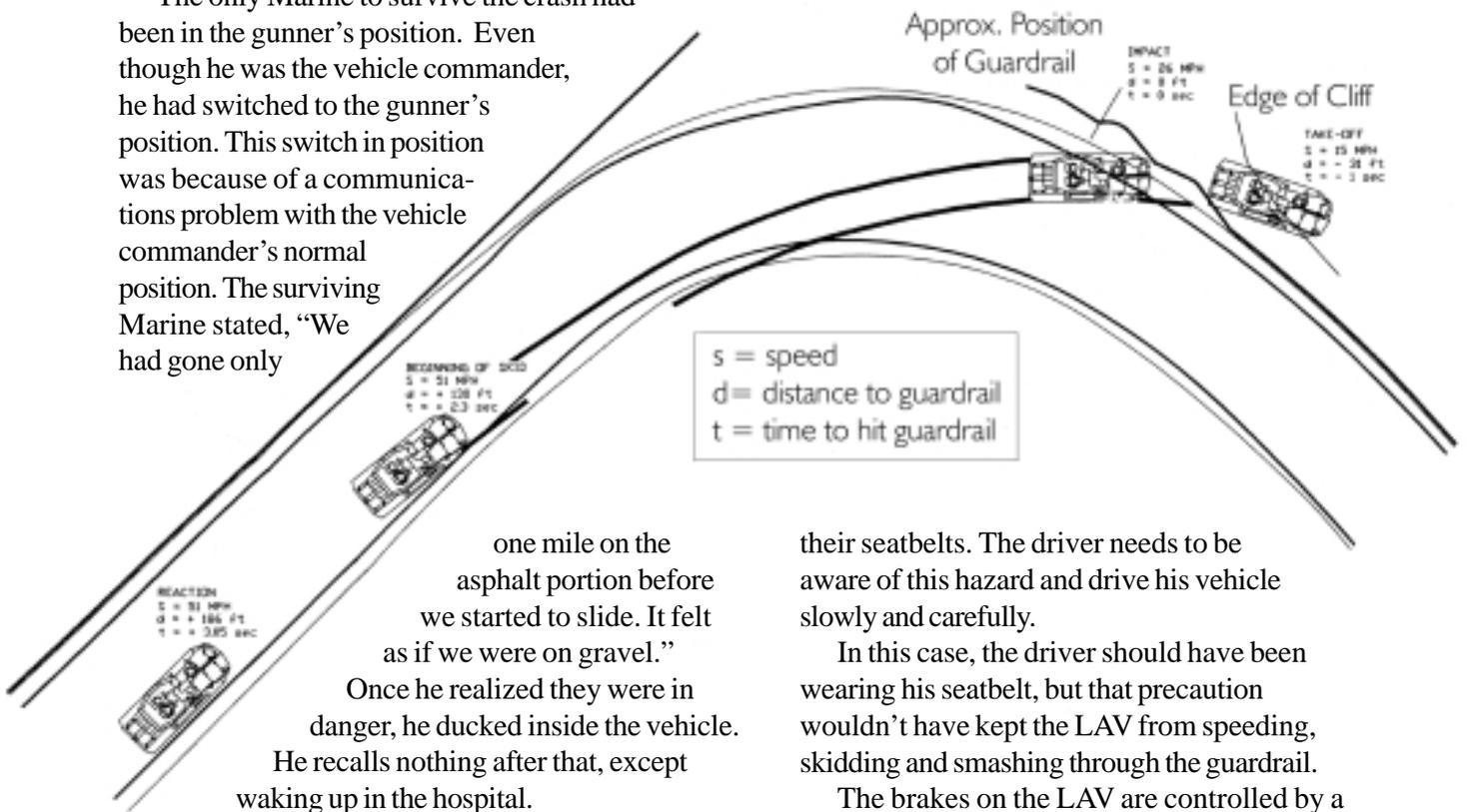
The vehicle had seemed fine on the drive to the range. During the exercise, several Marines

had talked to the mishap driver, but they hadn't noticed anything unusual. The mishap driver had been seen doing pre-op vehicle checks before leaving the range Friday afternoon after the live-fire exercise.

All of the vehicles were going so fast they were leaving skidmarks at each curve. It's amazing that all five vehicles did not end up at the bottom of the ravine.

There are several unique characteristics in the LAV that create special limitations:

Driving during an administrative movement, the vehicle commander and the gunner stand on their seats, up through the open hatches. In this position, they can see their surroundings and help the driver maneuver the LAV. The extra set of eyes is essential, as the driver's view is extremely limited. However, standing on the seats prohibits marines from wearing

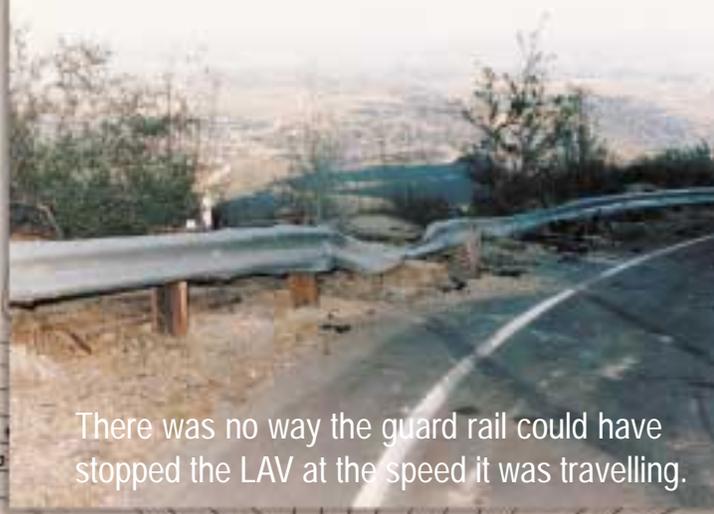


their seatbelts. The driver needs to be aware of this hazard and drive his vehicle slowly and carefully.

In this case, the driver should have been wearing his seatbelt, but that precaution wouldn't have kept the LAV from speeding, skidding and smashing through the guardrail.

The brakes on the LAV are controlled by a hydraulic system boosted by compressed air. The amount of pressure depends on how far down you

This diagram shows the elevation of the road and how it drops significantly. The road is relatively straight until that first 90-degree turn. The LAV went over the cliff and rolled down in front of the first LAV. That was why they were seen.



There was no way the guard rail could have stopped the LAV at the speed it was travelling.

LAV crashes through guard rail

Where the LAV ended up

### LAV Licensing:

Marines can become licensed to drive LAVs by attending the LAV operator's course or by getting on-the-job training (OJT) at their LAR Battalion and applying for a license.

Marines traditionally attend the LAV operator's course at an MOS school after recruit training. Then they are assigned to a LAR battalion. When school-trained drivers are not available within the battalion, Marines assigned as scouts are nominated to become drivers. The Marine driving the wrecked LAV became qualified in this manner.

Investigators compared training records obtained from the LAR battalion to the course of instruction offered by the LAV operator's course. While they were not identical, no areas of instruction seemed to be missing.

When was the last time your training officer made a similar assessment?

push the pedal. The brakes on the wrecked LAV worked well enough to produce skidmarks (see photo).

LAVs also have a Jacob's engine-brake that slows the vehicle by causing the engine to work as an air compressor—absorbing energy, rather than producing it. This brake is activated automatically when you release the accelerator.

Examination of the wrecked LAV revealed that the control lever for the 4/8-wheel drive was in the 4-wheel-drive position. The gear-range-selector lever was in the 2-5 gear range. According to the LAR-battalion safety officer, these settings were appropriate for normal highway driving, but given the steep grade of the road, the LAV should have been operated in a lower gear.

The driver of the LAV had qualified a year earlier, but had misplaced his original license. A new license was issued six months later with no restrictions.

Although the procedures had been followed in certifying the driver for an LAV, these discrepancies were noted by the investigators:

- Neither license had been signed.
- The block for the LAV licensing road test did not have the date of the examination, the driver's signature, or the examiner's name printed. The examiner's signature also was in the wrong place.

Nothing shows that the Marine didn't get enough training. But, obviously, key precautions were lacking. With proper supervision—one of the steps in operational risk management—lives and training dollars would have been saved. A thorough brief before the retrograde could have highlighted hazards and identified the necessary controls. Ultimately, two Marines still would be alive, and you would not be reading this story. 🍀



Once the LAV was recovered, the parts were pieced together in order to determine if mechanical failure was to blame.

