

ARMY GROUND-ACCIDENT REPORT COUNTERMEASURE

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The Halloween pumpkins are barely off the shelves before the Christmas trees go up in stores, so it's time to think about holiday safety. The holiday period means a lot of soldiers and their families will be on the roads and highways. We want to be sure that nobody's holiday turns into a tragedy, so once again we're warning about drinking and driving, trying to drive too far, and adjusting your speed to road conditions.

Apply the same risk-management principles to your off-duty activities as you do on the job: identify hazards, assess the hazards, develop controls and make risk decisions, implement controls, supervise and evaluate. If it works for operating wheels and treads, it will work for your leisure time. Give your POV a safety check—tires, brakes, lights—then as you plan your trip, consciously use the five steps of risk management to be sure that you and your family have nothing but happy memories of the holidays this year.

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Keeping the happy in the holidays

The holiday season means, for many people, a time for joy, for worship, for parties, and for good times. For many soldiers and their families this year, unfortunately, the holidays will mean a time of separation and loneliness and a time for accidents.

As we have said in this publication many times, POV accidents are the number one killer of soldiers. Preliminary figures for FY96 indicate that 67 percent of all accidental soldier fatalities were due to POV accidents. The fatality rate is up 17 percent from FY95. The reason? Young junior soldiers, the group that has the majority of these accidents, have demonstrated a low ability to recognize hazards—they underestimate their own personal risk and they overestimate their personal ability. In short, they think they are indestructible and while an accident may happen to someone else, it won't happen

to them. They're wrong. And it's not confined to young soldiers either. Senior people and all of our family members are at risk as we travel during the holidays.

Most of the POV accidents that happen during the holiday season are with soldiers traveling long distances, right? Wrong! Most POV accidents occur relatively close to the soldier's duty station, although long-distance driving does account for some of the accidents.

I know that NCOs will be doing everything possible to help prevent tragedies on the highways this holiday season. Although it probably won't be available in time to be incorporated into your holiday accident prevention programs this year, the Safety Center has developed a Privately Owned Vehicle Force Protection (Risk Management) Toolbox (see the October issue of *Countermeasure*) that will help in POV accident prevention throughout the year.

If you would like to have a copy, contact Ms. Sharrel Forehand, e-mail forehans@rucker-safety.army.mil or write to Commander, U.S. Army Safety Center, ATTN: CSSC-SIM, Bldg 4905 5th Avenue, Fort Rucker, AL 36362-5363. After completion of the test of the Automated Risk Assessment and Control

POVs - #1 KILLER OF SOLDIERS

End of Year FY96

- POV accidents account for 67% of all Army accident fatalities.
- POV fatality rate is up 17%.
- Seatbelt non-usage is up 6%.

0.22 (130) FY96

0.19 (116) FY95

Leading causes of severe injury and death

Analysis

- Low ability to recognize hazards
- Underestimate personal risk
- Overestimate personal ability

(ARAC) program for privately owned vehicles (which is currently underway in the field), a copy of the toolbox will be sent to you.

We don't claim this to be the final word on preventing POV accidents, but it can be a good reference for commanders and other leaders to use in implementing their own programs.

While we're talking about the holidays, let's not forget those soldiers who will be spending this holiday season deployed on missions at various locations around the world. Many will face the holidays separated from their loved ones, and they need the support of their unit and chain of command to see them through. And many of these soldiers have family members back home. Leaders should make a special effort to ensure these "waiting families" are included in holiday plans. Depression and loneliness during the holidays can definitely be a factor in accidents.

The Army is (or should be) like a big extended family. As such, all of us must rely on our family to help us through significant emotional events. The holidays can be such an event. Let's all do our part this year to make the holiday season happy, joyous, and accident free.

Protect the force through risk management! ♦

—SGM Gregory L. McCann, U.S.
Army Safety Center, 558-3575 (334-255-3575), e-mail mccann@rucker-safety.army.mil

Driving tips to arrive alive

■ **Don't drink and drive.** Forget the BAC charts; it only takes one beer to mess up your life.

■ **Use a designated driver.** Or call for a ride or take a taxi if you're going to be drinking.

■ **Always buckle up.** Insist that your passengers do too.

■ **Be prepared; watch the road and the traffic; check your mirrors often.** Monitor the traffic situation frequently; it can change rapidly. Take evasive action when other drivers make mistakes, because they will.

■ **Stack the odds in your favor.** When the weather is bad, slow down. Always allow enough distance between your vehicle and others to react to changes in traffic.

■ **Maintain your vehicle.** A well-maintained vehicle is a safe vehicle. Maintain yours as you'd maintain your weapon.

■ **Buy the best tires you can afford and check tread and inflation often.** Your life depends on those four small rounds of rubber.

■ **Avoid fatigue.** Try not to drive during your normal sleep hours. Limit the number of hours you drive without rest. Make frequent stops.

■ **Snow chains.** If you will be traveling in areas where snow and ice are possible, have snow chains available.

