

**TRAINING PROGRAM FOR
WHEELED VEHICLE
ACCIDENT AVOIDANCE**

DISTRIBUTION RESTRICTIONS: Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY

Change 1

Headquarters
Department of the Army
Washington, DC, 25 April 2003

Training Program For Wheeled Vehicle Accident Avoidance

1. Change TC 21-305, 19 Aug 96, as follows:

Remove Old

Insert New

Chapter 3

Chapter 3

2. File this transmittal sheet in front of the publication.

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:



JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0310001

DISTRIBUTION:

Active Army, Army National Guard, and US Army Reserve: To be distributed in accordance with the initial distribution number 114975, requirements for TC 21-305.

Training Circular
No. 21-305

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 19 August 1996

**TRAINING PROGRAM FOR
WHEELED VEHICLE ACCIDENT AVOIDANCE**

TABLE OF CONTENTS

	Page
PREFACE	ii
CHAPTER 1 ADMINISTRATIVE DATA	1-1
CHAPTER 2 COURSE SUMMARY	2-1
CHAPTER 3 RISK MANAGEMENT	3-1
3-1. Wheeled Vehicle Risk	3-1
3-2. Risk Management Pointer	3-3
CHAPTER 4 INSTRUCTIONAL MATERIAL	4-1
Staying Alert and Fit to Drive	4-1
Vehicle Inspection	4-15
Visual Search.....	4-25
Communication.....	4-40
Manage Speed	4-54
Manage Space	4-68
Operate Vehicle at Night.....	4-83
Safety Rules and Procedures for Driving Under Adverse Weather Conditions	4-96
Hazards	4-119
Driving Emergencies.....	4-132
Trailer Operation	4-155
Accident Procedures	4-171
GLOSSARY	Glossary-1
REFERENCES	References-1
INDEX	Index-1

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

*This publication supersedes TC 21-305, 22 March 1991.

PREFACE

This TC provides a standardized training program for wheeled vehicle accident avoidance according to AR 385-55. It provides basic knowledge and motivational training in the safe operation of all wheeled vehicles to include POVs as well as AMVs. It does not include any theater-unique requirements.

Instructions in this TC will help the wheeled vehicle driver maintain a high degree of driver 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 for this training program is arranged sequentially at Chapter 4. The lesson content consists of lesson outlines, transparencies, and handouts.

In addition to the training required by AR 385-55, this program may also be used for sustainment 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 this product is used for remedial training, the unit should focus on the task errors involved and use that portion of this TC for retraining. All training should be annotated on DA Form 348 (Equipment Operator's Qualification Record) according to AR 600-55.

The proponent of this publication is the US Army Transportation School. Submit changes for improving this publication on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forward it to Commandant, US Army Transportation School, ATTN: ATSP-TDX, Fort Eustis, Virginia 23604-5389.

The US Army's environmental strategy into the 21st century defines the Army's leadership commitment and philosophy for meeting present and future environmental challenges. It provides a framework to ensure that environmental stewardship ethic governs all Army activities. The Army's environmental vision is to be a national leader in environmental and natural resource stewardship for present and future generations, as an integral part of all Army missions. The Army's environmental vision statement communicates the Army's commitment to the environment.

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

CHAPTER 1

ADMINISTRATIVE DATA

1. Student Requirements: Notebook and pencil or pen.

2. Instructor Requirements:

AR 385-55.

AR 600-55.

DA Pamphlet 738-750.

FM 21-305.

Vehicle operator's manual or owner's manual.

All HN or local directives and regulations.

3. Training Facilities: Classroom.

4. Training Aids and Devices:

Overhead projector.

Projection screen.

Transparencies (paper copies included in this TC).

Television monitor.

Videocassette player.

TF (VT) 20-6371, Army Driver Improvement Program Number 6 – Randy Baker
Driving Professionally (PIN: 706080DA). (Running time 13 minutes, 1988).

5. Additional Training Aids and Devices: The following videos may also be used to enhance training:

TVT 20-867, Are Your Tires Safe? – An Operators Guide To Tire Inspection
(PIN: 504501DA). (Running time 25 minutes, 1989).

AFIF 427, Safety In The Streets (PIN: 504377DA). (Running time 17 minutes, 1991).

(NO IDENTIFICATION NUMBER ASSIGNED), Safety, Make Winter Driving Safer,
(PIN: 604891). (Running time 12 minutes, 1985).

TVT 20-1029, The Aftermath, (PIN: 805696). (Running time 21 minutes, 1993).

CHAPTER 2

COURSE SUMMARY

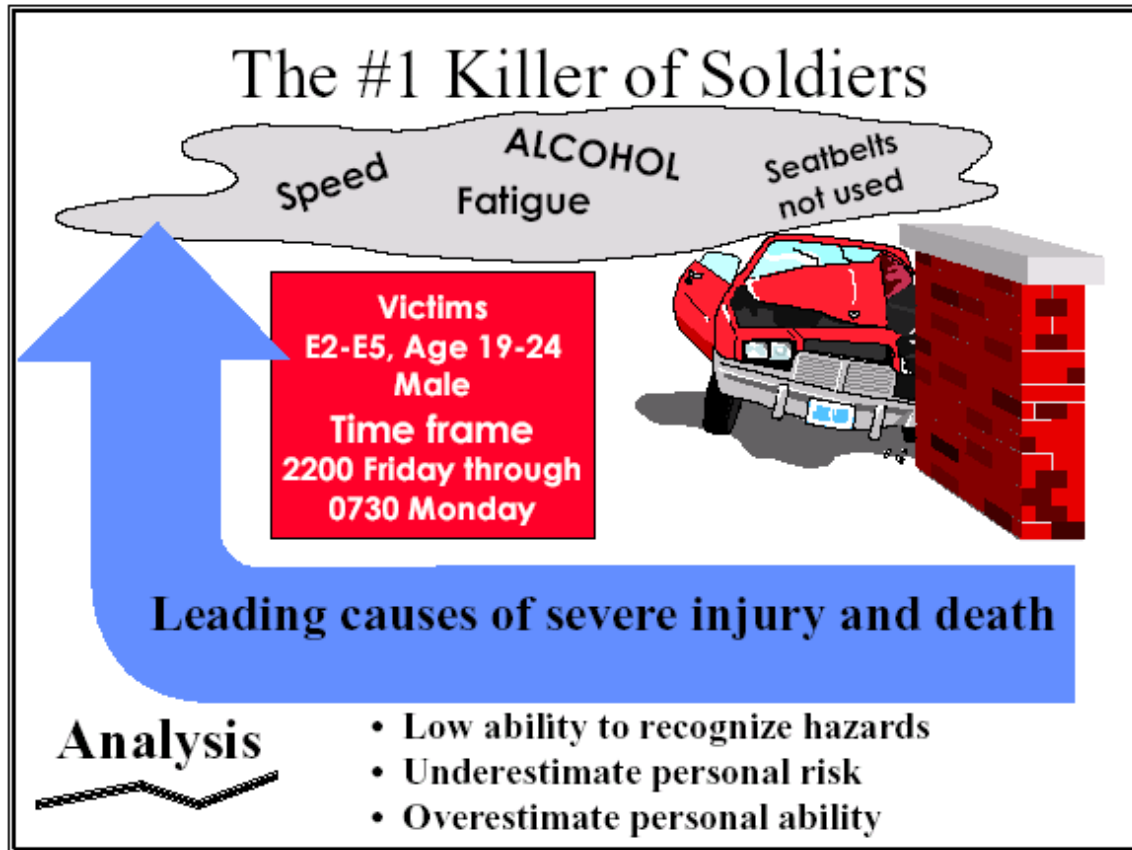
RECOMMENDED SEQUENCE	TYPE OF INSTRUCTION	RECOMMENDED LOCATION	RECOMMENDED TRAINING TIME
Staying Alert and Fit to Drive	Conference	Classroom	0.5 hours
Vehicle Inspection	Conference	Classroom	0.5 hours
Visual Search	Conference	Classroom	0.5 hours
Communication	Conference	Classroom	0.5 hours
Manage Speed	Conference	Classroom	0.5 hours
Manage Space	Conference	Classroom	0.5 hours
Operate Vehicle at Night	Conference	Classroom	0.5 hours
Safety Rules and Procedures for Driving Under Adverse Weather Conditions	Conference	Classroom	0.5 hours
Hazards	Conference	Classroom	0.5 hours
Driving Emergencies	Conference	Classroom	1.0 hour
Trailer Operation	Conference	Classroom	0.5 hours
Accident Procedures	Conference	Classroom	0.5 hours

Total recommended training time: 6.5 hours

NOTE: The times shown above are considered the minimum for effective training.

CHAPTER 3

RISK MANAGEMENT



3-1. **WHEELED VEHICLE RISK.** More than tanks, aircraft, training, weapons, and war, AMV and POV accidents continue to be the major killer of soldiers. Despite seatbelts, airbags, anti-lock brakes, built-in steel reinforcement and shock absorbing bumpers, and dozens of other innovations that have attempted to make driving safer since the automobile and truck were invented, the undeclared war rages on. Losers do not get a chance to fight again another day.

EMERGENCY ROLLOVER PROCEDURES

WARNING

Army tactical wheeled vehicles are not designed with rollover protection as a primary requirement. At the first sign of a vehicle rollover, occupants should immediately brace for impact. As a precaution, ensure all loose items and equipment, which can cause severe injury or death, are firmly secured prior to movement.

A. PREVENTIVE MEASURES

(1) **Driver Training.** Start by training your drivers in the six important factors that can affect vehicle stability. These four factors are:

(a) *Vehicle Center of Gravity.* The height of a vehicle's center of gravity and the length of the wheelbase determine the vehicle's stability.

(b) *Load Security.* Improperly secured loads can change a vehicle's center of gravity and its stability. Bulk tank trucks are inherently less secure because fluids can surge when trucks brake or go around curves, thereby altering the center of gravity. Also, a vehicle loaded with containers will have a higher center of gravity. Additionally, it is important that payloads are secured as closely as possible to the lateral centerline of the truck or trailer bed. If the payload is not centered properly, the vehicle stability will not be equivalent when turning to both the right and left. See Figures: 1-1, and 1-2 .

(c) *Radius of Curves and Slope of Roadways.* These are important because they generate a centrifugal force that acts sideways on the vehicle, thereby decreasing vehicle stability.

(d) *Vehicle Speed.* This is probably the most important factor contributing to vehicle instability because it magnifies problems presented by the other three factors. As the vehicle's speed increases, the centrifugal force, or sideways force increases. Faster speeds also result in decreased driver response times. Speed is the factor over which the driver can exercise the most control. When maneuvering through curves or sudden traffic situations, a vehicle with a high center of gravity can easily turn over. Speed is even more important when the movement of the liquid is "in phase" with the vehicle's maneuver. If the liquid is on one side during the first curve, then shifts to the other side during the next curve, the liquid is positioned to shift back to the first side with four times the side force it had during the initial curve. Sudden vehicle maneuvers are especially risky because the combination of speed and load shift makes the vehicle unstable.

(e) *Trailer Towing.* Vehicles towing trailers are much more prone to rollover,

especially in curves and during sudden steering maneuvers, as a result of the exaggerated motion of the trailer.

(f) *Vehicle Condition and Preparation.* It is critical the vehicle is in good operating condition before starting your mission, with particular attention paid to the tires' condition and air pressure. Properly performed PMCS is the best way to control this potential hazard.