# Face Full of Winch

By GySgt. Brian McGeorge

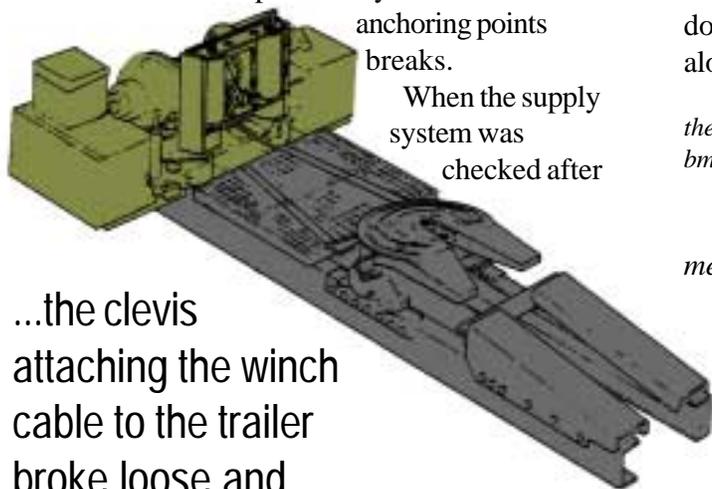
**A** heavy-equipment operator decided to take a crash course in operating a Mk-16 winch. He ended up with 55 stitches inside his mouth and two fewer teeth—a tough way to get 10 days convalescent leave. He could have been blinded, even killed.

The Marine was using the winch mounted on a Mk-48 truck (LVS) to attach an M-870 trailer. The LVS was parked inside the maintenance bay, close to the wall. Instead of driving it outside for better access, he walked between the truck and the wall to start the winch. This required him to stand closer than normal to the winch and inside the danger zone. As the winch was raising the trailer, the clevis attaching the winch cable to the trailer broke loose and whipped around, striking the Marine in the face.

After the mishap, inspectors found that the clevis and clevis-retaining pin were bent so badly that when the winch was engaged, the bent retaining pin came under too much stress. The retaining-pin cap broke, and the retaining pin worked loose.

Had the Marine been licensed to operate the equipment, he might have realized that the vehicle was too close to the wall and that he didn't have enough space to safely operate the winch from the left side. He also might have inspected the winch and noticed the bent clevis and clevis pin. Wire rope under tension will snap back on you when one of its anchoring points breaks.

When the supply system was checked after



...the clevis attaching the winch cable to the trailer broke loose and whipped around.



the mishap, no clevis pins were available. A quick inspection of Mk-16 and Mk-16A1 winches at the MCB revealed many pins with stress marks, bent shafts, and corroded or deformed retaining-pin caps, as well as non-standard safety pins. The winch comes with an incorrect clevis pin. The correct pin part number is 1517020W CAGE 45152. The correct quick-release pin part number is 2036040 CAGE 45152. To accomplish their mission, Marines were making do with non-standard parts or leaving damaged pins in place.

Any time you use equipment, there is a chance it will fail. Faulty equipment increases that chance. Leaders in this case failed to ensure operators were licensed, did not enforce equipment requirements, and failed to procure the correct equipment when a shortage was discovered.

It's up to senior Marines responsible for procurement to ensure we have the equipment and training to do the job. Company grade Marines need to pass along the word about problems. 🍀

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*WSEM Alert A0022-98 addresses the replacement clevis pins. – Ed.*

# Foot Chock

By GySgt. Brian McGeorge

# Fails OpTest



You never should use your feet like this, no matter how tough you think your toes are.

**W**ould you stick your feet under the tires of a moving trailer? Would you wear steel-toed boots when doing so? A Marine who answered “yes” to the first question, and “no” to the second broke one foot and tore skin and muscles on both feet.

Here’s how it happened. One overcast morning, a Marine forklift operator was moving an M-353 launch-kit trailer. He was qualified to operate a 4,000-pound tactical forklift. As required, he had another Marine serving as the ground guide. They hooked the trailer to the forklift, but when the driver tried to pull it forward, seized tires on the trailer made the forklift drag it across the ground.

Seeing the problems these two Marines were having, three other Marines came over to help. They discussed various options, but didn’t notify maintenance. Instead, the Marines placed a block of wood in front of the wheels. They thought they could free the seized tires by pulling the trailer over the wood.

The first try failed, so the driver decided to back the trailer over the block of wood in the other direction. The ground guide ensured the area was clear before the forklift started backing. As the trailer backed toward the piece of wood, one Marine in the group noticed the tires weren’t biting. That’s when his “can-do” attitude overrode his common sense and precaution.

The Marine placed both feet against the block of wood to force the tires to get a better grip. His efforts were successful. The only problem was that the tires remained seized. The forklift driver, unaware of the hazard developing, continued to back up. This forced the block of wood, still securely held by the tires of the trailer, over both of the Marine’s feet.

Seeing the trailer back over the Marine’s feet, the ground guide yelled to the driver to pull the forklift forward. The driver then brought the injured Marine to the medical annex for treatment. He was hospitalized for one day, placed on no duty for 72 hours, and light duty for six weeks.

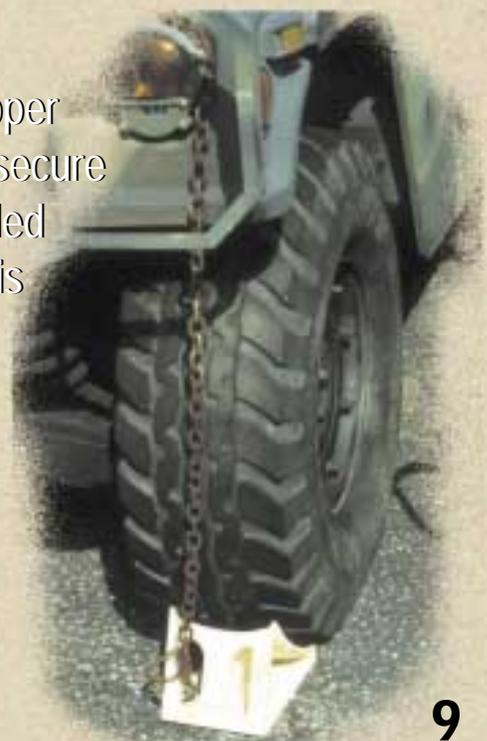
According to mechanics and engineers, it is common practice to use your feet to place chocks under tires of stationary trucks and trailers, but the tech manual does not tell you to do that to free seized tires. In this case, the Marines should have told maintenance rather than try to fix a problem they were not qualified to tackle.

The ground guide’s job is to keep all personnel clear of the vehicle when it is moving, especially well-intentioned, young Marines who only are trying to help. They’re the ones who get injured most often.

As leaders, you must take charge of the situation and enforce safety requirements. It will save your life and possibly your feet. 🦶

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The proper way to secure a wheeled vehicle is with a chock.



PH2 Matthew J. Thomas

*RUNAWAY*

# 5-Ton

*By Lt. Paul Berthelotte*

If you picked up a car or truck after some work and found it hadn't been fixed, wouldn't you insist the repairs be done before you drove it home? So why would a Marine tow a howitzer with a 22,000-pound truck he knew had brake problems that hadn't been fixed?

The Marine assigned to this particular 5-ton truck had reported brake problems to the mechanic in his artillery battery several times. Each time, the mechanic found nothing wrong with the brakes. His inspection amounted to nothing more than a cursory look at the brakes and a drive around the motor pool. Despite numerous reports of brake problems, the truck never was taken to quality control.

Two other drivers had reported brake problems with the same 5-ton. The main problem they identified was the brake pedal sometimes would go all the way to the floor. Other times, the drivers would have to pump the brakes in order to get them to work.

These complaints stemmed from several minor incidents. One driver backed into a howitzer because





The howitzer, still attached to the 5-ton, hangs over the edge of the road. The speed of the 5-ton made the weapon bounce and whip over, pulling the truck with it.

he couldn't stop when he tried to hook it up to the truck. The primary driver had problems with the brakes while driving on base, especially going down a steep road.

These facts came to light when a 5-ton truck assigned to tow a howitzer for the artillery battalion was deadlined. The 5-ton with the brake problems was substituted. The move was briefed to all hands, including the fact the road itself was steep, and all drivers were to use low gear going downhill. However, when and where to shift to low gear was not clear. None of the drivers in the convoy stopped at the top of the pass to shift gears.

The road was bordered on the right by a sharp grade into a gully. Heading down the hill, the 5-ton started rolling so fast that the driver tried repeatedly to apply brakes. His efforts to slow the truck failed. The Marine felt the howitzer jerking and pulling. As the road curved left, the howitzer slipped to the right, tipped over into the gully, and pulled the 5-ton over on its right side. The truck rolled almost completely upside down. It remained on the road while the howitzer, still connected to the 5-ton, hung over the hillside toward the gully. The 12 Marines, all wearing flak jackets and helmets, climbed out of the wreckage.

A technical engineer inspected the truck and discovered these discrepancies, which contributed to the mishap:

- All six brake drums were out of round with hot spots.
- The left-front and the right-rear wheel cylinders were leaking.
- All the brake shoes and hardware needed cleaning.
- All the brake shoes were badly out of adjustment.
- The right-front and right-rear brake shoes were packed with mud.