■ **Just in case.** It's a good idea when traveling in cold weather conditions to have blankets in your vehicle. And on any trip, you should include a well-equipped first-aid kit when you pack your vehicle.

■ **If possible, avoid driving when drunk drivers are more likely to be on the road.** Late Friday and Saturday nights and early morning hours are times to avoid. Be especially vigilant during holiday periods. ♦

See the video

Every soldier who's going to be driving this holiday season should see *Christmas Mourning* (PIN 700912). It's a very brief (4-minute) video with a hard-hitting message about drinking and driving, fatigue, and failure to buckle up. Get it from your installation Training Aids Service Center or audiovisual library. Schedule a viewing for your soldiers before turning them loose for the holidays. ♦



Tanker rollover

A soldier operating an M931A2 5-ton tractor at the National Training Center (NTC) while pulling an M969A1 5,000-gallon fuel tanker on a combat service support (CSS) mission was too confident in his ability to negotiate a curve in about a 10-degree downgrade.

The vehicle was traveling at 20 to 25 mph, and the driver failed to decrease his speed as he approached the "S" curve. As the vehicle entered the first curve (to the left), it veered off the road to the right. The driver turned the steering wheel to the left, oversteering, and pulled the vehicle back onto the road. As he approached the curve (to the right) at the bottom of the grade, the driver was unable to steer the vehicle so that he could negotiate the turn. As a result, the vehicle ran off the road on the left side. The driver began applying brakes, and the tractor lost traction and began to slide. The 5,000-gallon tanker continued to push the tractor and it

started to jackknife. The driver turned the steering wheel hard right. His action aggravated the situation even more. The vehicle continued out of control and rolled over, coming to rest with all of its wheels on the ground. The assistant driver was killed, and the vehicle was extensively damaged.

Overconfidence

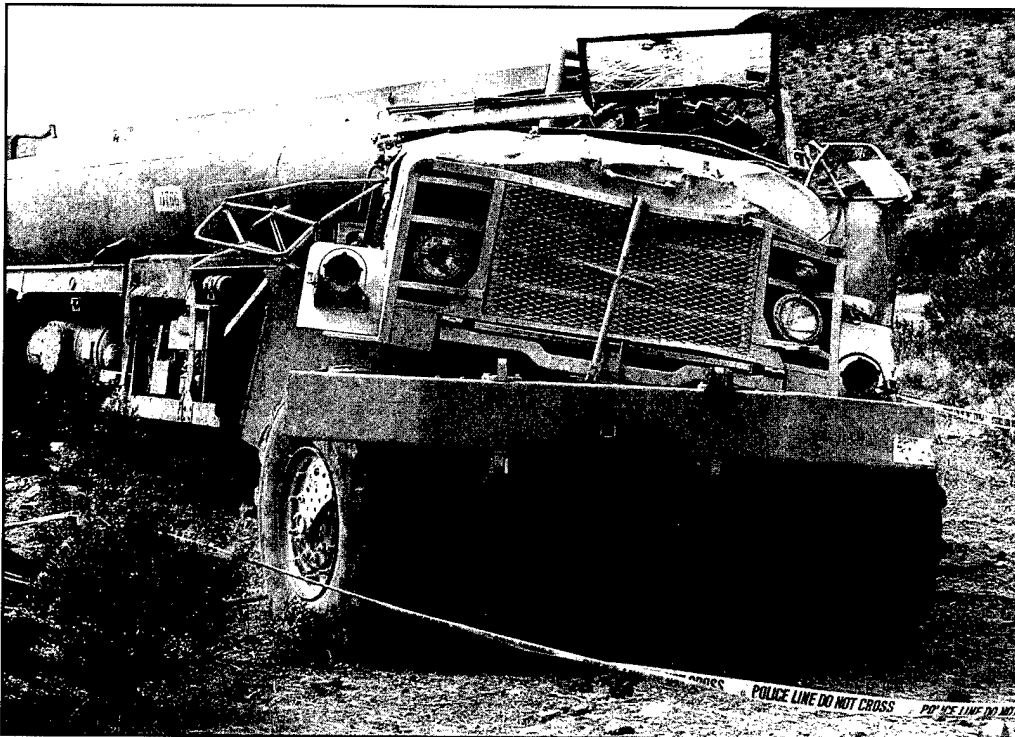
This soldier knew he was going too fast (the CSS convoy speed had been established at 15 mph, with a catchup speed of 20 mph). Many soldiers are overconfident in their capabilities to operate the M939 vehicle. Some think it's a lot like driving their own POV, but there's a lot more to operating a 5-ton tractor than meets the eye, especially when it is pulling a 5,000-gallon tanker loaded with 4,000 gallons of fuel (see article "Too fast for conditions" in this issue).

A lack of driver training and experience were causal to this accident.

When the driver found himself in trouble on the "S" curve, he took the wrong action. Everything he did from that point on made his situation worse, and an accident was the result.