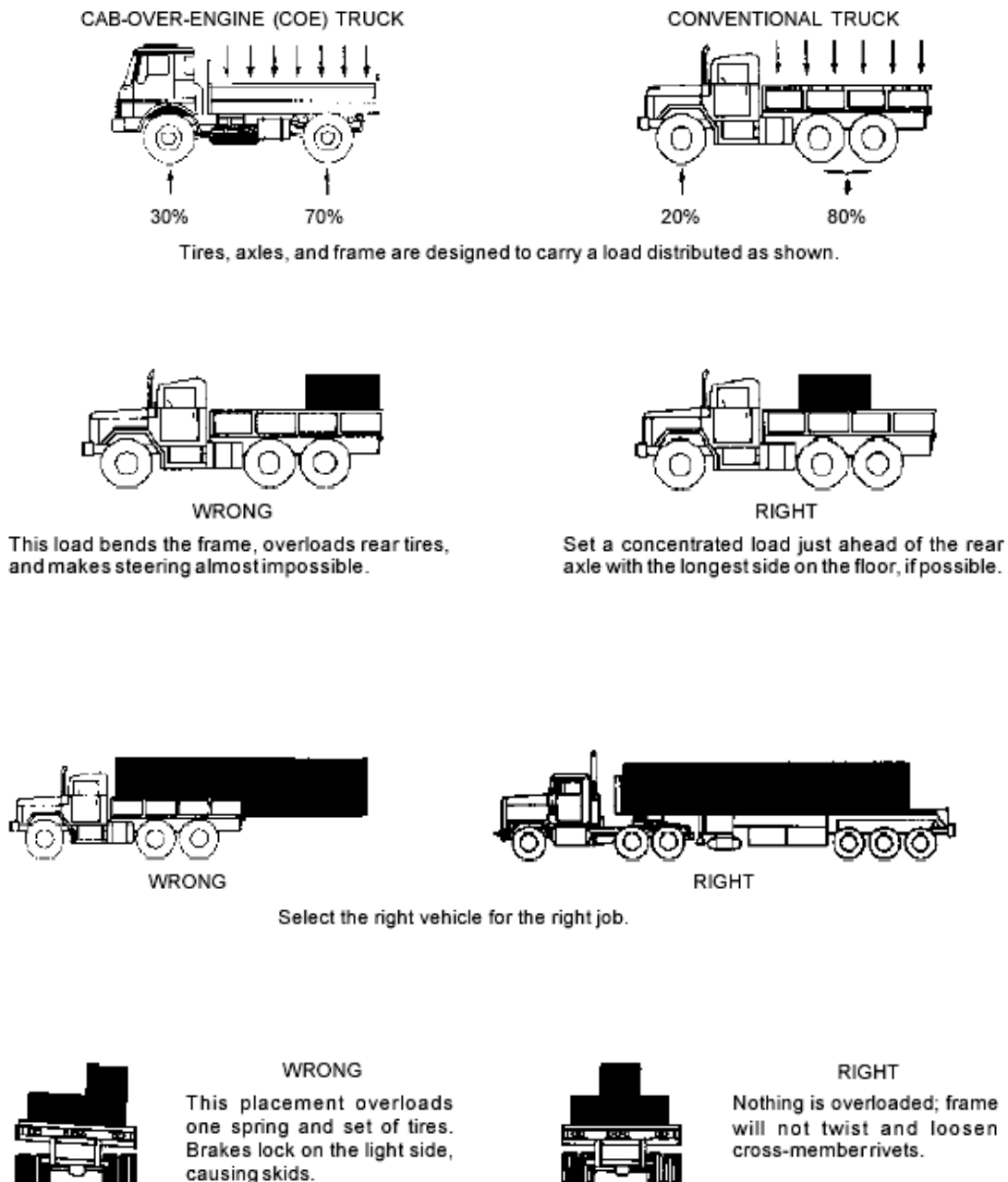


Figure: 1-1

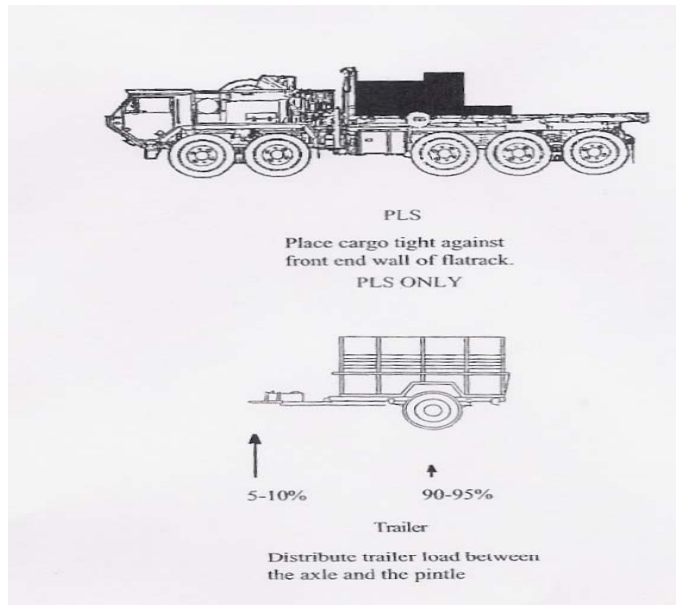


Figure: 1-2

(2) **Risk Management Control Measures.** Every driver can take eight basic steps to prevent or reduce the potential for rollovers.

NOTE: Commanders should include safety tips in initial and sustainment tactical wheeled vehicle operator training.

(a) Adjust the vehicle speed to allow a "Speed Cushion" for maneuvering (at least 10 MPH below the posted speed limit is recommended when approaching a curve).

(b) Slow down and downshift early. Do not shift in the curve.

(c) Observe speed limit and check speedometer to ensure that your vehicle is below the posted speed.

(d) Do not rely on a "seat of the pants" sense to judge speed and vehicle maneuverability. New suspensions and chassis set-ups give a false sense of control.

(e) Slowly accelerate out of the curve.

(f) Maintain a "Space Cushion" (distance between your vehicle and other traffic) so that you have a safe maneuvering speed to compensate for errors in judgement, weather, road conditions, and poor driving by other motorists.

(g) Avoid the temptation to brake hard if the rear of the vehicle or trailer “slides out”. Instead, if there is clearance, attempt to apply steady throttle, allowing the vehicle to straighten itself. Braking will accelerate the skid, contributing to loss of control and rollover.

(h) Risk Management Procedures. Personnel are required to wear seatbelts. All US Army personnel should follow unit standard operating procedures/tactical standard operating procedures and be in proper uniform when operating or riding as a passenger in military vehicles. It is recommended when operating tactical military vehicles in off-road conditions during field training, driver’s training, and tactical operations that the kelvar helmet be worn at all times with chin stap properly secured.



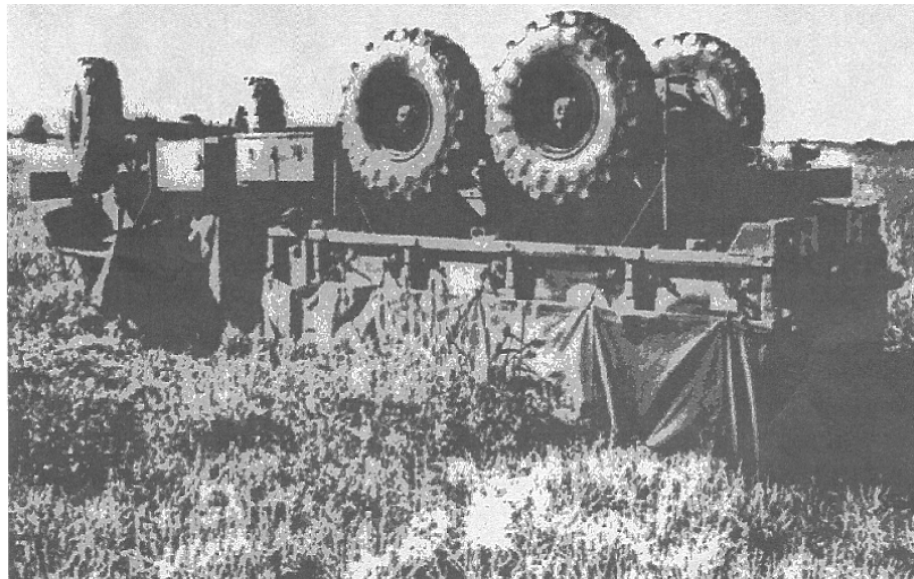
While taking a curve at almost 70 mph, the driver of an M998 lost control. The vehicle flipped and ejected its three unbelted occupants. One was killed and the others seriously injured.

B. ROLLOVER PROCEDURES

NOTE: The driver and passengers **MUST** wear seat belts (if equipped). The senior occupant is responsible for ensuring all personnel, riding in or on a vehicle, are wearing seatbelts (if equipped) and that all required equipment inside the vehicle is properly stored and secured. The senior occupant must ensure that all personnel are checked for injuries and injured personnel are given emergency first aid as needed. All sensitive items are to be secured, and the accident reported immediately. The first soldier to notice vehicle beginning to rollover should shout “**ROLLOVER!**”

(1) When rollover is imminent the driver performs the following:

- (a) Release the accelerator.
 - (b) Keep hands on the steering wheel with extended but not locked arms, tucks head and chin into chest and braces for an impact.
 - (c) Yell “ROLLOVER!”
- (2) When the rollover is imminent the passenger(s) performs the following:
- (a) Tuck head and chin into chest and braces for impact.
 - (b) Plant feet firmly on the floor while holding onto a stationary object.
 - (c) Yell “ROLLOVER!”



Three minutes after leaving post in an M923A2, one soldier was dead and two others were seriously injured.

- (3) When the vehicle is stabilized the driver performs the following:
- (a) Shut down the engine.
 - (b) Check for injuries.
 - (c) Identify an evacuation route.
 - (d) Retrieve fire extinguisher.
 - (e) Exit the vehicle.

- (f) Check for fire and fuel leaks or spills.
- (g) Attempt to contain fire and /or fuel leaks/spills.
- (h) Account for occupants and sensitive items.
- (i) Seek medical attention, as needed.
- (j) Radio for help.



The 5-ton driver was following too close behind another vehicle when he lost control and hit a utility pole. The passenger was killed.

- (4) When the vehicle is stabilized the passenger(s) perform the following:
 - (a) Check for injuries.
 - (b) Exit the vehicle.
 - (c) Account for personnel and sensitive items.
 - (d) Seek medical attention, as required.
 - (e) Assist the driver.

WARNING

Never attempt to leap from a rolling vehicle, it may rollover you. Ensure that the vehicle has stopped its roll before moving. Upon complete evacuation of all personnel, vehicle should be inspected for fire hazards such as leaking oil, fuel, and hydraulic fluid. Use the portable fire extinguisher when inspecting vehicle for leaks in case of fire, which could cause injury or death. If hazardous/explosive materials are involved, driver should take actions according to the DD Form 836 accompanying load. Notify emergency response personnel and remain at evacuation distance while securing accident site.

3-2. **LEADER ACTIONS:** There are many good programs leaders can establish to reduce accident risk. Designated-driver programs and unit on-the-spot safety inspections are good starting points.

A. Commanders should:

- Know their soldiers.
- Require disciplined, legal behavior.
- Conduct individual soldier risk assessments (see format on page 3-10).
- Provide incentives for safe performance.
- Provide accident avoidance and remedial driver training programs.
- Hold subordinate leaders accountable for leader intervention.

B. Squad leaders and Platoon Sergeants are the first line of defense. They should:

- Know their soldiers' driving habits.
- Ensure that deficiencies identified in vehicle inspections are corrected and then *re-inspect*.
- Recommend when driving privileges should be revoked.
- Counsel individuals on the repercussions of unsafe driving.
- Conduct periodic tail gate safety briefings to small groups.
- Encourage soldiers to look out for each other.

3-3. **POV ACCIDENTS.** The most common victim is a 19 to 24 year old male, in the rank of Private through Sergeant, who is driving between 2200 Friday and 0730 Monday. An Army Safety Center study shows that many soldiers have a low ability to recognize hazards. They also underestimate their personal risk and overestimate their driving

ability. The most common accident scenario is driving too fast after having too much to drink. This mixture is deadly.

A Case in Point. A soldier, who we will call SPC John Doe, was killed when a borrowed car he was driving went out of control in a curve. The car ran off the road, jumped an embankment, sideswiped a tree, and hit a 2-foot-high concrete wall. His passenger was seriously injured. SPC Doe had no more than 4 hours of sleep the night before and had been going for about 20 hours that day. He was under considerable stress. He had spent the evening playing pinball for shots of whiskey to let off steam. SPC Doe was under investigation for fighting at a local club. Girlfriend and insurance problems stemming from a recent minor traffic accident were also nagging at him. Everyone knew he was a hotheaded person as well as a high-risk driver.

In the past year, he has had *five* POV-related incidents:

- Driving while intoxicated.
- Failing to use his seatbelt.
- Speeding.
- Passing in a no-passing zone.
- Allowing an unlicensed driver to operate a POV recklessly.

For his repeated high-risk behavior, he had received:

- Three written counseling statements.
- An oral reprimand.
- License suspension for 120 days.
- Counseling for drinking problems.

This soldier was courting disaster, and he found it. His friends and his leaders also helped him on the trip.

While SPC Doe's unit had a new commander and a new platoon leader, his first sergeant had been with the unit as long as SPC Doe. His drinking and driving habits were well known. The night of the accident, several friends saw the soldier drink at least seven or eight shots of whiskey within a 3-hour period. Yet, one of those friends loaned him a car. SPC Doe's BAC at the time of his death was .222 percent—more than twice the legal limit and close to the level at which most people pass out.