The brake pedal went all the way to the floor board when the engineer pressed it the first time. The parking brake didn't work, and the parking-brake shoes were cracked and worn.

Why didn't maintenance fix the problem right the first time? The mechanics, after seeing the same vehicle several times for repeated brake problems should have investigated further and done a complete overhaul of the braking system. Some fault also lies with the battalion for accepting a 5-ton with inadequate repairs.

There also should have been a discussion with the drivers about what to do in the event of a runaway vehicle. While rare, it still can occur. A brief talk-through of the event might have helped the drivers cope with the unexpected.

The final question to ask is, "Where was risk management?" The steep hill was a known hazard and addressed. The convoy leader should have taken ORM to its conclusion and designated a specific spot to stop each vehicle for the shift to low gear. ●

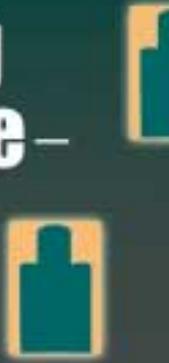
# Live-Fire

**Firing  
Range—  
1810**



**The platoon (in  
three squads)  
moves down  
range to engage  
targets.**

**Firing  
Range—  
1815**



**The squads assume V-  
targets and conduct fi**

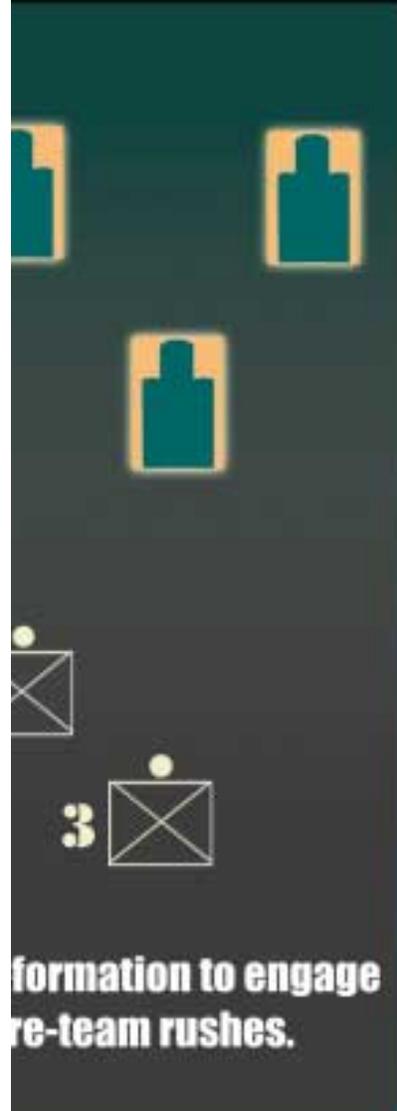
*By GySgt. Bobby Blackwell*

**A** Marine platoon was doing live-fire attacks late one evening at a training range. Each squad was executing fire-team rushes at pop-up targets. One of the fire-team leaders from third squad gave his men the order to “shift left.” A rifleman shifted immediately, directly into the path of his team’s M-249 squad automatic weapon (SAW). The SAW gunner couldn’t stop in time, and a bullet pierced the rifleman’s hip, shattering the pelvis and

severing a major artery. He died from loss of blood.

This exercise had started out smoothly. The platoon moved in a column down range toward the targets. Once on the range, the platoon assumed a “V” formation. First squad was in trace, with second and third squads flanking. The squads came on-line and the individual fire teams in each squad hit the dirt and got ready to fire. The fire teams engaged the targets to their direct front.

# Tragedy



formation to engage  
re-team rushes.

## Firing Range—1825



The mishap fire team shifts left.  
The rifleman steps into the firing  
line of the SAW and is fatally wounded.

Then disaster struck. One of the fire-team leaders from the third platoon gave the order to shift left. The fire-team SAW gunner was having problems with his weapon and didn't hear the order. At first, he had to pull the charging handle to the rear three times so he could start firing again. But one of the other riflemen from this fire team had acted immediately upon hearing the command. For some reason—whether the SAW was not firing or he couldn't see it—the

Marine shifted left directly in front of the SAW gunner. At this moment, the charging handle on the SAW slid home, and the gunner started firing.

The SAW gunner saw the rifleman begin to move, but did not realize the Marine was shifting left. As the rifleman cut across the SAW's line of fire, a round tore through his hip. A medevac was not enough to save his life, and he was pronounced dead several hours later.

At first glance, it might seem that the cause of this mishap was the SAW gunner not hearing the order to shift left. The Marine died because there was no planning for the live fire.

Investigators found these contributing factors:

- The range officer in charge (ROIC) was uncertified.
- The safety observers assigned to the third squad were not briefed properly or supervised. They positioned themselves behind first squad, 75 meters from third squad. They should have been right behind third squad, in a position to immediately stop any unsafe acts.
- The M249 SAW gunner was not current with the weapon. His last hands-on training was eight months before this drill. He had been assigned to the SAW shortly before the exercise.
- No request to conduct a live-fire maneuver was submitted as required by the base range-safety regulations.
- Battalion officers did not review and approve the training plan. They also did not review the assignment of the ROIC and the range-safety officer.

While not required, a rehearsal would have been an excellent way to prepare. It is not only part of an operational risk management plan, but also common sense. A walk-through of the exercise, including the orders to be given, substantially lowers the amount of confusion. Personnel have some idea of which way they will be moving, and what areas they need to avoid for safety reasons. It also permits safety personnel to highlight the most dangerous events and what personnel need to be aware of.

Live-fire exercises are a hazardous but necessary part of combat training. Range-safety regulations were established to make them as risk-free as possible. Violating these regulations is

asking for a mishap. Company leaders don't pay the price: the riflemen do. 🎯

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## Fix the Training

A Marine division had two firing-range mishaps. One Marine died in the first mishap; another was seriously wounded in the second one. Instead of immediately inundating everyone at the command with more training, the safety manager took a different approach.

He developed a weapons-handling questionnaire to pinpoint weaknesses. All units that used the ranges filled out the questionnaires. The results should have startled everyone.

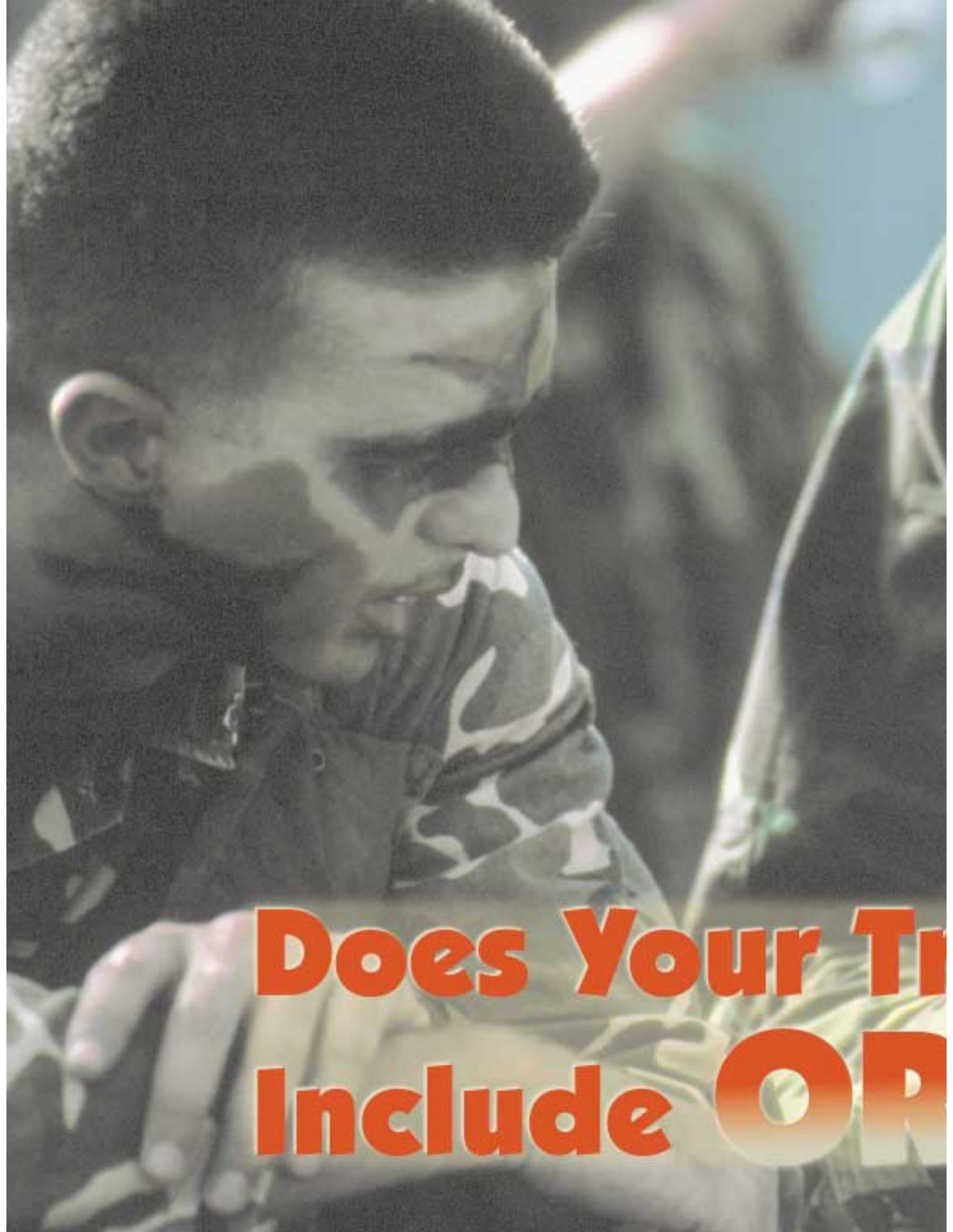
E-1 thru E-3	75% passed
E-4 thru E-5	90% passed
E-6 thru E-9	50% passed
O-1 thru O-3	10% passed