The fifth wheel

The M939 series vehicle's design and characteristics make it unique, requiring a well-trained and experienced operator. One of the designs that make this vehicle unique is its fifth wheel. The fifth wheel, or semitrailer coupler, is mounted on the rear of the M931 and



This M931A2 pulling an M969A1 fuel tanker was traveling at 20 to 25 mph as it approached an "S" curve in about a 10-degree downgrade. The assistant driver was killed when the vehicle ran off the road and overturned.

M932 tractor. When connected to a semitrailer, the fifth wheel pivots up, down, and sideways to allow for changes in road conditions. The fifth wheel is rated at 55,000 pounds (24,970 kg) on the highway and 37,500 pounds (17,025 kg) cross country.

Risk management

Company-grade leaders were aware of the risk-management process, but it was not well understood. Not only did they not understand the process beyond

hazard identification and assessment, they didn't understand that each activity during a rotation should be considered a mission. If the risk-management process had been applied to this mission, it would have shown—

Hazard. A soldier, not trained to division driver-training policy, coupled with little driving experience, operating an M931A2 5-ton tractor, towing an M969A1 5,000-gallon tanker loaded with 4,000 gallons of fuel. He approached an

“S” curve on a 10-degree downgrade in excess of the briefed catchup speed of 20 mph. Weather was clear, daylight. Resulted in loss of control of vehicle and vehicle overturned.

Risk. Damage to vehicle, one fatality.

Controls.

1. Use a different route (if available).
2. Use a more experienced driver.
3. Put an NCO as the TC of the vehicle.
4. Establish checkpoints before and after the “S” curve and slow the convoy down before proceeding

Attention master drivers

The new TC 21-305-100: *The Military Commercial Driver's License Driver's Manual*, dated 19 Aug 96, now requires the driver to be licensed in the operation of liquid cargo haulers. Be on the lookout for it.

through it.

5. Conduct a ground reconnaissance of route.

6. Train drivers on vehicle restrictions, capabilities, and limitations, especially considering that these change when tractor-trailer combinations change.

Training to and enforcing standards is a good risk-management tool. ♦

POC: SFC John B. Dawson, Transportation NCO, DSN 558-9197 (334-255-9197)

Figure 1
Highway position of the fifth wheel.

To adjust wedges

1. Position wedges (B) fully below the walking beam (A) for highway operations.

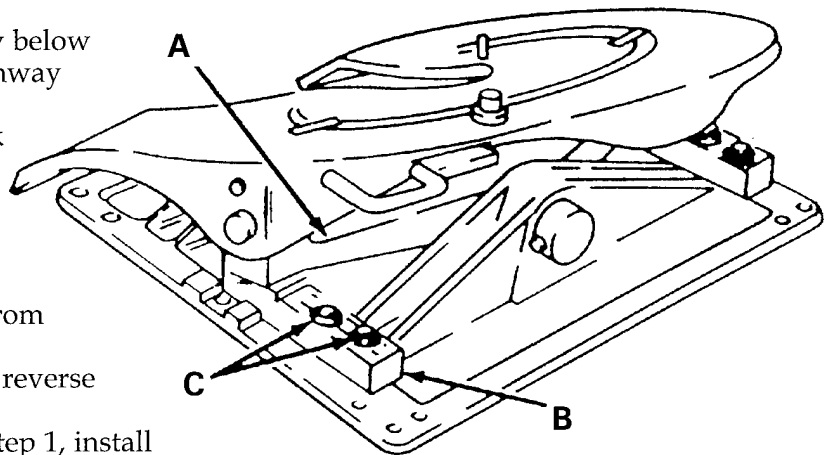
2. Position wedges (B) back and away from the walking beam (A) for cross-country operations (low speed only).

To position wedges

1. Remove capscrews (C) from center of each wedge (B).

2. Remove wedges (B) and reverse position.

3. Using same holes as in step 1, install capscrews (C) and tighten.



Too fast for conditions

On just about every evening's newscast, there is a report of an accident where a vehicle was "going too fast for conditions." The questions that always come to mind are "What was the proper speed? How fast is too fast?" Maybe the problem is not just the speed but the equipment or the environment.

When we hear this phrase used to refer to an Army accident, it usually means an Army truck. So let's take a look at the equipment.

- Was the equipment properly maintained?
- Was the tractor designed to be "forgiving" of driver error?
- Were all the hazards of the vehicle identified and ways to reduce the risks developed and implemented (controls)?
- Was the driver properly trained to operate the equipment?

Not all Army tractors are alike. There are many differences in tractors of the same model series as well as in tractors of different series. One of the most recent hazards in tractors that has been identified as causing accidents is the "off-road" or cross-country fifth wheel.

Fifth wheel

The cross-country fifth wheel differs from the highway fifth wheel in that it allows the trailer to oscillate side-to-side between 4.5 to 7 degrees (approximately 3 to 5 inches). In some series, some of the tractors will have cross-country fifth wheels and others will have highway fifth wheels. For example, the M915 and M915A1 have the highway fifth wheel, but the M915A2 has the cross-country fifth wheel.