ACCIDENT RISK ASSESSMENT OF PERSONNEL RATED BY COMMANDERS/LEADERS					NAME		
Risk Factors	Points						
1. Self-discipline (dependability): Soldier knows and is trained to standard, but does not follow standard.							
a. Counseled for poor performance (3 times in last 12 months, or more than 4 times in last 24 months).	8						
b. Had at fault accidents or citations (2 to 4 in last 12 months or 5 or more in last 24 months).	8						
c. Abused alcohol/drugs (in last 12 months) or referred to community mental health (in last 24 months).	8						
d. Had judicial/nonjudicial punishment (in last 24 months).	8						
e. GT score of 90 or less (enlisted only).	8						
f. Mile under age 25.	8						
2. Leadership (enforcement of standard): Leaders not ready, willing, or able to supervise and enforce performance to standard.							
a. Insufficient knowledge/experience (each subordinate leader who fits this example).	6						
b. Tolerates below-standard performance (each subordinate leader who fits this example).	12						
3. Training (job skills and knowledge): Soldiers lack training to perform tasks to standard.							
a. Not proficient in MOS task.	9						
b. Not proficient in assigned tasks outside MOS (has not received OJT, school, unit, or task training).	9						
4. Standards: Soldiers performing task for which task-condition-standard or procedures-							
a. Do not exist (example: two vehicles collide head-on on test track because there is no standard on track direction).	4						
b. Are not clear or practical (example: TM shows soldier changing 195-pound tire by himself).	4						
5. Support: Soldiers not receiving support need to perform task to standard.							
a. Personnel (not full crew, wrong MOS, not trained to standard).	2						
b. Equipment (TA-50, weapons, transportation, safety).	2						
c. Supplies (ammo, fuel, food, water, parts, clothing, publications).	2						
d. Services/facilities (maintenance, medical, personal services, storage).	2						
Points	0-20	21-30	31-40	41+			
Risk	Low	Medium	High	Extremely High			
Points							
Risk							

CHAPTER 4**INSTRUCTIONAL MATERIAL****LESSON TITLE: STAYING ALERT AND FIT TO DRIVE****A. TRAINING OBJECTIVE**

TASK: Demonstrate knowledge of procedures to stay alert and fit to drive.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

B. INTERMEDIATE TRAINING. None.**C. ADMINISTRATIVE INSTRUCTIONS**

1. Training time: Recommended instructional time is 0.5 hours.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for each class of 20 students.
6. Training aids and equipment: Overhead projector, transparencies, and screen.
7. References: AR 385-55 and FM 21-305.

D. SEQUENCE OF ACTIVITY**1. INTRODUCTION.**

a. **Interest Device.** Safe driving depends on skill, correct decisions, and the driver's physical and mental condition. Many factors affect physical and mental abilities. As a pedestrian, passenger, or driver, you must make responsible decisions about the use of alcohol and other drugs. If you are tired or emotionally upset, you are less able to drive safely. A severe headache or minor illness can also influence your driving.

b. **Tie-in.** At various times, you will need to decide whether you are fit to continue driving. You may also have to decide if it is safe to ride with another driver. To make the right decisions, you need to understand conditions that affect driving abilities. In some cases, there are ways to offset these effects. Sometimes the wisest decision is to postpone driving.

c. **Lesson Objective.**

ACTION: After this lesson the student will know the procedures to stay alert and fit to drive.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

d. **Procedures.**

(1) *Explanation.*

(2) *Summary.*

2. EXPLANATION.

Transparency 4-8

a. **Be Ready to Drive.**

(1) *Get enough sleep.* Leaving on a long trip when you are already tired is dangerous. If you have a long trip scheduled, ensure that you get enough sleep before you depart. Most people require 7 to 8 hours of sleep every 24 hours.

(2) *Schedule trips safely.* Your body gets accustomed to sleeping during certain hours. If you are driving during those hours, you will be less alert. If possible, try to schedule trips for the hours you are normally awake. Many vehicle accidents occur between midnight and 6 o'clock in the morning. Tired drivers can easily fall asleep at these times, especially if they do not regularly drive at those hours. Trying to complete a long trip at these hours can be very dangerous.

(3) *Avoid medication.* Many medicines can make you sleepy. Avoid driving if you are taking medication with a label warning against operating vehicles or machinery. The most common medicine of this type is an ordinary cold pill. If you have to make a long trip, drive with a cold. You are better off suffering from the cold than from the effects of the medicine.

(4) **Keep cool.** If the vehicle's interior is too hot, you can get sleepy. Keep the window or vent cracked or use the air conditioner, if you have one. Also, when the temperature outside is cold, do not have the heater control set too high. Again, this can make you drowsy.

(5) **Take breaks.** Short breaks can keep you alert. The time to take them is before you feel really drowsy or tired. Stop often. It may help to walk around or do some physical exercises.

Transparency 4-9

b. Alertness.

(1) **Do not “push on”.** When you are sleepy, trying to “push on” is far more dangerous than most drivers think. It is a major cause of fatal accidents.

(2) **Stop to sleep.** When your body needs sleep, sleep is the only thing that will work. If you have to make a stop anyway, make it whenever you feel the first signs of sleepiness, even if it is earlier than you planned. By getting up a little earlier the next day, you can keep on schedule without the danger of driving while you are not alert.

(3) **Take regular rest stops.** Even if you are not tired, take regular rest stops. Switch off with another driver every hour or so. Stop for coffee or a soft drink every 100 miles or every two hours.

(4) **Take a nap.** If you cannot stop for the night, at least pull off the road and take a nap. A nap as short as a half-hour will do more to overcome fatigue than a half-hour coffee stop.

(5) **Avoid drugs.** There are no drugs that can overcome being tired. While they may keep you awake for a while, they will not make you alert. Eventually, you will be even more tired than if you had not taken them. Sleep is the only thing that can overcome fatigue.

Transparency 4-10

c. Alcohol and Driving.

(1) **Drinking and driving-a serious problem.** Drinking alcohol and then driving is a very serious problem. People who drink alcohol are involved in traffic accidents resulting in over 16,000 deaths and 300,000 injuries each year. Over 40 percent of all traffic fatalities are alcohol related. You should know:

- How alcohol works in the human body.
- How it affects driving.
- Laws regarding drinking and driving.
- Legal, financial, and safety risks of drinking and driving.

(2) ***The truth about alcohol.*** There are many dangerous ideas about the use of alcohol. The driver who believes in these wrong ideas will be more likely to get into trouble. Here are some examples:

FALSE	THE TRUTH
Alcohol increases your ability to drive.	Alcohol is a drug that will make you less alert and reduces your ability to drive safe.
Some people can drink a lot and not be affected.	Everyone who drinks is affected by alcohol.
If you eat a lot first, you will not get drunk.	Food will not keep you from getting drunk.
Coffee and a little fresh air will help a drinker sober up.	Only time will help a drinker sober up – other methods do not work.
Stick with beer – it is not as strong as wine or whiskey.	A few beers are the same as a few shots of whiskey or a few glasses of wine.

Transparency 4-11

(3) ***Definition of a drink.*** What is a drink? It is the alcohol in drinks that affects human performance. It does not make any difference whether that alcohol comes from “a couple of beers” or from two glasses of wine or two shots of hard liquor.

(4) ***Drinks that have same alcohol content.*** The following drinks contain the same amount of alcohol:

- A 12 ounce glass of 5 percent beer.
- A 5 ounce glass of 12 percent wine.
- A 1 1/2 ounce shot of 80 proof liquor.

(5) ***How alcohol works.*** Alcohol goes directly from the stomach into the blood stream. A drinker can control the amount of alcohol he consumes. However, the drinker cannot control how fast the body disposes the alcohol. If you have drinks faster than the body can get rid of them, you

will have more alcohol in your body and your driving will be more affected. The amount of alcohol in your body is commonly measured by the BAC.

(6) ***What determines BAC.*** BAC is determined by the amount of alcohol you drink (more alcohol means higher BAC), how fast you drink (faster drinking means higher BAC), and your weight (a small person does not have to drink as much to reach the same BAC).

(7) ***Alcohol and the brain.*** Alcohol affects more of the brain as BAC builds up. The first part of the brain affected controls judgment and self control. One of the bad things about this is it can keep drinkers from knowing they are getting drunk. Good judgment and self control are absolutely necessary for safe driving.

(8) ***The build-up of BAC.*** As BAC continues to build, muscle control, vision, and coordination are affected more. Eventually, a person will pass out.

(9) ***How alcohol affects driving.*** All drivers are affected by drinking alcohol. Alcohol affects judgment, vision, coordination, and reaction time. It causes serious driving errors, such as:

- Increased reaction time to hazards.
- Driving too fast or too slow.
- Driving in the wrong lane.
- Running over the curb.
- Weaving.
- Straddling lanes.
- Quick, jerky starts.
- Not signaling, failure to use lights.
- Running stop signs and red lights.
- Improper passing.

(10) ***Increased chances of a crash.*** These effects mean increased chances of a crash. Accident statistics show that the chance of a crash is greater for drivers who have been drinking than for drivers who were not.

Transparency 4-12

d. Other Drugs.

(1) ***Legal and illegal drugs that are dangerous.*** Besides alcohol, other legal and illegal drugs are being used more often. Laws prohibit possession or use of many drugs while driving. Laws also prohibit someone from being under the influence of any “controlled substance,” an amphetamine

(including “pep pills” and “bennies”); narcotics; or any other substance which can make the driver unsafe. This could include a variety of prescription and over-the-counter drugs (cold medicines) which may make the driver drowsy or otherwise affect safe driving ability.

(2) ***Heed warning labels and doctor’s orders.*** Pay attention to warning labels of legitimate drugs and medicines and to doctor’s orders regarding possible effects. Stay away from illegal drugs. Do not use any drugs that hide fatigue – the only cure for fatigue is rest. Alcohol can make the effects of other drugs much worse. The safest rule is do not mix drugs with driving.

(3) ***Drugs equal traffic accidents.*** Use of drugs can lead to traffic accidents resulting in death, injury, and property damage. Furthermore, it can lead to arrests, fines, and jail sentences. It can also mean the end of a person’s driving.

Transparency 4-13

e. **Illness.** Any health problem can affect your driving – a bad cold, infection, or a virus. Even little problems like a stiff neck, a cough, or a sore leg can affect your driving. If you are not “up to par,” let someone else drive.

f. **Emotions.** Emotions quickly affect your judgment and ability to drive. You cannot drive well if you are worried, excited, afraid, angry, or just down. An emotional state, in most cases, will eventually affect your coordination. Emotions are hard to control. Here are a few tips:

- *Angry or excited.* If you are angry or excited, give yourself time to cool off. Take a short walk. Kick a telephone pole. But, stay off the road until you are calmed down.
- *Worried or down.* If you are worried or down about something, try to take your mind off it. Listen to the radio. It is often easier to listen to someone else than it is to try to take your mind off your problems.
- *Impatient.* If you are the impatient type, give yourself extra time. Leave a few minutes early so that you will not tend to speed, shave traffic lights, or do other things that can get you a traffic ticket or result in a collision.

g. **Vision and Hearing.**

(1) Good vision is essential for driving. Most of what we do behind the wheel is based on what we see. Good eyesight means:

- *Seeing clearly.* If you cannot see clearly, you cannot judge distances or spot trouble, so you will not be able to do something about it.
- *Good side vision.* You need to see out of the corners of your eyes. This lets you spot cars creeping up on either side of you while your eyes are on the road ahead.
- *Judging distances.* You may be able to see clearly and still not be able to judge distances. Good distance judgment is important in knowing how far you are from other cars.
- *Good night vision.* Many people who can see clearly in the daytime have trouble at night. Some cannot make things out in dim light. Others may have trouble with the glare of headlights.

NOTE: It is important to have your eyes checked every year or two. You may never know about bad side vision or bad distance judgment unless your eyes are checked.

(2) Hearing is more important to driving than many people realize.

- *Horns, sirens, or screeching tires.* Your hearing can warn you of danger – the sound of horns, a siren, or screeching tires. Sometimes you can hear a car in your blind spot that you cannot see.
- *Hearing problems.* A hearing problem, like bad eyesight, can come on so slowly that you do not notice it. Drivers who know they have hearing problems can adjust. They can learn to rely more on their seeing habits.
- *Turn down the radio.* People with good hearing cannot hear well if the radio is blaring. Keep it turned down and at least one window partly open.