In other words, the lowest scoring group was the leaders: the Marines who normally serve as range-safety officers (RSOs). To attack this problem, the safety office staff started to focus training on the junior officers and senior NCOs who serve as RSOs. All unit commanders got together and established procedures for range safety and range-safety-officer training.

The division has not had a safety mishap since then. If you aren't doing the right training for the task, then no amount of additional training is going to help you. When was the last time you checked your regimen? 🎯

*For copies of the quiz they used, contact the editor at [pberthel@safecen.navy.mil](mailto:pberthel@safecen.navy.mil).*



A young man in a military uniform is shown in profile, looking down at a document or map. The background is blurred, showing other people in uniform. The text is overlaid in a bold, orange font.

**Does Your Training  
Include OR**



# High w

*By Lt. Paul Berthelotte*

**N**obody believed it could happen, but a wire rope capable of holding tons of weight couldn't hold four Marines. The wire rope had served as a safety line 14 years, and no one had bothered to maintain or even inspect it.

At 0635, the Marines began training, which consisted of rope management and knot tying for two-strand or three-strand, wire-rope bridges. The company gathered near the wire rope bridges to practice. The safety officer held the brief, which included a warning not to horseplay or bounce on the bridges.

The trainers discussed procedures for crossing the bridges, and one of the instructors at the command demonstrated the right way to do it. He also showed how to fall, as well as how to recover from a fall while suspended from the safety line.

The Marines then began crossing the bridges. During the crossings, some Marines intentionally bounced on the wire rope bridges and let go to test the safety line even though on at least one occasion, they were ordered not to.

Nevertheless, Marines in the last group had openly discussed bouncing on the wire rope and testing the safety line in open disregard for established safety procedures. While they were discussing this plan, a sergeant who already had

crossed joined them, so he could make sure all Marines crossed at least once.

While the last group was preparing to cross, the sergeant told the instructor at hook-up that they were going to hang off the safety line for a photo-op. As the group approached the center, Marines from the previous group were unhooking themselves on the far side and shaking the wire rope. Three of the Marines in the last group intentionally let go. When their combined weight hit the rusted safety wire, it snapped.

Four Marines fell into the ravine, 30 feet below. Another Marine grabbed the wire ropes and did not fall. He climbed back to a point about 10 feet from the deck, where he jumped down. The last man also grabbed another wire and made it back to the start point.

Instructors, students and on-scene corpsmen immediately rushed into the ravine to aid the injured Marines. They were treated immediately at the emergency-aid station while awaiting the arrival of medevac helicopters. Their injuries included a broken hip, broken left ankle, severely scratched throat, and numerous bruises. Fortunately, none of the Marines died or was seriously injured.

### **Contributing factors:**

1. Training guidelines weren't enforced. The instructors and unit NCOs failed to intervene

# Wire Act



when they saw people bouncing and hanging off of the safety line. Also, allowing six people (instead of four) on the bridge at one time violated SOP.

2. Lack of regularly scheduled inspection and maintenance. The wire rope was worn and frayed throughout its length. The safety line was rusted inside and out, and wires within each strand were broken. A technical manual (TM 5-725) outlines basic lubricating, cleaning, and inspecting wire rope, but it is up to the unit responsible to establish procedures defining who was supposed to maintain the rope and when they were supposed to do it. In this case, the unit hadn't.

3. The breaking strength of one-inch diameter, 6 x 19 wire rope is 26 to 51 tons, depending on what it is made of. The safe working capacity (SWC) is eight tons, but not, obviously, after being exposed to the elements for fourteen years.

## Recommendations:

1. SOP needs to specify that the safety line is just that—a safety line. You aren't supposed to use it to gain confidence in knot tying, or for photo opportunities.

2. A unit SNCO or officer must be at the training site to observe, supervise, and maintain discipline.

3. Create a detailed SOP. The SOP then in effect said that an instructor was supposed to check the training apparatus for structural defects

The wire rope had served as a safety line for 14 years, and no one had bothered to maintain or even inspect it.

before allowing anyone on it. It did not address what to check, how to check it, or the qualifications of the person doing the check. A thorough, visual inspection of the wire-rope safety line by the instructor is insufficient unless that person is trained and knows what to look for. TM 5-725 provides basic guidance for visual inspection.

4. Establish a maintenance record. It will list regular inspections and preventive maintenance procedures for the training equipment.

5. Enforce training guidelines. Instructors and unit NCOs must enforce the no bouncing, no horseplay and no hanging-on-the-safety-line guidelines.

6. Ensure operational risk management procedures are understood and used before any high-risk training. A USMC high-risk training checklist can be downloaded from the Naval Safety Center's web site at [www.safetycenter.navy.mil](http://www.safetycenter.navy.mil). ★

# Training Plan M?



[www.safetycenter.navy.mil](http://www.safetycenter.navy.mil)

# Safety Officers

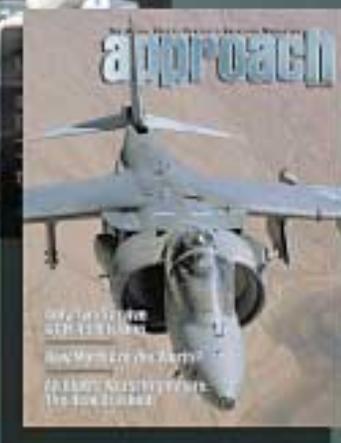
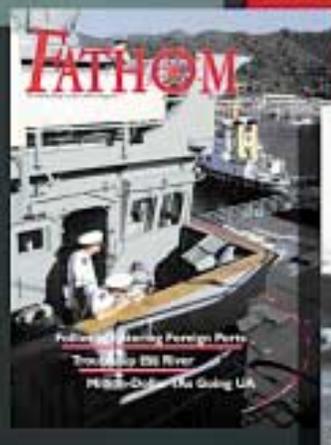
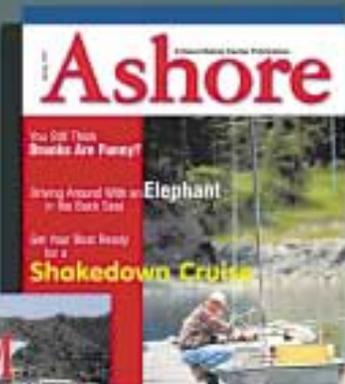
Why haven't you checked out the Naval Safety Center's web site? It has everything a high speed, low drag safety program could possibly need. Risk management presentations, hazardous activity checklists, and the latest safety posters. Surf on in and check it out today.



[www.safetycenter.navy.mil](http://www.safetycenter.navy.mil)

## Devil Dogs!

Check out the Safety Center's other magazines that let you know about liberty, shipboard life, and the aviation side of the house.