Hauling liquid cargo

Another hazard that has recently been identified in accidents is liquid haulers, fuel or water. The hazards involved in pulling a lowbed trailer are different from those of liquid haulers. The reason is that liquids react differently to the road surface than does solid cargo. Tanker trailers operating full or empty handle much like any other trailer, but tanker trailers operating somewhere between empty and full act differently. The liquid moves—not only forward and backward but side to side—and that moving liquid has mass and weight. When the liquid load shifts on a curve, the mass and weight displaces the center of gravity and the tractor and trailer can roll over.

Environment

The environment also presents conditions that

can cause good drivers to "commit an error" and have an accident. These environments include interstate highways, other highways, state roads, county roads, dirt and gravel roads, and off-road cross country. We all would like to think that the roads we travel have been constructed to the finest standards, but some have not.

Several years ago, a major interstate highway was constructed that included a tunnel under a river. The speed planned for the tunnel approach was 65 mph. During the first year this stretch of interstate was open, there were five fatal accidents at the tunnel approach. Each time, the cause was listed as "going too fast for conditions." It wasn't until a million-miler trucker (a driver who has driven more than a million miles without an accident or even a speeding ticket) had a wreck there that people began to ask questions. When they started looking into how the highway had been constructed, they found it was not built to design. Several changes had occurred after the roadway was planned. The actual safe speed for the approach to this tunnel was 40 mph. Several drivers had lost their lives because of a design flaw.

What it all means

When the equipment hazard (cross-country fifth wheel) is combined with the hazards associated with hauling a liquid tanker, experience with this particular type of equipment is everything. Drivers with many hours (even years) of experience in driving a tractor hauling solid cargo may not be qualified for hauling liquid cargo. It takes time and exposure to hauling liquid cargo before a driver acquires the feel of the tractor and the additional pushing and shifting of the weight on the rear axle so that he or she can safely operate this equipment.

What to do

■ *Leaders*—Select and train your best soldiers as operators and look for drivers with many hours of experience in the vehicles you have in your TO&E. Instill a sense of discipline in implementing controls for hazards. Cross-country travel speed limits that leaders impose should be taken seriously.

■ *Master drivers*—review your training plans for cross-country and highway fifth wheels. Study the test routes to determine if you can add the standardized test for cross-country fifth-

wheel operation. Obtain and implement TC 21-305-100, dated 19 Aug 96, which requires drivers to be licensed in the operation of liquid cargo haulers.

■ *Drivers* – review the operator’s manual for your tractor *as well as the operator’s manual of the trailer* for warnings and limitations of the trailers. Remember, the stricter controls, whether they are for the tractor or for the trailer are the ones you go by. If tractor maximum speed is 40 mph and that of the trailer is 35 mph, then 35 mph is the maximum speed for the system. Review the operator’s manual to ensure that you have the proper truck/trailer combination.

■ *Installations* – review curves, intersections, or sites where accidents are occurring to determine if the actual speed limits are “too fast” for the design.

Individual controls

- Consider reducing speed for varying road or weather conditions.
- Don’t tailgate. Always maintain a safe following distance. Stopping can be adversely affected by poor road and weather conditions. ♦

POCs: MAJ Julian Simerly, Chief, Ground Tactical Branch, DSN 558-3901 (334-255-3901) or Mr. Donald Wren, Safety Engineer, DSN 558-9864 (334-255-9864)

Safe speeds for M939s

Ground precautionary message (GPM) TACOM-96-09 (Tanker M131), 142901Z Jul 96, regarding semitrailer, tank, fuel, 5,000-gallon, M131. *Editor’s note: Information in this message summary has been updated by TACOM as of 27 Sep 96.*

Reference: GPM TACOM 96-04, 131807Z Dec 95, subject: Safe Operating Speeds for the M939 family of vehicles.

Problem: The M52/A1/A2, M818 FOV, M931/A1/A2 and M932/A1/A2 towed load is limited to 37,500 pounds. The M131 series and M969 series 5,000-gallon fuel tankers exceed this limitation. A waiver is required to allow these 5-ton tractor/trailer combinations to transport a full load of fuel.

User actions:

■ A waiver has been received from Department of the Army (number 96-3, dated 30 Apr 96) authorizing the 5,000-gallon semi-trailers (M131 series, M967/A1, M969/A1/A2 and M970/A1) to carry 5,000 gallons of fuel (but not water) when towed with the M818, M931/A1/A2, and M932/A1/A2 tractors when operating on all prepared surfaces, to include paved, gravel or dirt roads.

■ There is no waiver for the M52/A1/A2 tractors; therefore, the M131 and M969 series (5,000-gallon fuel tankers) are limited to a maximum payload capacity of 3,000 gallons when towed with the M52/A1/A2 tractor on all surfaces.

■ At unit-level maintenance, all operators

must adhere to the following conditions:

- Maximum speeds
 - Prepared surfaces (paved, gravel, or dirt roads) - 40 mph
 - Cross country - 35 mph
 - Sand-snow - 25 mph
 - Icy roads - 12 mph

■ Tire pressure on the rear tires of the M931A1/A2 and the M932A1/A2 must be increased to 70 PSI. Tractors equipped with central tire inflation systems (CTIS) must have the CTIS disabled IAW applicable vehicle technical manual.