3. SUMMARY.

Transparency 4-14

- Recap Main Points.** Call on students to answer questions presented on Transparency 4-14.
- Allow for Questions.**
- Clarify Questions.**
- Give Closing Statement.** Your own condition – your physical, mental, and emotional fitness to drive – outweigh any other hazard you will face on the road. Even a simple headache or cold will affect your ability to drive safely. Be as objective as possible about your fitness to drive at any time.

E. SAFETY RESTRICTIONS. None.

F. ADDITIONAL COMMENTS AND INFORMATION. None.

LESSON TITLE: VEHICLE INSPECTION**A. TRAINING OBJECTIVE**

TASK: Perform safety inspection and routine maintenance of a motor vehicle.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

B. INTERMEDIATE TRAINING. None.**C. ADMINISTRATIVE INSTRUCTIONS**

1. Training time: Recommended instructional time is 0.5 hours.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for each class of 20 students.
6. Training aids and equipment: Overhead projector, transparencies, television, VCR, screen, and TF (VT) 20-6371, Army Driver Improvement Program Number 6 - Randy Baker Driving Professionally (PIN: 706080DA). (Running time 13 minutes, 1988).
7. References: AR 385-55, DA Pamphlet 738-750, FM 21-305, and vehicle operator's manual or owner's manual.

D. SEQUENCE OF ACTIVITY**1. INTRODUCTION.**

- a. **Interest Device.** Having your vehicle inspected every 12 months, as is required by most states and military jurisdictions, is not enough to guarantee its safe operation. Regular routine maintenance should also be performed. While a mechanic may be needed to correct exhaust or suspension problems, you can handle many of the routine items yourself and discover early symptoms of what may become major safety problems.

b. **Tie in.** Drivers should be familiar with the different systems of the vehicle and in general know what to do to keep the vehicle in good working condition. This not only improves safety, it also ensures your vehicle is operating correctly to protect the environment.

c. **Lesson Objective.**

ACTION: After this lesson the student will be able to perform safety inspection and routine maintenance of a motor vehicle.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

d. **Procedures.**

(1) *Explanation.*

(2) *Summary.*

2. **EXPLANATION.**

a. **General.** Every driver should be familiar with the vehicle owners manual and study it carefully. Following the recommended maintenance schedules will help reduce costly repairs and inconveniences. In addition to the techniques described in this lesson, AMV operators must perform PMCS on their assigned vehicles according to the vehicle operator's manual and AR 385-55.

b. **Vehicle Inspection Checks.**

NOTE: Discuss transparencies 4-19 through 4-23 with the students. The 14 items listed on these transparencies are considered the most important for safe vehicle operation and are also what a novice should know. These transparencies can also be reproduced and used as student handouts.

Transparency 4-19

(1) *Headlights.*

(2) *Brake lights, signal lights, and horn.*

(3) *Windows and windshields.*

Transparency 4-20

(4) ***Tires.***

(5) ***Brakes.***

Transparency 4-21

(6) ***Steering.***

(7) ***Suspension.***

(8) ***Exhaust.***

NOTE: Ensure your vehicles exhaust is operating “leak free” to protect yourself and the environment.

Transparency 4-22

(9) ***Windshield wipers.***

(10) ***Engine and tune-up.***

(11) ***Cooling system.***

Transparency 4-23

(12) ***Oil and oil filter.***

(13) ***Battery.***

(14) ***Safety belts and child safety seats.***

c. **Additional Training Aid.** Show TF (VT) 20-6371, Army Driver Improvement Program Number 6 - Randy Baker Driving Professionally (PIN: 706080DA). (Running time 13 minutes, 1988).

3. SUMMARY.

Transparency 4-24

a. **Recap Main Points.** Call on students to answer questions presented on Transparency 4-24. Also remind students that even small amounts of engine oil, cooling liquids, and brake fluid leaks can add up. These spills can cause a run off during a rain that could pollute local water systems.

NOTE: Contain any know spill and report it ASAP in accordance with your units SOP.

b. **Allow for Questions.**

c. **Clarify Questions.**

d. **Give Closing Statement.** By following the general guidelines presented in this lesson, your vehicle should be safer, more reliable, and less likely to break down on the road.

E. SAFETY RESTRICTIONS. None.

F. ADDITIONAL COMMENTS AND INFORMATION. None.

LESSON TITLE: VISUAL SEARCH**A. TRAINING OBJECTIVE**

- TASK:** Know the principles of visual search.
- CONDITIONS:** Given instruction in a classroom.
- STANDARD:** Correctly answer verbal questions when called upon.

B. INTERMEDIATE TRAINING. None.**C. ADMINISTRATIVE INSTRUCTIONS**

1. Training time: Recommended instructional time is 0.5 hours.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for each class of 20 students.
6. Training aids and equipment: Overhead projector, transparencies, and screen.
7. References: FM 21-305.

D. SEQUENCE OF ACTIVITY**1. INTRODUCTION.*****Transparency 4-32***

- a. **Interest Device.** Most of what you do when you drive is a reaction to what you see. To be a good driver you need to see well. Seeing well means knowing where to look; ahead, to the side, and behind.
- b. **Tie-in.** Alert drivers see everything that goes on in front of their vehicles, and by checking their mirrors, a great deal of what goes on to the sides and rear. But they act only on those things that will affect their safety.

c. **Lesson Objective.**

ACTION: After this lesson the student will know the principles of good visual search habits.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

d. **Procedures.**

(1) *Explanation.*

(2) *Summary.*

2. **EXPLANATION.**

Transparency 4-33

a. **Looking Ahead.** To avoid last minute moves, a driver needs to look far enough ahead to see things early. One of the most common mistakes drivers make is looking right in front of their vehicle instead of down the road.

(1) Expert drivers try to focus their eyes at least 12 seconds ahead. In city driving, 10 to 15 seconds is about one block, while on the open highway it is about one-quarter of a mile (a much greater distance).

(2) Looking at least 12 seconds ahead will help you control your vehicle in another way. When you focus your attention at least 12 seconds ahead, it will be easier to keep your vehicle in a steady path. Your vehicle will not weave in its lane.

(3) Taking in the whole scene. Looking at least 12 seconds ahead does not mean looking at the middle of the road. It means taking in the entire scene, including the side of the road.

(a) If you look ahead, you will be able to see important things that you cannot see later on, such as someone getting into a parked car.

(b) Scanning the roadside helps you see:

- Vehicles and people that may be in the road by the time you get there.
- Signs warning of conditions ahead.

- Signs giving you information about places ahead and how to reach them.

Transparency 4-34

b. **Looking to the Sides.** Any time you come to a place where others may cross or enter your path, you should look to the sides to make sure no one is coming. These places include:

- Intersections.
- Crosswalks.
- Roadside areas.
- Railroad crossings.

(1) ***Intersections.*** An intersection is any place where one line of traffic meets another. It includes:

- Cross streets and side streets.
- Freeway entrances.
- Driveways, alleys, and shopping center entrances.

(a) Always look both ways when approaching an intersection.

- *Look to the left.* Cars coming from the left are closer to you.
- *Look to the right.* Drivers often fail to see vehicles to the right. As a result drivers are more apt to be hit by a car coming from the right.
- *Look in both directions.* Take one more look in both directions before you pull out, just in case there is someone you did not see the first time.
- *Look both ways.* Make sure you look both ways, even when you cross a one-way street. Someone might be going the wrong way.

(b) Do not rely on traffic signals. At an intersection, look left and right, even if other traffic has a red light or stop sign. Someone may run either one.

(c) Make sure you have a good view.

- If your view of a cross street is blocked by a building, trees, shrubs, or a row of parked vehicles, edge forward slowly until you can see.

- If a line of cars is blocking your view of another lane, wait until the cars move. If you try to look by sticking the nose of your vehicle into the other lane, you may get hit.

Transparency 4-35

(2) ***Crosswalks***. When turning a corner, watch for people who are about to cross the street you are turning into.

- Remember, if you have a green light, the light is also green for pedestrians.
- A special situation arises where a right turn on red is permitted.
- In all cases, the law requires drivers to yield to pedestrians in the crosswalk.

(3) ***Roadside areas***. Whenever there is a lot of activity along the side of the road, there is a good chance that someone will cross or enter the road. Therefore, it is very important to look to the sides when you are near:

- Shopping centers and parking lots.
- Construction areas.
- Busy sidewalks.
- Playgrounds and school yards.

(4) ***Railroad crossings***. Look both ways as you approach a railroad crossing.

(a) Look, even if the warning lights are not flashing (the signal may not be working).

(b) When stopped at a railroad crossing with more than one track, wait a moment after the train passes. Wait until you have a clear view well down the track in both directions before you start across. Another train may be coming from the other direction.

TRANSITION: To avoid a collision, it is a good idea to check traffic behind you. How often you check behind depends on traffic conditions. By checking behind, you will find out if someone is following too closely or coming up too fast. Checking behind will give you time to do something about it.

Transparency 4-36

c. **Looking Behind.** It is important to look behind when anything ahead of you indicates that you may have to adjust speed or position.

- This would include a change of lanes, slowing quickly, driving down a long or steep hill, approaching an intersection, or backing up.
- Glance over your left or right shoulder to be sure no one is near the left or right rear corners of your vehicle. These areas are called blind spots, because you cannot see things in these areas by looking at your mirrors. You have to turn your head.

(1) ***Changing lanes.*** Whenever you change lanes, you must check behind you to make sure you are not getting in the way of cars that are already there.

(a) Changing lanes include:

- Changing from one lane to another on a roadway.
- Entering the roadway from the curb or shoulder.
- Entering a freeway or highway from an entrance lane. (When two or more drivers are involved in a merging situation, both drivers should adjust speed and lateral position.)

(b) Procedures for checking traffic behind:

- *Glance in your rearview and side mirrors.* Make sure that no one is preparing to pass you.
- *Glance over your left or right shoulder.* Be sure no one is near the left or right rear corners of your vehicle.
- *Check quickly.* Do not take your eyes off the road ahead for more than an instant. The vehicle ahead of you could stop suddenly while you are checking over your shoulder.
- *Check using left side mirror or glance over your left shoulder.* Use your left side mirror to check to your left while you are preparing to change lanes or pull onto the roadway. This way you can keep an eye on vehicles ahead of you at the same time. Check over your left shoulder just before you change lanes. Make sure that your side mirror is giving you the whole picture.
- *Check far lanes.* Someone in another lane may plan to move into the same spot you do.

Transparency 4-37

(2) ***Slowing down suddenly.*** Take a quick glance in your mirrors before you slow down or stop. It is very important to do this when you slow down suddenly. Some situations when this may happen are:

- When you slow down for something in the road ahead that the driver behind you cannot see. (For example, you come around a corner and see a car stalled in the road.)
- When you are prepared to turn into a side road or driveway. (This is very important if the driveway is just before an intersection.)
- When you are stopped to pull into a parking space.

(3) ***Going down a long or steep hill.*** Check your mirrors on a long or steep hill. Drivers of trucks and buses often try to build up speed so that they can make it to the top of the next hill more easily. If you see them early you can change lanes or increase speed to move out of their way.

(4) ***Backing up.*** Backing is dangerous because it is hard to see behind your vehicle. Here are some rules you should follow whenever you have to back your vehicle:

- Check behind your vehicle (or car). (In accordance with AR 385-55, drivers of military vehicles with passenger-carrying capacity greater than 12 and of 2 1/2-ton and larger trucks will use ground guides when backing.)
- If you are backing in a straight line, place your right arm on the back of the seat and turn around so that you can look through the rear window. Keep your head turned to the right looking backwards until you are stopped.
- If you are turning while backing, be sure to check the front fender on the side opposite your turn to make sure you have clearance. Do not depend on your mirrors. Do not use the side window. You cannot see the right side of the vehicle when you look out the left side window.
- Back slowly, your vehicle is much harder to control and to stop while you are backing.
- Because it is harder to see while backing, try to do as little backing as possible. In a shopping center, try to find a parking space you can drive through so that you come out head first.
- Whenever possible, avoid backing into traffic. When you enter a driveway or parking space, back into it so you will be going forward when you pull out.

Transparency 4-38

d. **Clear Windows and Mirrors.** It is important that you be able to see clearly through the windows, windshield, and mirrors. Here are some things you can do to be sure you will be able to see clearly.