# Tank Smac



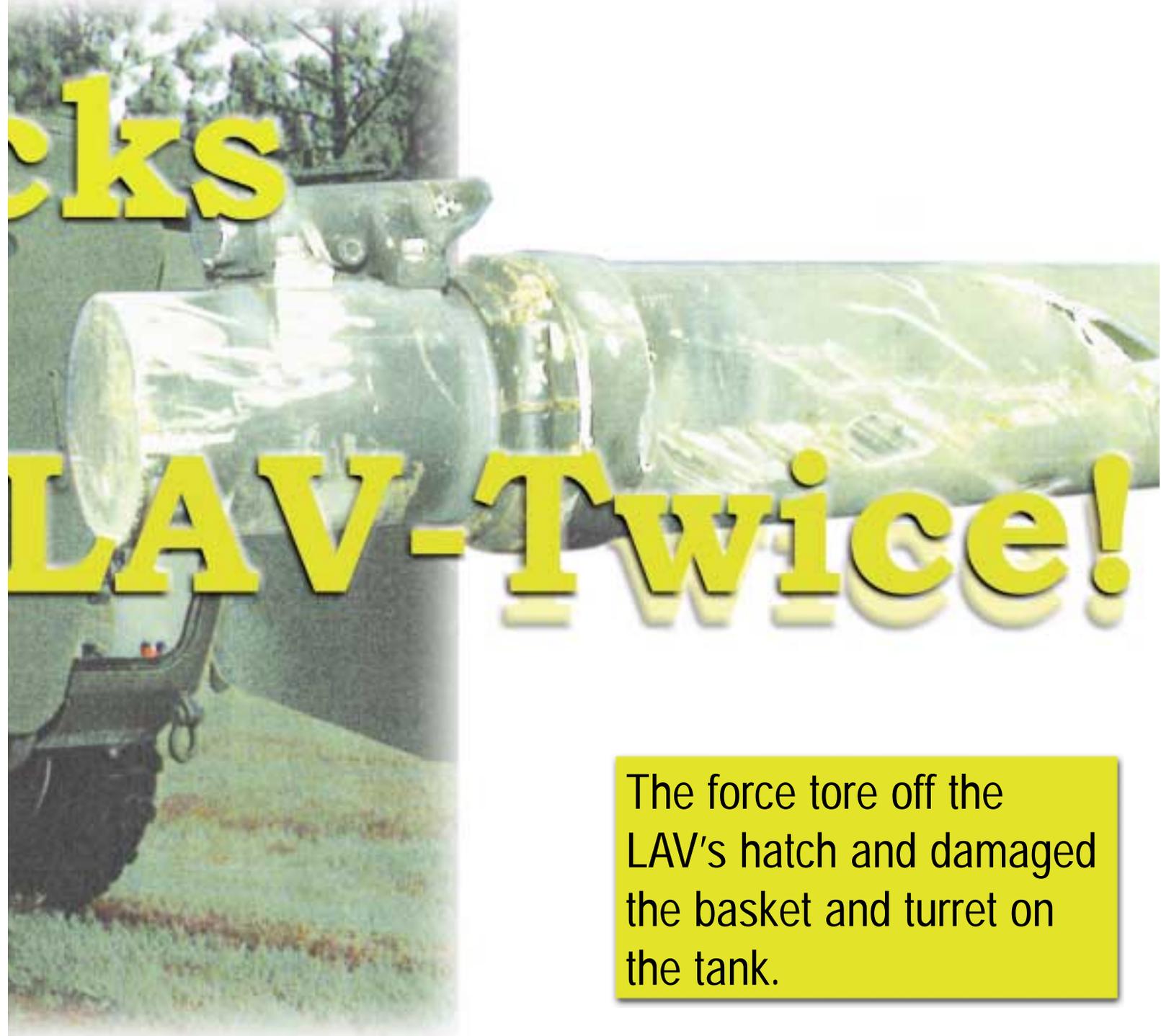
*By Lt. Paul Berthelotte*

**T**he public affairs staff at a Marine Corps base recently decided to put some combat vehicles through their paces for members of the press and a governor's committee for military affairs. The agenda included static displays and demonstrations. A contest between an M1A1 tank and an LAV was not on the schedule, but one happened anyway.

After viewing the static display, the visitors

walked over to a test track. Marines drove some of the display vehicles to the track for the demonstration.

A few of the visitors rode in one of the amphibious-assault vehicles (AAVs). At the track, the visitors manned the bleachers. The AAV was parked to the side. An unmanned LAV was parked just off the pavement in front of the bleachers. The tank was staged on a steel "spin" plate directly



The force tore off the LAV's hatch and damaged the basket and turret on the tank.

opposite the entrance to the track. This plate kept the tank's treads from gouging deep trenches in the asphalt.

The tank crew (a civilian gunner and a driver) got the signal to start. The crew buttoned up the tank and "locked" the main gun onto the bleachers. Then they spun the tank to show that the barrel would remain pointed at the original target.

After that maneuver, the driver moved the Abrams onto the track and began the first of two counter-clockwise laps. The gun barrel, as part of the demonstration, was still locked-onto the bleach-

ers. The tank made the first turn, and the gun barrel swung to a 90-degree angle, aiming at the stands.

Remember the LAV that was parked just off the pavement in front of the bleachers? Well, it wasn't parked quite far enough off. As the tank rumbled in front of the stands containing the governor's committee for military affairs, the gun's muzzle smashed into the LAV's left rear loading hatch and turret. The force tore off the hatch and damaged the tank's basket and turret.

However, since the force of the collision blended with the normal vibrations of the tank, the driver and



gunner didn't realize they had hit the LAV. No one could tell them, since there was no radio communication between the tank crew and the event coordinator. All the start signals had been visual.

As the tank began its second lap, the driver accelerated to 35 mph. The main gun again acquired its target as the Abrams drove over the speed bumps and came around for its second pass. Once again, the muzzle swung out to a 90-degree angle. This time, it slammed into the LAV 2 feet lower. The force shoved the LAV 4 feet forward and to the right, dented the hull, damaged the tail light, and chipped some paint.

The crew of the tank felt this collision, which bent and scraped the gun barrel and shroud. The turret drive and locking mechanisms were damaged so severely that the turret spun free for several revolutions. The driver stopped the vehicle after traveling 300 feet farther down the track.

Because the muzzle-reference indicator contains a small amount of the radioactive material tritium, the radiation safety officer was called to survey the area. Fortunately, no radiation was detected. The final repair costs for the M1A1 totaled \$93,714; for the LAV, the cost was \$1,550.

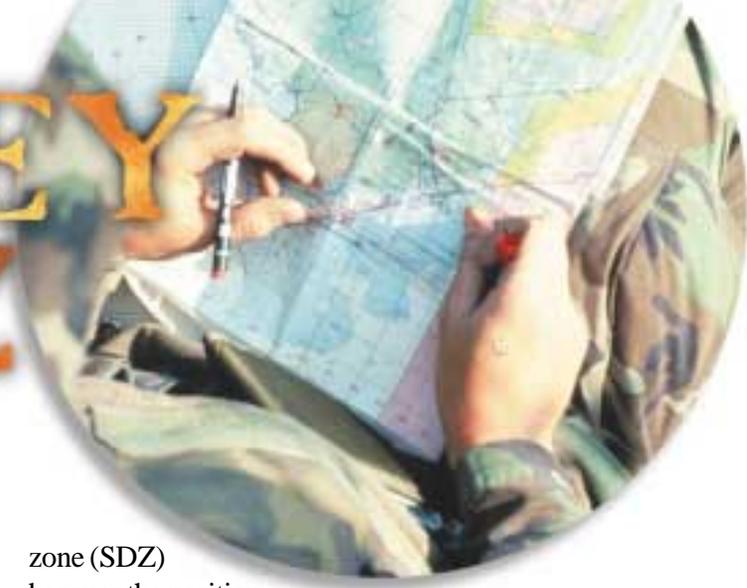
There was no communication plan for this demonstration. Had the organizer's assessed the risks for the event, they would have realized that if a mishap had occurred, they would not have been able to contact any member of the tank crew. They also

Because the muzzle-reference indicator contains a small amount of the radioactive material tritium, the radiation safety officer was called to survey the area.

would have discovered that there was no tank ground-guide. After this mishap, a detailed SOP was written to specifically cover civilian demonstrations. The members of the press had something to write about, too. ☘

*Lt. Berthelotte is the editor of Ground Warrior magazine, and can be reached at pberthel@safecen.navy.mil.*

# SMOKEY SEZ



By Lt Paul Berthelotte

**W**hen an Indiana farmer's field caught fire last summer, he called the local volunteer fire department. Soon, a dilapidated fire truck arrived, filled with firefighters, and headed straight toward the fire. It stopped in the middle of the flames. Firefighters jumped out and frantically started spraying water in all directions and soon put out the fire. The farmer was so impressed with their bravery that he made a \$2,000 donation to the department right on the spot. A local reporter asked the fire chief what he was going to do with the money, "Well, that should be obvious," the chief said. "The first thing we're gonna do is get the brakes fixed on that fire truck."

Fortunately, DoD fire departments don't have problems with their equipment that the local volunteers had, but they also are called on to put out brush fires. One such fire was started by live ordnance and burned 800 acres before it was brought under control.