■ When operating on cross-country terrain, the payload is limited to 3,000 gallons of fuel if the prime mover is an M818-, M931-, or M932-series 5-ton tractor.

Warning

Do not drive too fast for road or weather conditions! The maximum safe speed limit for highway is 40 miles per hour. Don’t tailgate. Always maintain a safe following distance. Stopping can be adversely affected by poor road/weather conditions. Drive at a slower speed if conditions call for it. Death or serious injury to personnel or damage to equipment can occur if excessive braking is used under these conditions. ♦

POCs: PM trailers: Ms. Julie Jacobs, DSN 786-7928 (810-574-7928), e-mail jacobsj@cc.tacom.army.mil. PM tractors: Mr. Gerald Taube, DSN 786-8009 (810-574-8009), e-mail taubeg@cc.tacom.army.mil.

From the sergeant major **Five-ton truck: Situational awareness**

The M939 family of 5-ton trucks is a vast improvement over the previous generations of Army vehicles. Drivers no longer have to search for gears with a stick shift they have to throw a couple of feet; no more do they have to grip the steering wheel with both hands and throw their body weight into turning the steering wheel; and the clutch pedal is gone, so they don't have to worry about their left leg being 4 inches thicker than their right.

Maybe that's part of the problem with the 5-ton truck. The history of accidents involving the 5-ton suggests that the typical driver is not an MOS-trained truck driver but drives as an additional duty. Unlike older versions of Army cargo trucks, these newer vehicles are easy to drive . . . so easy, in fact, that you can forget what it is you're driving.

In the old days, and that

was not so many years ago, there was no doubt in your mind that you were driving an Army truck. It was loud, it was hard to steer and shift, it was green, and it smelled like the Army: wet canvas and diesel fuel. Today's 5-ton are relatively easy to drive, have more comfortable crew cabs, and are better insulated against sound and fumes.

I suspect that many of our drivers, especially those not school trained in truck driving, become complacent and forget that they're driving a large vehicle. It's easy for your mind to drift as you drive along, and before too long, the driver is operating this big truck as if it were his POV. That's a big mistake! Five-ton handle nothing like an automobile. They take longer to stop, they require more area in which to turn, and they are much more likely to overturn for many reasons. Often they are pulling trailers, which further alters the characteristics of how they handle.

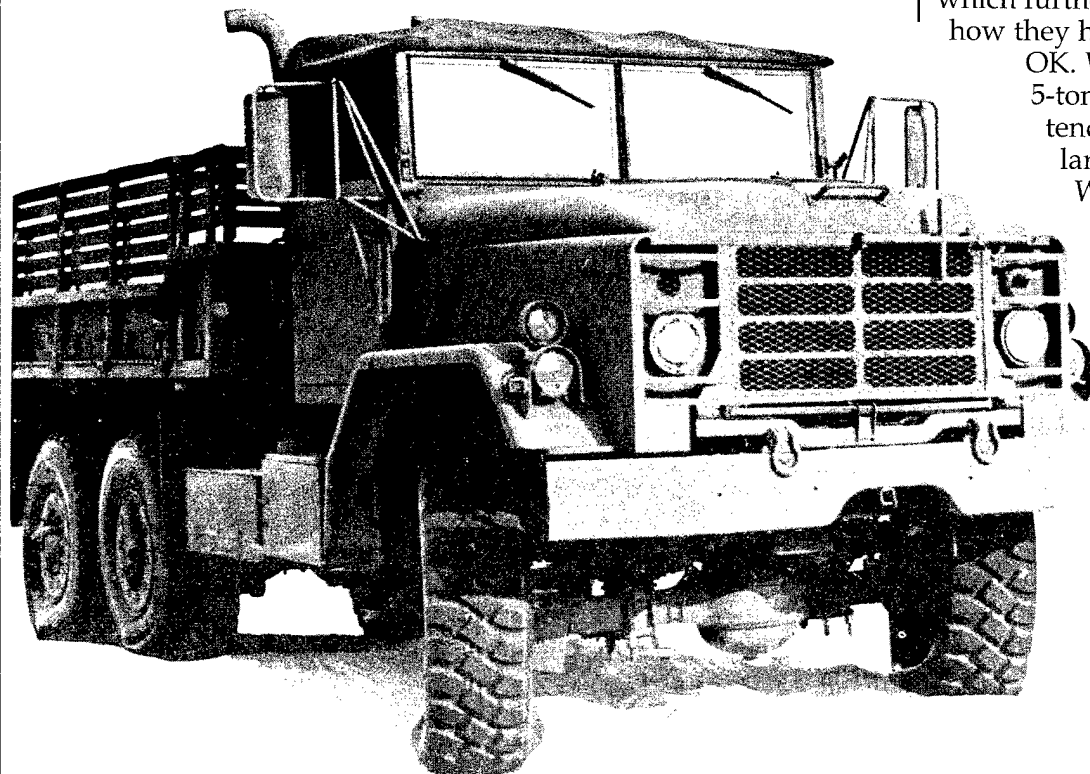
OK. We've identified a **hazard**: the 5-ton is easy to drive, and drivers tend to forget they're driving a large truck and have accidents.