- Keep the windshield clean. Bright sun or headlights shining on a dirty windshield make it hard to see. Carry a rag or paper towels so that you can stop and clean your windshield any time it needs it.
- Keep your windshield washer bottle full. Be sure you keep the windshield washer bottle full of windshield washer fluid. Do not use water on very cold days. Water will freeze on the windshield.
- Keep inside windows and mirrors clean. Smoking while driving causes a film to build up on the glass inside your vehicle. Clean the inside of your windows and mirrors frequently if you smoke. (In accordance with AR 385-55, drivers are prohibited from smoking in military vehicles.)

e. Adjust Seat and Mirrors.

- Adjust the seat so that you can see the road close ahead of your vehicle. Sliding the seat forward will raise it. If it is still too low, use a seat cushion. Do not move the seat so far forward that you cannot steer properly. If you are short, you may need pedal extensions.
- Adjust your rearview mirror and side mirror before you start driving. You will not have time to adjust them when you really need them in traffic.
- If adjustable, adjust your head restraint so that the top of the head restraint is slightly above your ears or at the back of your head, not at the base of your neck. This will reduce the risk of whiplash in the event of a collision from the rear.
- To guard against glare from headlights from cars behind you, use a day/night mirror. Make sure it is in the correct position before you start driving.

3. SUMMARY.

Transparency 4-39

- Recap Main Points.** Call on students to answer questions presented on Transparency 4-39.
- Allow for Questions.**
- Clarify Questions.**
- Give Closing Statement.** Most of what you do as a defensive driver is in response to what you see. Avoid a fixed stare – keep your eyes moving and learn to “read” the road. Look ahead, to the sides, and behind you.

E. SAFETY RESTRICTIONS. None.

F. ADDITIONAL COMMENTS AND INFORMATION. None.

LESSON TITLE: COMMUNICATION

A. TRAINING OBJECTIVE

- TASK:** Know the correct, safe, and legal methods of communication.
- CONDITIONS:** Given instruction in a classroom.
- STANDARD:** Correctly answer verbal questions when called upon.

B. INTERMEDIATE TRAINING. None.

C. ADMINISTRATIVE INSTRUCTIONS

1. Training time: Recommended instructional time is 0.5 hours.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for each class of 20 students.
6. Training aids and equipment: Overhead projector, transparencies, and screen.
7. References: FM 21-305.

D. SEQUENCE OF ACTIVITY

1. INTRODUCTION.

a. **Interest Device.** When we do not communicate early with others it causes misunderstandings. Communication should be thought of as an exchange of information. On the road, the consequence of poor communication – or lack of communication – is potentially much greater: a crash.

b. **Tie-in.** You can influence the behavior of other drivers by communicating your intentions.

c. **Lesson Objective.**

ACTION: After this lesson the student will know the correct, safe, and legal methods of communication.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

d. **Procedures.**

(1) *Explanation.*

(2) *Summary.*

2. **EXPLANATION.**a. **Communicating Means.***Transparency 4-46*

(1) Letting others know where you are by:

- Using your headlights, brake lights, and turn signals.
- Using your horn.
- Positioning your vehicle so that it can be seen.
- Using emergency signals (flares and/or warning triangles).
- Using emergency hazard signals (4-way flashers).

(2) Letting others know what you plan to do by signaling:

- Changes of direction.
- When slowing or stopping.

Transparency 4-47

TRANSITION: Besides helping you to see at night, headlights help other people see you.

b. **Using Headlights.**

(1) On rainy, snowy, or foggy days, it is sometimes impossible for other drivers to see your vehicle. On gray days, vehicles seem to blend into the surroundings. In these conditions, headlights make your vehicle easier to see. Also, anytime your windshield wipers are in use, your low beam headlights should be on.

- (2) Turn on your headlights when it begins to get dark. If you turn them on a little early, you will help other drivers see you.
- (3) When you are moving and lights are necessary, use your headlights. Parking lights are for parked vehicles only.
- (4) Use headlights to get attention of other drivers. An example of this is when passing other vehicles.
- (5) Flash headlights to communicate a hazard. An example of this is when you are in another vehicles blind spot. This could help prevent a collision.
- (6) The best rule to remember is to turn on your headlights whenever you have trouble seeing other vehicles. If you have trouble seeing them, chances are other drivers are having trouble seeing you.
- (7) Tactical vehicle drivers will keep low beam lights on at all times when on public roadways outside military installations, except where SOFA and local laws prohibit use of headlights during daylight hours (see AR 385-55).
- (8) Vehicle manufacturers are voluntarily equipping new vehicles with DRLs. DRLs make vehicles more conspicuous and decreases the possibility of having a head-on collision. At the time of this writing, there is some movement toward national mandate of DRLs. DRL legislation for passenger vehicles is not anticipated to become law in the immediate foreseeable future.

Transparency 4-48

TRANSITION: People cannot see you unless they are looking your way. Your horn can get their attention. Use it whenever it will help prevent an accident.

c. **Using Horn.** (When it is safe and legal to do so.)

- (1) The horn is used to give warning and not for other purposes such as intimidation.
- (2) If there is no immediate danger, a light tap on the horn should be all you need. Give your horn a light tap well in advance when:
 - You approach a person on foot or on a bike, or when you see someone walking close to the road.
 - You pass a driver who may decide to pass the vehicle in front of him. (At night a flick of the headlights may be enough.)

- Approaching a driver who is not paying attention or may have trouble seeing you.
- Coming to a place where you cannot see what is ahead – like a steep hill or a sharp curve.

(3) If there is a real danger, do not be afraid to sound a sharp blast on your horn when:

- A child is about to run into the street.
- Another vehicle is in danger of hitting you.
- You have lost control of your vehicle.

Transparency 4-49

TRANSITION: Try to keep your vehicle where it can be seen. You cannot always be sure other drivers will see you, but you can avoid putting your vehicle where they cannot see it. One common mistake is driving in another driver's blind spot.

d. Keep Your Vehicle Where it Can be Seen.

- (1) Try to avoid driving on either side and slightly to the rear of another vehicle for a long period of time. Either speed up or drop back so the lane is clear.
- (2) When passing another vehicle, get through the other driver's blind spot as quickly as you can. The longer you stay in the blind spot, the longer you are in danger.

Transparency 4-50

TRANSITION: If your vehicle breaks down on the highway, make sure that other drivers can see your vehicle. Accidents often occur because a driver does not see a stalled or parked (meaning off the road) vehicle. By the time he does see it, it is too late to stop.

e. Using Emergency Signals.

- (1) If you are having vehicle problems, and have to stop, follow these rules:
 - If at all possible, pull off the road all the way out of traffic.
 - Turn on your emergency hazard signals (4-way flashers) to show you are not moving.
 - Lift the hood to signal an emergency and tie a white cloth on the door handle (road side of vehicle).

- If you cannot get completely off the roadway, try to stop where people have a clear view of you and your vehicle from behind. Do not stop just over a hill or just around a curve.
- Give other drivers plenty of warning. Place emergency flares or warning triangles 200 and 300 feet behind your vehicle. This allows other drivers time to change lanes if necessary.
- If you do not have emergency flares or triangles, stand by the side of the road, well back from your vehicle, and wave traffic around you.
- Do not ever try to change a tire if it means you have to stand in a traffic lane.

(2) Use 4-way flashers when unloading, at an accident scene, or traveling slow (below posted minimum speed limit or well below the posted maximum speed limit).

Transparency 4-51

TRANSITION: Other drivers expect you to keep doing what you are doing. Let others know when you are going to do something different. It gives them time to react to your moves.

f. Signal When Changing Direction.

(1) You should use your turn signals before you:

- Change lanes or pass another vehicle.
- Turn at an intersection.
- Enter or leave a freeway.
- Pull away from the curb.
- Pull over to the side of the road.
- Signal when merging into traffic.
- Signal when approaching a parallel parking place.

(2) If you do not signal, other drivers will not know what you plan to do. They may start to do something that will lead to an accident. Here are some important rules about signaling direction changes:

- Get into the habit of signaling every time you change direction. Signal even when you do not see anyone else around. It is the vehicle you do not see that is the most dangerous.
- Signal as early as you can. Signal at least three or four seconds before you make your move. If you are planning to turn at an intersection, start signaling about a half a block away.
- If you plan to turn just beyond an intersection, do not signal until you are actually in the intersection. If you signal earlier, other drivers may

think you plan to turn before you reach them. They might pull into your path.

- After you have made a gradual turn or lane change, make sure your turn signal is off. On a very gradual turn the signals may not turn off by themselves. Check your signal after turning. Turn it off if it has not clicked off by itself. If the signal is on, other drivers might think you plan to turn.

Transparency 4-52

TRANSITION: Your brake lights let people know that you are slowing down, but they do not say how much.

g. **Signal When Slowing or Stopping.** If you are going to slow down or stop at a place where another driver will not expect it, warn drivers behind you. A few light taps on the brake pedal - enough to flash the brake lights - should warn following drivers. Signal before you slow down to:

- Turn off a highway, which has no special deceleration lane.
- Park or turn into a driveway. (This is important when you do it just before reaching an intersection. The driver behind you may expect you to continue to the intersection.)
- Avoid something in the road ahead that the driver behind you cannot see. (For example, as you come over the crest of a hill and see a vehicle stalled or parked in the roadway.)

3. SUMMARY.

Transparency 4-53

a. **Recap Main Points.** Call on students to answer questions presented on Transparency 4-53.

b. **Allow for Questions.**

c. **Clarify Questions.**

d. **Give Closing Statement.** Accidents often happen because one driver does not see another driver, or when one driver does something the other driver does not expect. It is important that drivers let others know where they are and what they plan to do.

E. SAFETY RESTRICTIONS. None.

F. ADDITIONAL COMMENTS AND INFORMATION. None.

LESSON TITLE: MANAGE SPEED

A. TRAINING OBJECTIVE

TASK: Know the procedures to manage vehicle speed effectively in response to various conditions.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

B. INTERMEDIATE TRAINING. None.

C. ADMINISTRATIVE INSTRUCTIONS

1. Training time: Recommended instructional time is 0.5 hours.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for each class of 20 students.
6. Training aids and equipment: Overhead projector, transparencies, and screen.
7. References: FM 21-305.

D. SEQUENCE OF ACTIVITY

1. INTRODUCTION.

a. **Interest Device.** Good timing is critical to safe driving. To develop into a conflict or cause a collision, a potential hazard must move into your immediate path of travel. Knowing how much or whether to decrease or increase speed, depends on how well you can judge when and where other hazards might close in or come closest to your path of travel.

b. **Tie-in.** Speed saves time, yet speed also can create problems relating to managing time and space. Speeding is the major cause of fatal traffic accidents.

c. **Lesson Objective.**

ACTION: After this lesson the student will know the procedures to manage vehicle speed effectively in response to various conditions.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

d. **Procedures.**

(1) *Explanation.*

(2) *Summary.*

2. **EXPLANATION.***Transparency 4-60*

a. **Manage Speed.** To understand speed management, we must first define speeding. Speeding is:

- Exceeding the legal or posted speed limit.
- Driving too fast for conditions.

Transparency 4-61

b. **Conditions Affecting Safe Speed.** There are four conditions which affect the maximum safe speed.

(1) *Traction:*

- Traction refers to the tire's grip on the road.
- Decreased traction means increased stopping distance.
- Adjust speed to the conditions that decrease traction such as slippery roads.

(2) *Visibility:*

- Must be able to stop within the distance that you can see.
- Adjust speed to the conditions that interfere with visibility such as rain, fog, snow, and darkness.

(3) ***Traffic conditions:***

- Need to maintain a safe space cushion in traffic.
- Adjust speed to the volume and flow of traffic to keep a safe cushion.

(4) ***Road characteristics:***

- The shape of the road affects traction and visibility.
- Adjust speed for curves and hills.

TRANSITION: Vehicle speed is the most critical factor in stopping distance.

Transparency 4-62

c. **Speed and Stopping Distance.** Three things add up to total stopping distance:

(1) ***Perception distance.*** The distance the vehicle goes from the time your eyes see a problem to the time your brain knows it.

- About 3/4 second perception time for an alert driver.
- In 3/4 seconds at 55 MPH, you travel 60 feet.

(2) ***Reaction distance.*** The distance traveled from the time your brain tells your foot to move from the accelerator until your foot pushes the brake.

- Reaction time of 3/4 second for average driver.
- Accounts for an additional 60 feet traveled at 55 MPH.

(3) ***Braking distance.*** The distance it takes to stop once the brakes are applied.

- At 55 MPH it will take about 4 1/2 seconds to stop.
- On dry pavement with good brakes, it takes about 150 feet to stop.