Preventing forest fires usually is not part of a Marine Corps unit's safety brief. Yet, it should have been for several Marines who fired their 60mm mortar into brush and started the raging inferno. The ordnance didn't land in an established surface danger

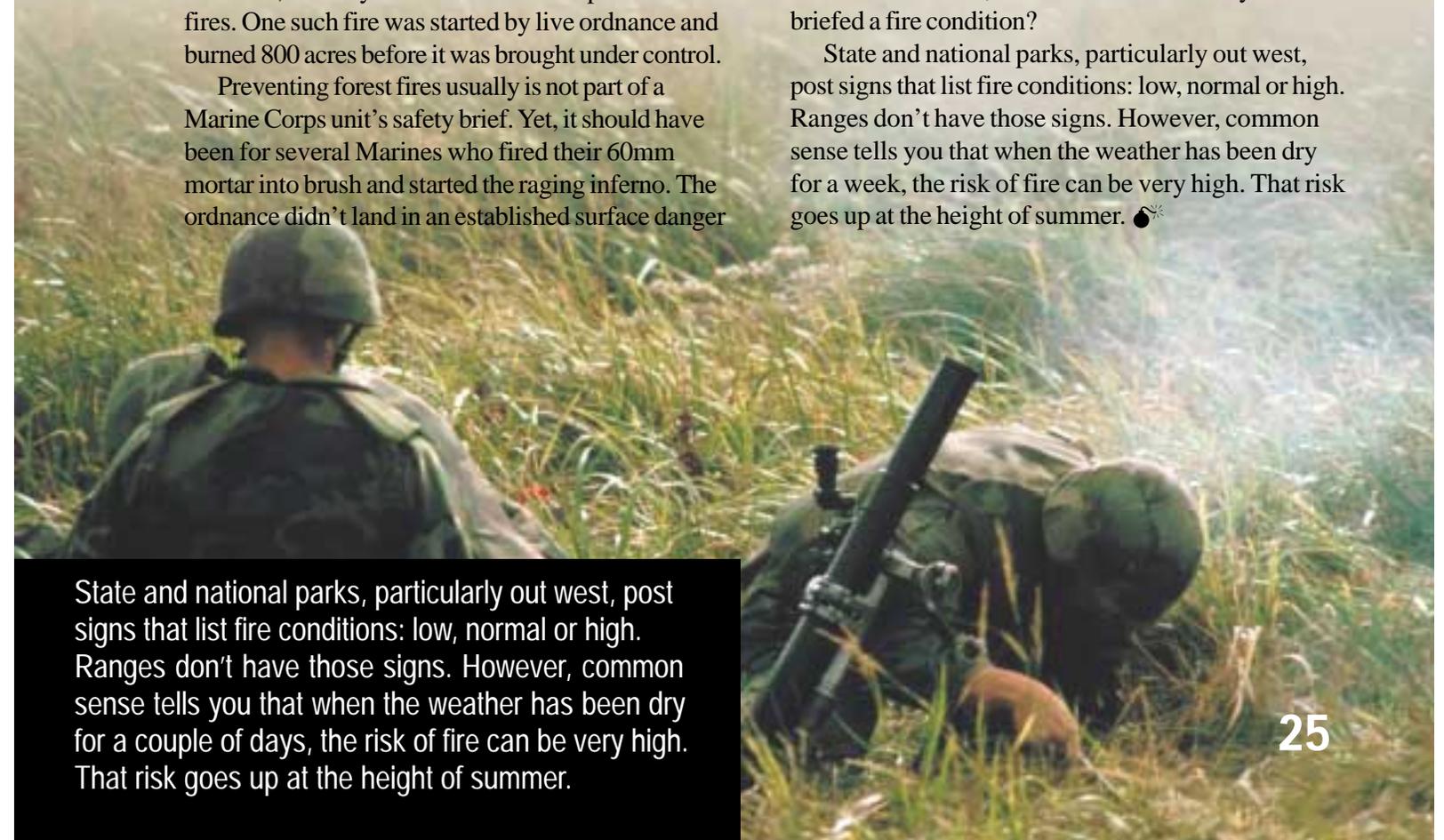
zone (SDZ) because the position safety officer had not established one.

In another instance, a Marine ignited a small fire inside a training area with a smoke grenade. He didn't use an ammunition can, which was required, and the grenade rolled into dry grass and twigs. The fire burned an acre of land before firefighters contained it. The platoon leader and platoon sergeant hadn't included an ammunition can in the gear for the exercise.

Live-fire ranges and training areas are in remote locations, so combat units can train under realistic conditions. Weather, such as rain, snow or heat, that affects the exercise often is briefed to participants, as are ways of dealing with it. For example, if it is hot, you would explain the importance of drinking plenty of water. However, when was the last time you briefed a fire condition?

State and national parks, particularly out west, post signs that list fire conditions: low, normal or high. Ranges don't have those signs. However, common sense tells you that when the weather has been dry for a week, the risk of fire can be very high. That risk goes up at the height of summer. ☀

State and national parks, particularly out west, post signs that list fire conditions: low, normal or high. Ranges don't have those signs. However, common sense tells you that when the weather has been dry for a couple of days, the risk of fire can be very high. That risk goes up at the height of summer.



# Waterbulls 3,



PH2 Matthew J. Thomas

One Marine will not be able to hold a fully loaded waterbull once it starts rolling downhill.

By GySgt. Brian McGeorge

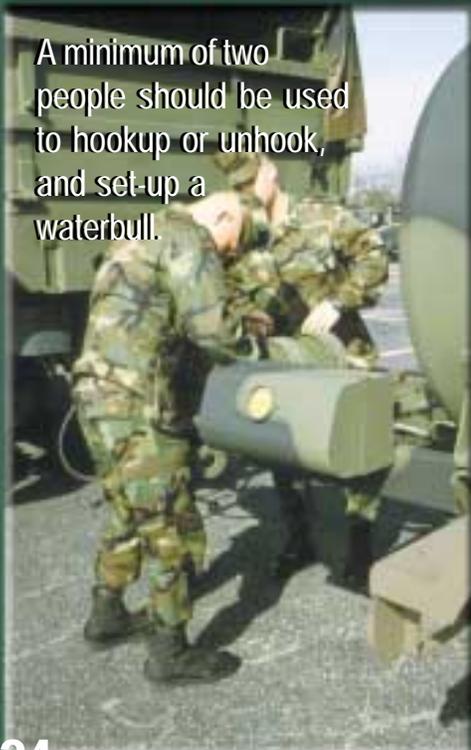
**T**his past November, a Marine was adjusting the landing leg of an M149A waterbull by himself. The waterbull rolled forward. Thinking quickly but using little common sense, the Marine braced his body against the front of the waterbull to stop it from rolling any farther. The weight of the trailer pushed the Marine's ankle backward, breaking it.

Just one week later, another Marine was staging a waterbull for cleaning. While he was raising the landing leg for transporting, it slipped out of his hands, smashing one finger, breaking it and damaging nerves.

Another mishap with a waterbull happened in FY97. A private was helping a driver connect a waterbull to a 3-ton truck. The tongue of the trailer slipped from the pintle hook, landed on the Marine's leg, and broke it.

These three Marines lost a total of 58 workdays because of their injuries.

# Marines 0



A minimum of two people should be used to hookup or unhook, and set-up a waterbull.

## Lessons learned from these mishaps:

1. Use at least two people to connect trailers.
2. Move the truck to the trailer, not vice versa.
3. Don't remove chocks from wheels until after trailer is connected. Disconnect both hand brakes before transporting a trailer.
4. When disconnecting trailers, apply both hand brakes and chock the wheels. This will keep a trailer from moving and injuring Marines.
5. If it is raining, as it was in the second incident, wear gloves so your hands don't slip. ☛\*

GySgt. McGeorge is a combat-vehicle analyst at the Naval Safety Center. His e-mail is: [bmcgeorge@safecen.navy.mil](mailto:bmcgeorge@safecen.navy.mil).

## Training Mishaps



# The High Costs of MEU Training

By Capt. Keith Rivinius

During the last four years, training mishaps have increased steadily from 162 to 229. Reversing this trend should be a goal of every Marine Corps unit. A strong, comprehensive safety program can help you achieve this goal, and an excellent way of accomplishing this is to schedule a thorough, confidential review of your safety program by the Naval Safety Center. When was the last time your safety program underwent a review? Are proper instructions and training aids available?

Here are examples of safety-program deficiencies found in the last couple of years:

- The MEU and Major Subordinate Element (MSE) collateral-duty safety officers were not formally trained.
- The MEU safety officer did not have a turnover folder or history file.
- No safety SOPs, safety councils or centralized reporting procedures were established.

To avoid these problems and the hazards they create, ask your MEU safety officer to schedule a Naval Safety Center survey.

These visits are no cost to the command. They cover ground and afloat operations and an overall evaluation of the safety program that is in place. The survey is not an inspection, and results are released only within the command. This process eases the open exchange of safety-awareness information between the command and the Naval Safety Center.