What controls can we apply to prevent this from happening? It's as simple as this:

- Emphasize during driver training the many differences between driving larger cargo trucks and small utility vehicles and POVs.

- Consciously tell yourself before, during, and after you drive that **this is not a car; this is a truck and it handles differently!**

- Assistant drivers should help remind the soldier behind the wheel that they must



maintain situational awareness as they drive.

Where do I get this crazy idea that you can forget you're driving a truck? It happened to me a few times in Korea as I was driving a 5-ton expandable van. Fortunately, I didn't have an accident, but there were several times when I realized that I was over- or under-steering, driving too fast for conditions, or neglecting to remember my size as I drove along rural roads because I had forgotten, if only for a few seconds, what I was driving.

Let me talk straight to you drivers. There have been far too many soldiers killed while driving 5-ton trucks. One of the problems is speed. There is currently a 40 mph speed limit on the M939 series of 5-ton vehicles on prepared surfaces (paved, gravel, or dirt roads). The speed limit cross country is 35 mph. These speed limits were established as a control

to counter the hazard of loss of traction and rollover caused by braking and running off the road. It is critical that you observe the speed limits. If your convoy requires you to drive faster, inform your convoy commander of the restriction. The 40 mph speed limit cannot be waived.

Remember that when you drive a 5-ton, you're in charge of many tons of steel moving pretty fast. You're wider, higher, and heavier than you may think. You must always remember to drive the vehicle within the limitations you learned in training and in the operator's manual. These limits weren't put there to take away the fun of driving . . . they were put there to control hazards, prevent accidents, and save lives. Follow them! ♦

—SGM Gregory L. McCann, U.S. Army
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Listen up drivers

The Army Transportation School has completed work on TC 21-305: *Training Program for Wheeled Vehicle Accident Avoidance*. The circular is designed to sharpen driving skills, standardize training, increase awareness, and enhance the Army's driver training program. It provides basic knowledge and motivational training in the safe operation of all wheeled vehicles—privately owned as well as Army motor vehicles (AMVs).

The instructions in TC 21-305 will help wheeled-vehicle drivers maintain a high degree of proficiency. The contents are not restricted to any particular vehicle. It is a guide to normal everyday driving and driving under difficult conditions. The lesson content is arranged sequentially and includes lesson outlines, transparencies, and handouts.

In addition to the standardized training required by AR 385-55, this program may also be used for sustainment and remedial training. When used for sustainment training, commanders have the flexibility to

choose and arrange training material based on the unit's mission, driver behavior, and/or accident history. When the TC is used for remedial training, the unit should focus on the task errors involved and use that portion for retraining.

TC 21-305 was distributed via pinpoint distribution in July 1996. Units desiring to receive additional copies must requisition them through the U.S. Army Publications and Printing Command.

The Army Safety Center is currently revising AR 385-55. One of the major changes is the addition of a standardized accident avoidance course. The present AR 385-55 states in paragraph b-4(a), page 10, under Driver Education, that all personnel (active Army, U.S. Army Reserves, Army National Guard, and civilian) required to drive AMVs will be given classroom instruction in accident avoidance. The Safety Center will publish a new AR 385-55 that details implementing instructions and guidance for TC 21-305. ♦

**POC: SFC John B. Dawson, Transportation
NCO, DSN 558-9197 (334-255-9197)**

Adjusting NVGs in the field

You're in the field, and you need the sharpest possible image from your night vision goggles (NVGs). But you're just not satisfied with the image you're getting. What do you do?

First of all, you aren't going to get 20/20 vision with the goggles technology available today, but you should be able to get a *sharply focused* image at infinity and at distances short of infinity. To accomplish this, however, you have to know how to adjust your goggles properly. Before you start trying to adjust your goggles, there are some things you need to know.

■ There are certain objects you should look at in the field when focusing your goggles because they provide sharp images. These objects include both light and non-light sources. Certain other objects should not be used

because they don't provide the sharpest images.

■ NVGs do not correct for all vision problems. For example, if you have an astigmatism, you will still have it when you wear NVGs.

Note: When the tactical situation requires light security, operators will need to remove eyeglasses and use the eyecups.

■ In the following guide, which is based on tests conducted by the Army Research Institute at Fort Benning, GA, and guidance developed by Army, Air Force, and Navy aviation agencies, you will find some practical exercises to help you determine when you have adjusted your NVGs well. Experience in looking at different objects will help you determine when you have the best adjustment under different levels of night illumination. The visual acuity you achieve will improve with practice, and adjusting the goggles will get easier and faster.