(4) ***Total stopping distance.***

- At 55 MPH it will take about 6 seconds to stop.
- These add up to about 270 feet ($60+60+150=270$) or a little less than the length of a football field. (Heavy and large vehicles take a little longer to stop.)

Transparency 4-63

d. Effect of Speed on Stopping Distance.

- (1) If you double your speed, it will take you about four times the distance to stop your vehicle.
- (2) By slowing down, you gain some reduced braking distance.

e. Speed and Distance Ahead.

- (1) Be able to stop within the distance you can see ahead.
- (2) Other conditions, or fog and rain, may require you to slow down.
- (3) At night, when you use low beams, slow down.

f. Speed and Traffic Flow.

- (1) The safest speed in heavy traffic is within 5 MPH of the prevailing speed of traffic.
- (2) Keep a safe following distance. If following distances are decreased, back off to allow the gap to increase.
- (3) If you go faster than the speed of other traffic:
 - It increases the chance of a crash.
 - It is more tiring.
- (4) The safest and easiest speed (but legally) is going with the speed of other vehicles.

Transparency 4-64**g. Matching Speed to the Road Surface.**

- (1) You must have traction to steer or brake a vehicle.
- (2) Traction is friction between the tires and the road.
- (3) The following road conditions reduce traction and call for lower speeds:
 - Slippery roads make the vehicle harder to turn and cause you to take longer to stop.

- Wet roads can double stopping distance. Reduce speed by about one third (such as slowing down from 55 MPH to about 35 MPH).
- On packed snow, reduce speed by a half or more.
- On ice, stop your vehicle as soon as possible.

Transparency 4-65

(4) On Slippery roads.

- *Shady areas.* These areas will remain icy and slippery longer than unshaded areas.
- *Bridges.* Bridges will freeze before the road. Freezing will occur when the temperature is close to 32 degrees F.
- *Melting ice.* Melting ice is more slippery than unmelting ice.
- *Black ice.* Black ice is clear enough that you can see the road underneath. Drive with caution if the temperature is below freezing and the road looks wet.
- *Vehicle icing.* Vehicle icing is when the vehicle or parts are covered with ice. If the vehicle has ice on it, then probably the road surface is starting to ice up.
- *Rains.* The roads are very slippery right after it starts to rain.
- *Hydroplaning.* This may happen to a vehicle when it goes over wet roads.

Tires lose road contact and have little or no traction.

Hydroplaning is more likely to happen when tire pressure is low and tread is worn.

Can occur at speeds as low as 30 MPH if there is a lot of water.

Gradually, release the accelerator and shift to neutral to slow the vehicle.

Do not use the brakes to slow down.

Transparency 4-66

h. Speed and Curves.

(1) Adjust speed for curves.

(2) Taking a curve too fast involves two things:

- Wheels can lose their traction and continue straight ahead.
- Wheels may keep traction and vehicle may roll over.

(3) Slow down before entering a curve.

- Braking in a curve may cause a skid.
- Most exit ramps for interstate highways are curved to cause drivers to slow down before merging with slower moving traffic.

Slow to the appropriate speed for exiting the highway. (The posted speed limit is for cars; drivers of heavier vehicles generally must slow down 10 to 15 MPH less than the posted speed limit.)

Prepare to stop at the bottom of the exit.

3. SUMMARY.

Transparency 4-67

- a. **Recap Main Points.** Call on students to answer questions presented on Transparency 4-67.
- b. **Allow for Questions.**
- c. **Clarify Questions.**
- d. **Give Closing Statement.** Speed limits are based on ideal conditions, visibility, and traffic. Posted speed limits do not tell you what speed to drive. They only say you cannot travel faster than the speed shown. By law, you must go slower if conditions make the posted speed unsafe.

E. SAFETY RESTRICTIONS. None.

F. ADDITIONAL COMMENTS AND INFORMATION. None.

LESSON TITLE: MANAGE SPACE

A. TRAINING OBJECTIVE

TASK: Know the procedures to manage space.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

B. INTERMEDIATE TRAINING. None.

C. ADMINISTRATIVE INSTRUCTIONS

1. Training time: Recommended instructional time is 0.5 hours.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for each class of 20 students.
6. Training aids and equipment: Overhead projector, transparencies, and screen.
7. References: FM 21-305.

D. SEQUENCE OF ACTIVITY

1. INTRODUCTION.

Transparency 4-76

a. **Interest Device.** When a driver makes a mistake, other drivers need time to react. The only way you can be sure you have enough time to react is by leaving plenty of space between yourself and the vehicles around you. That space becomes a margin of safety.

b. **Tie-in.** You should try to keep a margin of space on all sides of you. Space margins provide time, distance, and visibility.

c. **Lesson Objective.**

ACTION: After this lesson the student will know how to keep a margin of safety ahead, to the side, behind, and between vehicles and problem drivers.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

d. **Procedures.**

(1) *Explanation.*

(2) *Summary.*

2. **EXPLANATION.***Transparency 4-77*

a. **Space Ahead.** Of all the space around your vehicle, it is the area ahead of the vehicle – the space you are driving into – that is most important.

(1) *Need for space ahead.* You need space ahead in case you must stop suddenly. Rear-end crashes are more common than any other kind. The reason for this is because a lot of drivers follow too closely, and when the vehicle ahead stops, they cannot stop in time.

(2) *How much space.* How much space should you keep in front of you? Two seconds is an absolute minimum at any speed. How can you tell if you are far enough back?

(a) To know how much space you have, wait until the vehicle ahead's rear bumper passes a shadow on the road, a pavement marking, or some other clear landmark.

(b) Then start counting the seconds it takes you to reach the same spot on the road.

(c) Count off the seconds like this: "one thousand-and-one, one thousand-and-two".

(d) If you pass the shadow, pavement marking, or landmark before you finish counting one thousand-and-two, you are following too close.

(3) *Extra space situations.* There are some situations where you should allow extra space. In these situations a three to four second following distance is needed:

- *Slippery roads.* If the vehicle ahead should slow or stop on a slippery road, you will need more distance to stop your vehicle.
- *Following motorcycles.* If a motorcycle you are following should fall, you will need extra distance to avoid the rider. The chances for a fall are greatest on wet or icy roads, metal surfaces such as bridge gratings or railroad tracks, and on gravel.
- *Passing driver.* When the driver behind you wants to pass, let him pass. Slow down, if necessary, to allow the passing driver to return to your lane.
- *Blocked rear view of driver ahead.* Be aware when following drivers whose view to the rear is blocked. Drivers of trucks, buses, vans, or cars pulling campers, boats, or trailers cannot see you very well. They could slow down suddenly without knowing you are behind them.
- *Heavy load or towing trailer.* When you have a heavy load or are pulling a trailer, the extra weight increases the time and distance needed to stop.
- *Following large vehicles.* When following large vehicles that block your view ahead, you need the extra room to see around the vehicle and to the sides.

(4) Buses and vehicles placarded for hazardous materials, to include tank trucks carrying flammable liquids, must stop at all railroad crossings. So expect the stops and slow down early to allow plenty of room.

(5) You should allow space when you are stopped on a hill. The vehicle ahead may roll back into your vehicle when it starts up or pulls out.

(6) When stopped in a line of cars at a traffic light, a stop sign, or traffic back-up, stop so that you can see the rear wheels of the vehicle ahead of you. This distance provides a safety margin if you are struck from behind.

(7) Drivers of large vehicles such as buses, cargo trucks, and tractor-trailer combinations require additional space ahead of their vehicles. As a general rule, you need at least one second for each 10 feet of vehicle length at speeds up to 40 MPH. At greater speeds, you must add one second for safety. For more detailed guidance on large vehicle following distances, see FM 21-305.

TRANSITION: Some vehicles are often wide and take up most of a lane leaving other vehicles with very little space in which to drive. Safe drivers will manage what little space they have by keeping their vehicle centered in their lane and avoiding driving alongside others.

Transparency 4-78

b. **Space to the Sides.** You need a margin of safety to the side of your vehicle to have room to react to sudden moves toward your lane by other vehicles.

(1) ***Driving alongside other vehicles.*** Avoid driving alongside other vehicles on multi-lane streets. Move ahead of the other vehicles or drop back. There are two dangers in traveling alongside other vehicles:

- Someone may crowd your lane or try to change lanes and pull into you.
- You may be trapped when you need to change lanes.

(2) ***Oncoming vehicles.*** Keep as much space as you can between yourself and oncoming vehicles. If you can, stay out of the lane next to the center line. That way, you will have more room to avoid an oncoming vehicle if it suddenly swerves toward you. This is very important at intersections where another driver could turn left without giving a signal.

(3) ***Vehicles entering freeways.*** Make room for vehicles entering freeways. If there is no one next to you, move over a lane.

(4) ***Freeway exits.*** At freeway exits do not drive alongside other vehicles. A driver on the freeway may pull off suddenly or a driver leaving may swerve back on.

(5) ***Parked vehicles.*** Keep a space between yourself and parked vehicles. Someone may step out of a vehicle or from between parked vehicles. A vehicle may suddenly pull out.

(6) ***Strong winds.*** Strong winds make it difficult to stay in your lane. The problem is usually worse for lighter vehicles. This problem can be especially bad coming out of tunnels. Avoid driving alongside others vehicles if possible, especially if the vehicle is larger than yours.

(7) ***Split the difference.*** Sometimes there will be dangers on both sides of the road. For example, there may be parked cars to the right and oncoming vehicles to the left. In this case, the best thing to do is split the difference and steer a middle course between the oncoming vehicle and the parked cars.

(8) ***Take dangers one at a time.*** Sometimes you are faced with two dangers at one time. Suppose there is an oncoming truck and a child on a bike to the right. Instead of driving between the truck and the child, pass them one at a time. Slow down and let the truck pass. Then, move to the left to allow plenty of room before you pass the child.

(9) **Compromise.** If one danger is greater than the other, give the most room to the worst danger. Suppose there is an oncoming truck, a line of cars to your left, and a child on a bike to the right. Since the child is more likely to make a sudden move into your path, give the child more room. This may mean moving closer to the truck and oncoming cars.

TRANSITION: The driver behind you has more control over the space behind you than you do. However, you can help the driver keep a safe distance.

Transparency 4-79

c. **Space Behind.** You cannot stop others from following you too close. But there are things you can do to make it safer.

(1) Keep a steady speed and signal in advance when you have to slow down.

(2) Stay to the right.

(3) You may at times find yourself being followed too closely or “tailgated” by another driver. To handle tailgaters:

- Open up room in front to help you avoid making sudden speed or direction changes. It also makes it easier for the tailgater to get around.
- If you are being tailgated and there is a right lane, move to the right.
- If there is no right lane, maintain a space margin ahead and wait until the way ahead is clear. Then, move to the right as far as you can and reduce speed slowly to encourage the tailgater to pass.
- Do not speed up, it is much safer to be tailgated at a low speed than a high speed. You could also end up tailgating the vehicle ahead of you.
- Avoid tricks, such as turning on your tail lights or flashing your brake lights.

TRANSITION: When you are in moving traffic, you can control the speed and position of your vehicle to keep a margin of safety around you. However, when you approach a line of traffic, you must share space with vehicles already there. One of the biggest problems drivers have is judging how much space they are going to need.

Transparency 4-80

d. **Sharing Space.** You must learn to judge how much space you need to:

- Merge with traffic.
- Cross or enter traffic.
- Pass other vehicles.

(1) ***Yield right-of-way.*** Remember, when you make any of these movements you must yield the right-of-way to the other vehicles. It is your job to allow enough space so that you do not conflict with the other vehicles.

(2) ***Space to merge.*** Any time you merge with other traffic, you need a gap of at least four seconds. Four seconds will give both you and the vehicle behind you a two-second following distance. You need a four second gap whenever you change lanes or enter a freeway from an entrance lane or merge with another road.

(a) Do not try to squeeze into a gap that is too small. Leave yourself enough space.

(b) If you have to cross several lanes, take them one at a time. Filter through traffic. If you stop to wait until all lanes are clear, you will tie up traffic and may cause a collision.

(3) ***Space to cross or enter.*** When you cross through traffic, you need enough room to get all the way across.

(a) Stopping halfway across is only safe when there is a median divider large enough to hold your vehicle.

(b) If you are crossing or turning, make sure there are no vehicles or people blocking the path ahead or the path to the side. You do not want to be caught in an intersection with traffic bearing down on you.

(c) Even if you have a green light, do not start across if there are vehicles blocking your way. If you are caught in an intersection when the light changes, you will block other traffic. In some cities you can get a ticket for this.