A message request to the Naval Safety Center (Code 30) is all it takes to get a survey scheduled. The more effort you exert in the beginning, the smoother your safety program will be in the end.

*Capt. Rivinius has transferred from the Naval Safety Center to the Amphibious Warfare School. You can reach his replacement, Capt. Joseph Cleary, at e-mail: [jcleary@safecen.navy.mil](mailto:jcleary@safecen.navy.mil).★*

# If That Amount of Water Isn't "I

By Lt. Paul Berthelotte



**Y**ou realize your AAV is about to sink, yet you're trapped inside the troop compartment. Within seconds, dark, icy water fills the space. Your available air disappears in a cloud of bubbles. Your lungs begin to burn from lack of oxygen. Do you panic? Do you thrash about as you exhale your last gasp of air, or do you calm down and follow the trail of bubbles to the top of the compartment for another breath of air trapped in the space? Do you know your way out of your AAV in the dark? Can you open the hatch and swim to the surface?

Any time your AAV goes feet wet, you'd better be able to answer these questions correctly and immediately. If the time comes to actually do these

actions, you may get only one chance, and it'll be a fleeting one at that. Recently, three Marines answered these questions, kept their wits about them, and lived to tell about it.

That morning, a driver and crew chief did the pre-operational checks on their AAV. They found no discrepancies, and the AAV departed for the beach where the platoon would launch for an amphibious onland.

The platoon commander briefed the embarkation that afternoon, but the AAVs didn't splash until that evening, which is when the risk-management process broke down. From the time of the first pre-operational checks to actual splash, no one else inspected

# “Much,” I’d Hate to See “Much”

the AAV. If the crew had made a thorough inspection after arriving at the beach and before launching, they might have seen that the port side No. 1 shock mount was missing two bolts, leaving holes directly to the outside.

The pre-operational checklist was vague. It stated “check suspension,” but did not specifically identify what to check. The shock-mount bolts are just below the track shroud, and it’s possible they were not put back on correctly during maintenance. A recommendation was made after this mishap to have the pre-op checklist state “check the shock-mount bolts.”

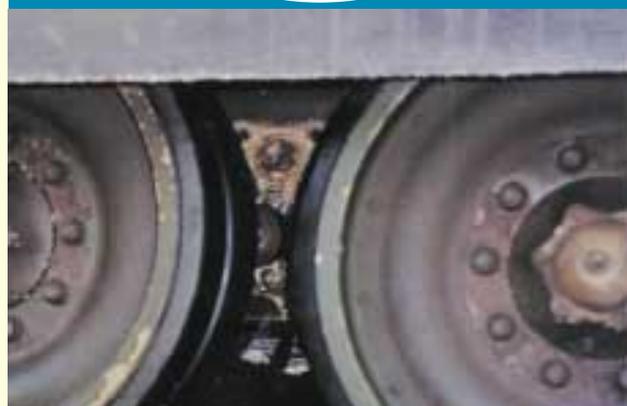
The sea state and surf conditions at the beach were favorable for AAV operations, and the signal came through to start the embarkation. The AAV (fourth in the column) went feet wet at 1840 and headed to the ship. Twenty minutes later, the crew chief moved his gear to a higher level in the crew compartment because water was sloshing over the deck plates. The two bolt holes were letting in 365 pounds of water per minute. After 35 minutes in the water, the AAV had taken on 6 tons of water. No one noticed the water rising because the electric and hydraulic bilge pumps had been handling most of it.

Then the situation got worse. The engine started having power problems and smoked white before finally quitting. The hydraulic bilge pumps quit immediately. Halfway to the ship (2,500 yards away), the AAV’s crew called another AAV to tow them. Within five minutes, the battery level dropped too low to run the electric bilge pumps and the radios, so the driver turned off the master switch. The driver and the crew chief removed their helmets to talk to one another. Two inches of water covered the deck plates. The second AAV began towing the sinking AAV toward the ship.

Fifteen minutes after losing electrical power, the water level was at 16 inches and rising. Again, the driver and crew chief moved their gear to a higher

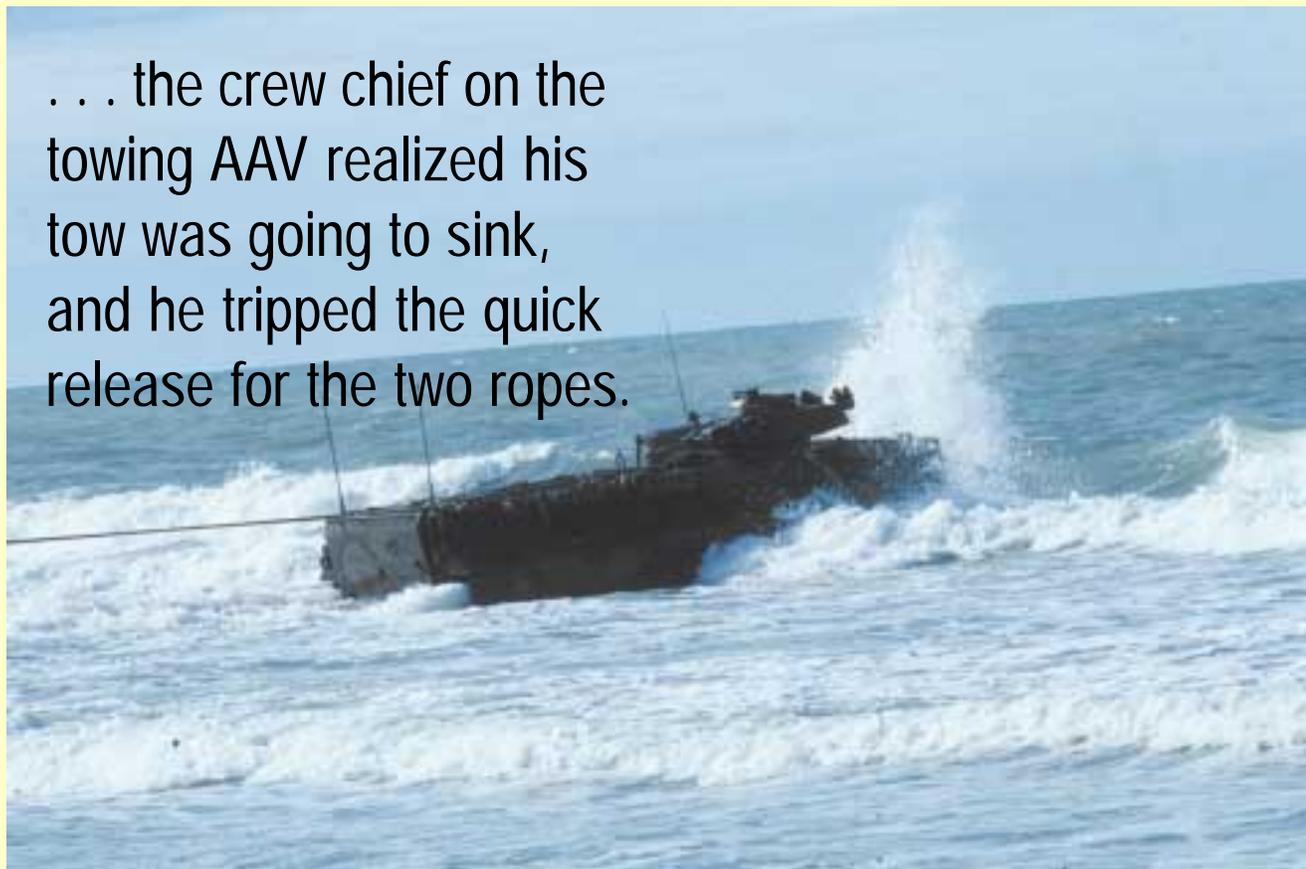
level. They saw water seeping in through the rear plenum. The driver opened a panel at his station and saw water flowing in through the vent aspirator, which is the air intake for the engine. By this time, the AAV was riding noticeably lower in the water, and swells were coming over the bow. The driver finally told the crew chief that he was concerned about the water level.

For 10 minutes, they searched for the cause of the leak. With the water level two-and-a-half feet



The holes may be small, but the amount of water they let in wasn't.

. . . the crew chief on the towing AAV realized his tow was going to sink, and he tripped the quick release for the two ropes.



above the deck plates, they told the Marines on the towing AAV by arm signals that they were taking on water. This information was relayed to the platoon commander, who asked how much water. When he was told, “Not much,” the platoon commander told them to continue on to the ship. The crew chief of the towing vehicle told his driver to bypass the other vehicles to get to the ship more quickly.

Thirty minutes after the AAV under tow lost electrical power, two large swells hit it. The rocking motion sent all the water in the AAV rushing into the bow, tilting it down 75 degrees. The towing AAV immediately stopped, and the crew chief called the safety boat to tell them that the towed AAV was sinking. The platoon commander called the towing AAV to pass the word to the crew to get off the sinking vehicle.