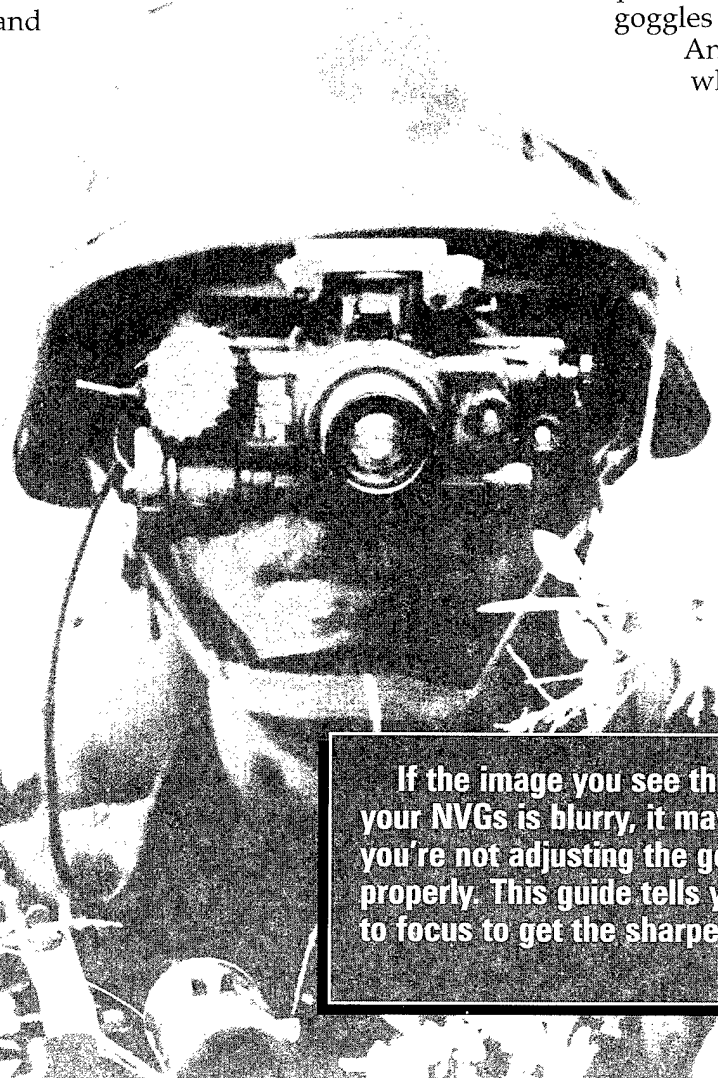
An important thing to remember when using the following guide to focus NVGs is that *the steps must be performed in sequence.*

Adjustment procedures

1. Put on the head harness or put on the Kevlar helmet, being sure to tighten the chin and nape straps, and mount the NVGs. Adjust straps to fasten head harness securely.

2. Set the eye clearance—move the goggles close to your eyes. [The eye clearance is the distance of the eyepieces from the eyes.]

● Depress the socket-release button on the NVG mount and move the goggles toward your eyes. The eyepieces should *not* touch your eyelashes or corrective



If the image you see through your NVGs is blurry, it may mean you're not adjusting the goggles properly. This guide tells you how to focus to get the sharpest image.

glasses.

3. Turn on the NVGs.

4. **Adjust tilt on helmet-mounted goggles, using the tilt adjustment knob, until you get a comfortable viewing angle.** This means you should not have to tilt your head up or down excessively to make the tube approximately level.

5. **Set the eye span—center each eyepiece over each eye.** [The eye span is the distance between the two eyepieces. It is also called the interpupillary distance or the IPD.]

- Set the eye span to correspond to the distance between the two eyes.
- Start by pulling the eyepieces as far apart as possible.
- Close one eye. For the eye that is open, move the corresponding eyepiece inward until the image you see is a full circle, not an oval. (If you have trouble closing one eye, cover it by folding the eyecup over the NVG eyepiece.)
- Once one eyepiece is set, do the same process with the other.

6. **Select an object to look at.** [Select objects that provide a high-contrast or light sources whose "bloom" can be reduced.]

Recommended objects

- *Tree trunk.* Get within 5 feet of a tree trunk and look at the bark.
- *Vehicle,* positioned so you can distinguish sharp lines, corners, and other features.
- *Vehicle trail* that stands out in its environment (for example, a white, sandy trail in the middle of a grassy field).
- *Star.*
- *IR chem light.*
- *Blue chem light.* Leave the wrapper on the chem light and expose only the round end of the light. Do not expose the entire chem light.

Focus objects that do not work as well

- Flashlight with a red filter.
- Red chem light.
- Phoenix transmitter.
- Flashlight with an NVG-compatible filter.
- Tree trunk silhouetted against the night sky.
- Piece of white paper.

7. **Set the objective lens focus—focus the goggles for the object's distance.** [The objective lens focus is the *outside lens* located at the end of the NVG image-intensification tube. It adjusts for *distance only*. When the objective lens focus is

turned to its full left or counterclockwise position, it is on the maximum distance or infinity setting. Use this setting when looking at objects farther than 30 feet from you.]

● Turn the objective lens focus to the right or to the left until the object you are looking at is as clear as possible.

● If the object you are viewing is beyond 30 feet, simply turn the objective lens focus to its full left or counterclockwise position.