(d) Never assume another driver will share space with you. Do not turn into traffic just because an approaching car has a turn signal on. The driver may plan to turn just beyond you. Or, the signal may have been left on from an earlier turn. This is particularly true of motorcycles. Their signals do not cancel by themselves. Wait until the other driver actually starts to turn.

(4) ***Space to pass.*** Whenever you pass another car on a two-lane road, you must enter a lane that belongs to oncoming vehicles. At highway speeds of 50 to 55 MPH, assuming you accelerate to a speed 10 MPH faster than the vehicle you are passing, you will need about 12 seconds to

complete the pass. That means, you need at least a 12 second gap in oncoming traffic to pass safely. You will need 3 to 5 additional seconds to pass a larger vehicle, such as a tractor-trailer. You must judge whether or not you have enough room to pass whenever you approach: an oncoming vehicle, a hill or a curve, an intersection, and a roadway obstruction.

(a) *Oncoming vehicles.* At highway speeds you will travel about 1,000 feet in 12 seconds. So will an oncoming vehicle. That means you need over 2,000 feet or over one-third of a mile to pass safely. It is hard to judge the speed of oncoming vehicles over one-third of a mile away. They do not seem to be coming as fast as they really are. A car that is far enough away generally tends to be standing still. In fact, if you can really see it coming closer, it is probably too close for you to pass.

(b) *Hills and curves.* As already stated, you have to be able to see at least one-third of a mile if you are going to pass safely. Any time your view is blocked by a curve or a hill, you should assume that there is an oncoming vehicle just out of sight. Therefore, you should treat a curve or a hill as you do an oncoming vehicle. That means you should not start to pass if you are within one-third of a mile of a hill or curve.

(c) *Intersections.* It is dangerous to pass when someone is likely to enter or cross the road. Such places include crossroads, railroad crossings, and shopping center entrances. While you are passing, your view of people, cars, or a train is blocked by the vehicle you are passing. Also, a driver turning onto the roadway into the left lane will not expect to find you in his lane. He may not even look your way.

Transparency 4-81

(5) *Lane restrictions.* Before you pass, look ahead for road conditions and traffic that could cause other vehicles to move into your lane. You might lose your space for passing because of:

- People or bikers near the road.
- A narrow bridge.
- A patch of ice, broken pavement, or something on the road.

(6) *Space to return.* Do not pull out to pass unless you know you have enough space to return. Do not count on having enough time to pass several cars at once and upon other drivers making room for you.

- Before you return to the driving lane, be sure to leave enough room between yourself and the vehicle you have just passed.
- One way to do this is to look at the vehicle in the rearview mirror. When you can see the whole front of the vehicle you have just passed, you have enough room to return to the driving lane.

(7) **Roadway markings.** Many roads have lane markings that tell you when you cannot see far enough to pass.

- You may not pass when there is a solid line on your side of the road.
- You may pass if there is a broken line on your side of the road. Pass only if there are no oncoming vehicles in the passing lanes.
- The double yellow broken lines indicate reversible lanes. You cannot cross the lines except at certain times.
- Lane markings and signs can tell you when it is unsafe to pass. Only you can tell when it is safe to pass.

3. SUMMARY.

Transparency 4-82

- Recap Main Points.** Call on students to answer questions presented on Transparency 4-82.
- Allow for Questions.**
- Clarify Questions.**
- Give Closing Statement.** To be a safe driver, you need space all around your vehicle. When things go wrong, space gives you time to think and to take action. To have space available when something goes wrong, you need to manage space.

E. SAFETY RESTRICTIONS. None.

F. ADDITIONAL COMMENTS AND INFORMATION. None.

LESSON TITLE: OPERATE VEHICLE AT NIGHT**A. TRAINING OBJECTIVE**

- TASK:** Know procedures to operate the vehicle at night.
- CONDITIONS:** Given instruction in a classroom.
- STANDARD:** Correctly answer verbal questions when called upon.

B. INTERMEDIATE TRAINING. None.**C. ADMINISTRATIVE INSTRUCTIONS**

1. Training time: Recommended instructional time is 0.5 hours.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for each class of 20 students.
6. Training aids and equipment: Overhead projector, transparencies, and screen.
7. References: FM 21-305.

D. SEQUENCE OF ACTIVITY**1. INTRODUCTION.**

- a. **Interest Device.** You start out at a disadvantage just because it is night. Drivers' night vision simply is not as good as their vision during the day. Also, night is the usual time for a person to sleep. You can more easily become tired or fatigued at night.
- b. **Tie-in.** Reduced visibility, glare from oncoming headlights, and unseen objects in the road all combine to make night driving hazardous.

c. **Lesson Objective.**

ACTION: After this lesson the student will know safety procedures to operate the vehicle at night.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

d. **Procedures.**

(1) *Explanation.*

(2) *Summary.*

2. **EXPLANATION.**

Transparency 4-89

a. **Night Driving Risks.**

(1) Driving at night is more dangerous.

- More than one-half of all traffic accidents occur at night.
- Most fatal accidents occur between sunset and sunrise, even though there is less traffic and fewer miles traveled at night.

(2) Why do so many accidents occur with less exposure?

- Low illumination makes things harder to see which means hazards must be nearer before they can be seen and the closer distance leaves less time to respond.
- Drivers caught by surprise are less able to avoid a collision.

TRANSITION: All three elements of highway traffic system are involved in night driving; driver, roadway, and vehicle.

Transparency 4-90

b. **Night Driving Factors.**

(1) *Driver factors:*

(a) *Vision.* The driver has limited vision at night because--

- Eyes need time to adjust to the change between light and darkness.
- Drivers cannot see as sharply at night (visual acuity).
- Drivers cannot see to the sides as well at night (peripheral vision).
- Different parts of the eyes used to see at night than during the day.

(b) *Glare*. Glare causes temporary blindness, normally from oncoming headlights but sometimes from other lights.

- Due to the physical makeup of the eyes, it takes time to recover from glare blindness (illustrate by pointing out common experience of being temporarily blinded by flashbulbs).
- The rate of recovery from glare varies with individuals from one-half second to several seconds with intense glare (distance traveled in two seconds at 55 MPH is 160 feet). The rate of recovery also increases with age.

(c) *Fatigue*. Driver fatigue is a serious factor at night. Fatigue reduces the ability to see clearly. The driver also becomes less alert and is slower to see hazards (which does not make him react as promptly). Results of fatigue:

- Less time to react.
- Reflexes are slower.
- Much greater chance of collision.

(d) *Driver inexperience*. Newness to driving, coupled with the reduced vision, glare, and fatigue account for the fact new drivers have higher nighttime accident rates than more experienced drivers. What this points to is the need to learn how to adjust speed, space, and driving techniques for night driving conditions.

(2) ***Roadway factors:***

(a) *Low illumination*. Street lights often provide only poor to fair illumination. On most roads, the only illumination is from the driver's headlights. Headlights are useful for a relatively short and narrow path straight ahead of the vehicle. Headlights do not bend around corners.

(b) *Variation in illumination*. The driver must constantly adjust his eyes to different types and degrees of lighting. Flashing lights

distract as much as they illuminate. Traffic signs are hard to see against the background of other lights especially in towns and cities.

(c) *Familiarity with roads.* The driver must be particularly alert on roads that he has never driven during the day. On familiar roads, drivers tend to be overconfident. This is dangerous because--

- The view of the roadway is not the same at night.
- Situations on some stretches will change such as stalled car, fallen tree, and so on.

(d) *Other road users.* The driver must adjust his driving to hazards such as pedestrians, joggers, bicyclists, and animals (transfixed by headlights).

(e) *Drinking drivers.* The chances of encountering drunken drivers increases after sundown. Be especially alert when driving near roadside taverns and similar attractions for pedestrians and drinking drivers coming out of parking lots. Continue to be alert for signs of drinking drivers in early hours of morning after taverns close.

Transparency 4-91

(3) *Vehicle factors:*

(a) *Headlights.* Sight distance is limited to headlights' range. Therefore, the driver must drive at a speed that lets him stop within his sight distance. Dirty, burned out, or maladjusted headlights are unsafe and cause vision problems for the driver and other road users.

(b) *Auxiliary lights.* Other drivers can see vehicles better at night when marker lights, tail lights, and brake lights (also reflectors and clearance lights on trucks) are clean and working properly.

(c) *Turn signals.* The ability to communicate with other drivers depends on turn signals. Nonfunctional or dirty turn signal lights greatly increase the risk of an accident.

(d) *Windshield and wipers.* A clean windshield and properly working wipers are necessary for safe driving.

(e) *Mirrors.* Mirrors help the driver see what is going on around him. Keep them clean and properly adjusted.

Transparency 4-92**c. Night Driving Procedures.****(1) Preparation:****(a) Getting yourself ready.**

- If you wear glasses, be sure they are clean.
- Remove sunglasses.
- Be well rested.

(b) Planning your route.

- Know the location of rest stops (to aid in fighting fatigue).
- Plan for hazards such as unlighted areas, exit ramps, rural roads, taverns, construction areas, and other changes in the highway environment.
- Get information about unfamiliar routes.

(c) Getting the vehicle ready.

- Ensure windshield, mirrors, lights, and reflectors are clean. If needed, clean again during stops, particularly if the weather is bad.
- Ensure all lights are operational.

Transparency 4-93**(2) Driving:****(a) Avoid blinding others.**

- Dim high beams when oncoming vehicles are within 500 feet.
- Do not use high beams to retaliate against other drivers.

(b) Avoid glare.

- Set interior panel lights at the lowest setting to reduce glare.
- Look to the right when oncoming vehicles are using high beams.
- Switch the inside day/night rearview mirror to the night setting.
- Do not smoke while driving. In addition to creating a smoke screen, smoking reduces night vision. It also causes a film to build up on the glass inside the vehicle.

Transparency 4-94

(c) Maximize visibility.

- Use low beams when desired visual range is about 250 feet.
- Use high beams when there are no oncoming vehicles and desired visual range is 350 to 500 feet.

(d) Adjust basic driving techniques.

- Be extra cautious because of reduced vision.
- Signal earlier than during daylight to give other drivers more time to react.
- Increase following distance by at least one second to allow more time to react to hazards.
- Keep speed within sight distance. Do not overdrive headlights.

3. SUMMARY.

Transparency 4-95

a. **Recap Main Points.** Call on students to answer questions presented on Transparency 4-95.

b. **Allow for Questions.**

c. **Clarify Questions.**

d. **Give Closing Statement.** Night driving means reduced visibility. Do not overdrive your vision. Drive at a speed that will let you stop if an object moves into the area of your headlights. You should be well rested and have a clean windshield when you drive at night.

- Twilight or dusk is a dangerous time to drive. When the sun is just below the horizon; glare, shadows, and reduced light will play tricks with your vision. Day becomes night in 15 to 30 minutes. Your vehicle can cover 25 miles during this period.
- Changes in light that occur at sunrise and sunset affect the vision of all drivers. Care and caution is needed.

E. SAFETY RESTRICTIONS. None.

F. ADDITIONAL COMMENTS AND INFORMATION. None.

LESSON TITLE: SAFETY RULES AND PROCEDURES FOR DRIVING UNDER ADVERSE WEATHER CONDITIONS

A. TRAINING OBJECTIVE

TASK: Demonstrate knowledge of procedures for driving under adverse weather conditions (rain, ice, snow, fog, smog, and thunderstorms).

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

B. INTERMEDIATE TRAINING. None.

C. ADMINISTRATIVE INSTRUCTIONS

1. Training time: Recommended instructional time is 0.5 hours.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for each class of 20 students.
6. Training aids and equipment: Overhead projector, transparencies, screen, and student handout at pages 4-112 through 4-118 (sufficient copies should be reproduced prior to scheduled class time).
7. References: FM 21-305.

D. SEQUENCE OF ACTIVITY

1. INTRODUCTION.

a. **Interest Device.** A road that is safe under most conditions is dangerous if it gets slippery. Ice and packed snow can easily induce a skid especially if you are traveling too fast, driving over bridges and hills, around curves, or braking to a stop. If you are forced to drive through standing water or to drive in the rain where the water is deep enough to allow rain bubbles to stand on the surface, you may lose contact with the road surface and hydroplane.

b. **Tie-in.** Bad weather can affect driving by reducing visibility and traction. Either condition can lead to loss of control. If you must drive under adverse weather conditions, it is helpful to have the facts and skills needed to cope with them.

c. **Lesson Objective.**

ACTION: After this lesson the student will know the procedures for driving under adverse weather conditions (rain, ice, snow, fog, smog, and thunderstorms).