Another swell sent water gushing through the open turret hatch. The critical angle of the AAV caused the vent-aspirator valve to remain open, allowing even more water to flow into the AAV. The crew tried to abandon the vehicle. At the same time, the crew chief on the towing AAV realized his tow was going to sink, and he tripped the quick release for the two ropes. Only one disconnected, and the

towed AAV slipped under the waves for the last time, still connected to the other AAV.

The driver unlocked his hatch and frantically tried to open it. The water pressure was too great, and he went down with the AAV. The Marine in the turret got caught on something and was dragged down. The driver’s station filled with water in five seconds. The pressure equalized enough for the driver to open the hatch. A wall of water burst in, forcing the driver back into the troop commander’s position. The crew chief was shoved all the way to the ramp in the back of the AAV.

The crew chief on the towing AAV finally cut the tow rope with an axe, jarring the sunken AAV, but freeing the man in the turret. He headed for the surface. The driver found a pocket of air and managed to get a few gulps until it disappeared. He saw bubbles and found the driver’s hatch open. The driver swam out and up to the surface.

The last Marine in the AAV was the crew chief, trapped in the back and disoriented. The water was cold and the compartment pitch black. A small pocket of air in the upper rear of the vehicle offered a few breaths until it was gone. He found the ramp dog, got his bearings, and swam through the AAV,

which was filled with floating gear, to the front. He saw dim light coming through the troop-commander hatch, opened it, and broke free to the surface after spending four minutes under water.

The safety boat picked up the crew and took them to the ship for medical evaluation. All the Marines were suffering from minor hypothermia; most had small bruises and one had a slight cut. They returned to full duty the next day.

Several factors contributed to this mishap, starting with two missing bolts. They may have been loose and vibrated out in the six-mile transit to the beach. Other discrepancies, which had been initialed as “checked with no discrepancies noted,” were noted after the mishap.

The crew also failed to do a second pre-operational check, as required by battalion SOP. This SOP mandates a pre-water operational check every time a vehicle travels more than 4,000 meters, spends more than half an hour transiting to a splash point, or any time watertight integrity is compromised.

There was no SOP for abandoning an AAV when it is taking on water. While the dedication of the Marines sticking with the vehicle is commendable, it was misplaced. There was too much water in the AAV when the crew first passed word they were in trouble. Then a verbal report stated that the problem was minimal, even though the AAV actually was without power, being towed and taking on water. The crew chief should have signaled to the towing AAV to release the tow ropes and bring the safety boat alongside so he could get his crew off.

Water level or rate of flooding should have been addressed in the pre-operational brief as criteria for abandonment. It should not take a water level of 2 to 3 feet or a 75-degree tilt to convince you to abandon the ve-

hicle, especially when the power had cut out 30 minutes earlier.

At least these Marines managed to stay calm, cool and collected when the embarkation went to pieces around them. Had they panicked, they could have died. ☘

*Lt. Berthelotte is the editor for Ground Warrior .*



The AAV hit two big swells, tilted 75 degrees, and plunged straight to the bottom.

# Inside the Blind Spot — A Fatal Mistake

*By Capt. Joseph Cleary, USMC*

**T**he Amphibious Assault Vehicle (AAV) is designed for infantry support. Its steel armor and weapons are a major force multiplier when used by trained Marines. But, when you stumble into the driver's blind zone, you might end your career sooner than you think. This fatal mistake has happened twice in the last four years. The first mishap occurred in 1995. A Marine infantryman, acting as an aggressor during a force-on-force exercise, got caught under the AAV's tracks. He died nine days later from a crushed pelvis, dislocated hip and massive internal injuries.

Last year, another Marine infantryman, a machine gunner, nearly was killed in a strikingly similar incident. The mishap again occurred during a force-on-force encounter. This time the Marine was part of the assault team from the AAV. He was providing local security near the AAV when he was run over by it. This Marine lived to tell his story. However, he suffered multiple fractures and torn ligaments from his pelvis to his feet and received a medical discharge from the Marine Corps.

The second mishap occurred during a reaction-force drill conducted in an urban environment, a mock city. Adrenaline, a tight operating area, and confusion created a disaster waiting to happen. The drill started at 2145 when the infantry squad leader received a frag-order (a command over the radio) to engage and neutralize an enemy threat less than a mile from the command post. The 10-man squad swiftly embarked in the AAV while the squad leader briefed the threat and destination to the AAV crew chief.

The mechanized squad's drive to their objective was cut a block short when they came under mock fire in an intersection. The squad leader directed the AAV crew chief to stop immediately. He had the squad debark and set up a 180-degree-perimeter security near the AAV. This order conflicted with the order from the section leader, who told the squad to form a 360-degree perimeter.

The final result was a loose 360-degree perimeter around the AAV. As part of the perimeter, two Marines positioned themselves in front of the AAV—only 5 to 10 feet away from the vehicle. This position placed them just inside the blind spot of the AAV's crew.

Meanwhile, the squad leader's gear got caught in the troop commander's hatch while he was trying to debark. This problem delayed him in supervising his troops. Once freed, the squad leader ran aft and around the stern of the AAV, then toward the enemy threat. Thirty seconds later, the AAV crew chief, intending to better support the infantry squad with his weapons station, decided to move the AAV forward to a new position.

The crew chief and driver scanned the immediate area for dismounted infantrymen and determined the area was safe. Since the two Marines were in his blind spot, he never saw them. They drove the AAV forward, then turned left. One of the two Marines in front of the AAV, hearing and seeing it move toward him, scurried out of the way. The other Marine was not as fast, and his legs were caught under the track of the AAV as he tried to get out of danger. The AAV then drove over and pivoted on his legs. Swift medical response saved his life.



A danger zone surrounds an amphibious assault vehicle (AAV). When the driver and the crew chief are sitting in their seats, they have a blind spot surrounding the immediate front of the vehicle. A ground guide must give directions to the driver before he moves the AAV.

#### **How this mishap could have been prevented**

A five-minute risk assessment, held the night before or the morning of, would have revealed that the squad had little experience working with an AAV. For six of the 10 members, including the Marine who was run over, it was their first time. There were no rehearsals or walk-throughs. The first time some of these Marines had been on an AAV was the previous night, during an administrative move to the training area.

Besides familiarizing new personnel with the equipment, a series of walk-throughs trains Marines how to deploy and position themselves around an AAV. Close coordination procedures can be worked

out among the squad leader, crew chief, and section leader. Establish standard operating procedures so that in the absence of immediate orders, the squad knows what to do. If a minimum of familiarity training had been conducted, the proper order for perimeter security would have been given, and the new Marines may have deployed from the AAV properly. Young Marines have the initiative to fight and win, and it is up to the junior leaders to make sure they know how to use it. ☛

*Capt. Joseph Cleary, USMC, is the amphibious operations specialist in the Afloat Directorate at the Naval Safety Center.*

# 5-Ton Flip- Top

**When checking the hood latches, make sure it takes some effort to fasten and unfasten them.**

*By GySgt. Brian McGeorge*

**F**our years ago, a Marine found out the hard way that just because you close a hood doesn't mean it will stay fastened. He was driving an M813, 5-ton cargo truck from a third-echelon maintenance garage back to his unit. As he was traveling down the road at about 25 mph, the hood flew up and back, hitting him on the head. He suffered minor injuries.

A freak mishap? No. The same thing happened last year, but this time, a 21-year-old Marine was paralyzed from the neck down.

Since these trucks had just left third-echelon maintenance, they were stripped down (windshields and engine side panels removed). Even though both drivers were wearing flak jackets and helmets with the chin straps fastened, they still suffered head and spinal injuries.

Investigators inspected the 5-ton trucks involved. On each truck, they found that no one had fastened the hood latches. Before drivers take out a truck, they are supposed to make sure the hood is fastened as part of a pre-op check, which always should be done in accordance with the LTI or PMCS.

When checking the hood latches, make sure it takes some effort to fasten and unfasten them. A clear sign that a hood latch may need to be replaced is the ease with which it goes on and comes off. A loose or defective latch can work free as the truck vibrates. The ride of a 5-ton is not as smooth as that of a luxury car, especially when traveling over rough terrain.

Always do the pre-op check, regardless how far you have to go, how slow you will be driving, or how close you are to liberty. The Marine, who is now paralyzed, picked up the vehicle at 1635—the end of his work day. Do you think he may have been so anxious to go on liberty that he skipped a seemingly unimportant task? Have you ever done that? 🍀\*

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*Reference: RMG DTG 201300Z NOV98, Ground Hazard Alert from CG FIRST MARDIV G-7 SAFETY.*

**As shown in these pictures, the later versions of the 5-ton truck have hoods and latches to prevent such accidents from happening.**

*PH2 Matthew J. Thomas*

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