8. **Set the diopter adjustment ring for each eye** to adjust for the unique vision in each of your eyes. [The diopter adjustment rings are the two rings closest to your eyes. These rings can be rotated to correct for refractive errors in your eyes (that is, whether you are near-sighted or far-sighted), and will determine the visual acuity you obtain. The acuity is also dependent upon the amount of illumination available and the contrast of the target.]

● First, close one eye (or cover eyepiece with eyecup) and adjust the diopter ring for the open eye.

● Turn the diopter adjustment ring to the left (counterclockwise) until it stops.

● Stop for a second, blink, and let your open eye relax.

● Slowly turn the diopter adjustment ring back to the right (clockwise) until the object just becomes sharp. **Stop!! Do not turn the diopter ring beyond this point.** Do not go beyond the initial clear focus.

● Repeat these procedures for the other eye.

9. **Check the objective lens focus again (step 7).** This will ensure your distance focus is still sharp. Readjust if necessary.

10. **Repeat steps 8 and 9 as necessary** to determine if you have the best adjustment.

Reminders

■ Do not readjust the diopter adjustment rings once good visual acuity has been achieved.

■ You must readjust the objective-lens focus to correspond to the distance of objects you encounter in the field to provide the sharpest image.

■ The more you practice, the easier it becomes. ♦

POC: Dr. Jean Dyer, Army Research Institute, Fort Benning, GA, DSN 835-5589 (706-545-5589).

USASC POC: CW5 Bob Brooks, Product Development Branch DSN 558-3969 (334-255-3969).

For additional information on night-vision equipment, see the February 1996 issue of *Countermeasure*.

Take note AN/PVS-7B maintainers

No matter how well soldiers can adjust their NVGs, if the PVS-7Bs are not properly maintained, they cannot be optimized.

TM 11-5855-262-23+P-2: *Night Vision Goggles, AN/PVS 7B*, dated 15 Mar 93, requires unit-level PMCS each month. (The next version of this TM will change the frequency requirement so be sure and watch for it!) Table 3-1 of the TM spells out each of the checks. A particularly important area of this monthly inspection includes checking the *mechanical assemblies*.

- The first point in this section requires the maintainer to check the headmount assembly for freedom of movement and to make certain the socket release works properly.

- Next ensure the individual eyepieces move left and right. This movement should require deliberate effort but should not be excessively stiff.

- Next check the diopter focus rings for freedom of movement. Total movement here should be only about one-third of a full turn. If more than that is present, turn the goggles in for maintenance.

- Then check the objective lens focus ring for freedom of movement. Again, total movement should only be about one-third of a full turn. Very often, the infinity focus lock ring is not tight, and this condition allows the objective focus ring or knob to move without focusing.

Again, if this ring is loose, turn the goggles in for service.

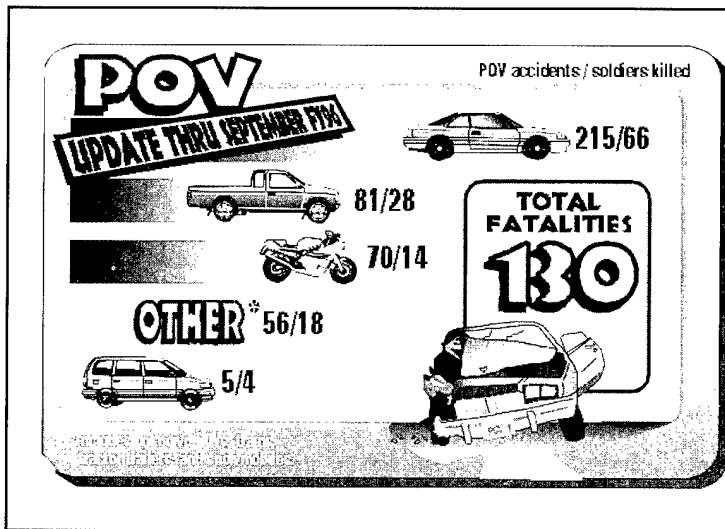
The next section of Table 3-1 discusses checking optical surfaces for cleanliness and for lens scratches, chips, or cracks. The lenses should be cleaned with lens paper. If the lenses are very dirty, you may moisten the lens paper to clean them. Do not submerge the NVGs in water to clean them. This step is very important and cannot be overemphasized. Dirty lenses can cut resolution in half. (Also, do not use water to clean demisting shields. Using water removes the coating and will allow the shields to fog up when needed most.)

Another very important area to check is the on-off switch. Whenever the NVGs are inadvertently dropped, they invariably land on the on-off switch, which is easily broken.

The rest of Table 3-1 is pretty cut and dried. Not so clear, however, is the use of TS-4348/UV. This is the small test set that most units leave in the arms room in the small black plastic boxes. This test set works great in checking goggles resolution at the unit level. One very important note though—*make sure that you dark adapt for at least 10 minutes before making the check.*

Document this service, using DA Form 2404, and schedule the services on DD Form 314. ♦

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