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

d. **Procedures.**

(1) *Explanation.*

(2) *Summary.*

2. **EXPLANATION.**

Transparency 4-104

a. **Rains.**

(1) Drizzle or light rains normally fall from the low stratus clouds. The droplets are usually small with only a slight accumulation of moisture on surfaces. This type of rain may create very slick driving surfaces. The first few minutes of a light rain or drizzle causes the oils, chemicals, dirt, and rain to mix, creating a very slick surface. It is recommended extreme caution be used when operating on this type surface. Expect visibility restriction, slippery surfaces, reduced traction, increased stopping distance, and a high probability of skids. ***Corrective action: moderate acceleration, reduce speed, moderate brake application, and make no quick or fast turns.***

(2) Heavy rains or downpours (sometimes called cloudbursts) are very intense rainstorms that are associated with the cumulonimbus cloud formation. The cumulonimbus cloud is a white cloud that builds to a great height. The top forms in the shape of an anvil and is called a thunderstorm by most. These storms usually only last about 30 minutes or less. They produce high winds and blowing objects associated with heavy rains and lightning. The heavy rains create standing water on the roadways, thus increasing the possibility of hydroplaning. Expect poor visibility, reduced

traction, increased stopping distance, and possible loss of directional control. **Corrective action:** *reduce speeds, moderate acceleration, moderate braking applications, and make no quick or fast turns.*

(3) Freezing rains form when moisture falls as rain, and when it comes in contact with a solid object, it freezes. When the ground level temperature is below freezing, it causes the supercooled droplets to freeze on contact. The ice will adhere to the roadway, equipment, and most flat surfaces creating a very hazardous condition for all types of operations. All movement should stop unless life threatening. Expect slippery surfaces, poor visibility, little to no traction, little to no braking action, reduced directional control, and high possibility of skids. **Corrective action:** *stop movement until the condition changes. If movement is a must, it must be at a very slow pace.*

Transparency 4-105

b. Ice.

(1) Ice is a water substance in solid form. Formation is possible anytime moisture is present and the temperature is 32 degrees F or below. Expect bridges and overpasses to become slick or iced over first. Ice creates very hazardous conditions. Expect reduced traction, increased braking distance, poor directional control, and possibility of skids. **Corrective action:** *moderate acceleration, reduce speeds, increase following distances, light braking, and make no quick or fast turns.*

(2) Frost is a covering of minute ice crystals on a cold surface. Frost forms when the surface temperature is at or below dewpoint temperature and the dewpoint temperature is below freezing. Bridges and overpasses tend to give up the heat much quicker than the surrounding areas, thus forming frost before the adjoining roadways and creating a hazardous surface and driving condition. A vehicle operating in a subfreezing air mass going into a warmer air mass may encounter frost. Expect slippery surfaces, reduced traction, reduced directional control, and increased braking distance. Frost often occurs on windshields and may cause a restriction to or total loss of visibility. **Corrective actions:** *reduce speed, moderate braking, moderate turns, and increase following distances.*

(3) Snow is precipitation in the form of small ice crystals formed directly from the water vapor of the air at a temperature of less than 32 degrees F. Snow does not create a major hazard unless there is an accumulation. Expect reduced visibility, reduced traction, less directional control, and increased braking distance. When snow melts and refreezes, a very dangerous driving surface is created. Drivers should be aware of the

dangers of this condition and look for it in areas near intersections, any high traffic areas, and areas that are in direct sunlight and are shaded in the afternoon where the moisture may refreeze. ***Corrective action: reduce speed, moderate braking, moderate turns, and increase following distances.***

Transparency 4-106

(4) Hail is precipitation in the form of small balls or lumps consisting of concentric layers of clear ice or compact snow that fall from cumulonimbus clouds. Expect possible surface damage to the vehicle and a possibility of broken windows from the hail. It normally does not remain on the ground for an extended length of time; therefore, it will only be a short interruption to operations. ***Corrective action: stop operations until storm passes.***

(5) Sleet is frozen or partly frozen rain. Sleet can create a very hazardous surface making driving very dangerous. Expect slippery surfaces, poor traction, increased braking distances, and reduced directional control. ***Corrective action: reduce speed or stop, use very light braking, increase following distances, and make no quick or sudden turns.***

(6) Windshield icing may occur anytime the temperature is low enough and there is sufficient moisture present. Anytime you are operating in cold temperatures and there is visible ground haze, the conditions are present for frost or icing. Expect reduced to no forward visibility through the windshield until the ice is removed. ***Corrective action: use the windshield defroster and scrape windshield as necessary.***

(7) Black ice is a thin sheet of ice, relatively dark in appearance and may be formed when light rain or drizzle falls on a road surface which is at a temperature below 32 degrees F. It may also form when supercooled fog droplets are intercepted by bridges, overpasses, trees, and so on. Expect where shadows exist, the layer of ice is clear enough that you can see the road underneath it. A good indicator of black ice is the road looks wet and temperature is below freezing. Proceed with caution because a surface with black ice is a very dangerous driving surface. Expect little to no traction, little to no braking capability, extremely poor directional control, and high possibility of skids. ***Corrective action: stop operations. If operations must continue, reduce speed, accelerate very slowly, increase following distances, use very light braking action, and make all turns very gradual and slow.***

Transparency 4-107

(8) Glaze (clear ice) is a deposit of ice formed by the freezing of supercooled drizzle droplets or raindrops on surfaces that are 32 degrees F or below. It may also be produced by the freezing of warm light rain or drizzle (non-supercooled) immediately after the impact with surfaces that are well below 32 degrees F. This is a very dangerous driving surface. Expect little to no traction, little to no braking capability, extremely poor directional control, and high possibility of skids. **Corrective action: stop operations. If operations must continue, reduce speed, accelerate very slowly, increase following distances, use very light braking action, and make all turns very gradual and slow.**

(9) Frost heaving is the uneven lifting and distortion of the ground close to the surface. It results from the expansion of water within the soil when the soil reaches temperatures low enough to freeze the ground. This may cause damage to the road surfaces and loosen the roots holding plants and trees. Expect uneven driving surfaces. Interrupted directional control could present a problem on curves at highway speeds. **Corrective action: reduce speed.**

Transparency 4-108

c. Fog.

(1) Fog is a vapor condensed to fine particles of water suspended in the lower atmosphere that differs from a cloud only in being near the ground. Fog makes driving difficult because of the reduced visibility. Visibility may get so bad that driving may be too hazardous to continue. **Corrective action: reduce speed, increase following distances, turn on lights.**

(2) Advection fog forms by the passage of relatively warm, moist, and stable air over a cool surface. It is associated mainly with cool sea areas, particularly in the spring and summer, and may affect adjacent coast. It may also occur over land in winter, particularly when the surface is frozen or snow-covered. Expect reduced visibility. **Corrective action: turn on lights, reduce speed, and increase following distances.**

(3) Upslope fog forms when moist, stable air flows up a sloping land surface. When the air rises, it cools by expansion as the atmospheric pressure decreases. When the expansional cooling is sufficient to lower the temperature of the air to the dewpoint temperature, upslope fog may form. The windspeed must be adequate to support continued upslope motion. If the wind is too strong, the fog may be lifted from the surface, creating an

overcast of low stratus clouds. Expect reduced visibility. ***Corrective action: turn on lights, reduce speed, and increase following distances.***

(4) Valley fog forms during the evening hours when cold dense air drains from areas of higher elevation into low areas or valleys. As the cool air accumulates in the valley, the air temperature may decrease to the dewpoint temperature creating a dense formation of fog. Expect reduced visibility. ***Corrective action: turn on lights, reduce speed, and increase following distances.***

(5) Frontal fog forms when liquid precipitation, falling from the warm tropical air above the frontal surface, evaporates in the colder air below the frontal surface. Evaporation from the falling drops may add sufficient water vapor to the cold air to raise the dewpoint temperature to the temperature of the air. The cold air will then be saturated and frontal fog will form. Frontal fog is common with active warm fronts during all seasons. Frontal fog occurs ahead of the surface front in an area approximately 100 miles wide. Expect reduced visibility. ***Corrective action: turn on lights, reduce speed, and increase following distances.***

(6) Steam fog forms when cold stable air flows over a nonfrozen water surface that is several degrees warmer than the air. The intense evaporation of moisture into the cold air saturates the air and produces fog. Conditions favorable for steam fog are common over lakes and rivers in the fall and over the ocean in the winter when an offshore wind is blowing. Expect reduced visibility. ***Corrective action: turn on lights, reduce speed, and increase following distances.***

(7) Ice fog is suspended ice crystals usually formed with the introduction of water into clear, calm air of low temperature (-37 degrees F or lower). Ice fog is rare at temperatures above -37 degrees F and almost always present at temperatures below -50 degrees F. Ice fog may form over a body of troops, herd of animals, bivouac areas, motor parks, convoys, and gun positions during firing. Reduced visibility is the major hazard to driving. ***Corrective action: turn on lights, reduce speed, and increase following distances.***

(8) Freezing fog is composed of liquid water droplets, but the droplets are in a supercooled state, only forming when the temperature falls below 32 degrees F and freezing as soon as they come in contact with a cold surface. If the surface or roadway is at or below freezing, the fog will form ice, creating a very hazardous condition. Expect reduced visibility, poor traction, increased braking distances, poor directional control, and possible skids. ***Corrective action: turn on lights, reduce speed, accelerate slowly,***

increase following distances, use moderate braking applications, and make no quick or fast turns.

Transparency 4-109

d. Smog.

(1) Smog is a combination of smoke and fog. Water droplets form around solid particles in the atmosphere; therefore, it forms more easily than fog and is slower to clear. Smog may persist for days. Expect reduced visibility. ***Corrective action: turn on lights, reduce speed, and increase following distances.***

(2) Photochemical smog is created completely independent of atmospheric humidity level, being initiated by the action of sunlight on fumes from car exhaust and consists of a mixture of nitrogen dioxide, ozone, and a chemical known as PAN (peroxyacyl nitrate). A combination of these gases causes eye irritation, coughing, and fatigue. Expect reduced visibility. ***Corrective action: turn on lights, reduce speed, and increase following distances.***

e. Dew. Dew forms on objects during clear, still nights when the objects are cooled by radiation to a temperature at or below the dewpoint of the adjacent air. The moisture collects on these objects just like it does on a pitcher of ice water in a warm room. Heavy dew is often observed on grass and plants when there is none on the pavement or on large solid objects. These solid objects absorb so much heat during the day, or give up heat so slowly, that they may not cool below the dewpoint of surrounding air during the night. Bridges and overpasses give up the heat much quicker than the surrounding areas, thus forming dew or frost before the adjoining roadways, creating a slippery surface. Expect reduced traction, increased braking distance, and possible skids. ***Corrective action: reduce speed, accelerate slowly, increase following distances, use moderate braking applications, and make no quick or fast turns.***

Transparency 4-110

f. Thunderstorms.

(1) The cumulonimbus cloud is the key in identifying a thunderstorm. These large billowing clouds carry high moisture content and are associated with high winds of short duration. An average of 44,000 thunderstorms occur daily over the surface of the earth. They almost always consist of strong gusts of wind, severe turbulence, heavy rains, and lightning. During a thunderstorm, hail is uncommon and tornadoes are possible. Most thunderstorms pass within 30 minutes. Expect reduced

visibility, slippery surfaces, reduced traction, increased braking distances, and possible skids. ***Corrective action: use lights, reduce speed, accelerate slowly, increase following distances, use moderate braking applications, and make no quick or fast turns.***

(2) First gust is a hazard associated with thunderstorms. It is the rapid change in direction and windspeed immediately prior to a storm's passage at the surface. The speed of this first gust may exceed 75 knots and vary 180 degrees from the prevailing surface winds. The first gust usually precedes the heavy precipitation and strong gusts may continue for 5 to 10 minutes with each thunderstorm cell. First gusts are not limited to the area ahead of the storm's movement. They may be found in all sectors, including the area back of the storm's movement. Expect high winds, blowing items, and possible sudden crosswinds with high gusts. ***Corrective action: stop until the storm passes. If you must continue, reduce speed and counter steer to compensate for the unexpected gusts.***

3. SUMMARY.

Transparency 4-111

- a. **Recap Main Points.** Call on students to answer questions presented on Transparency 4-111.
- b. **Allow for Questions.**
- c. **Clarify Questions.**

NOTE: PASS OUT STUDENT HAND OUT – WEATHER EVALUATION GUIDE, pages 4-112 through 4-118 (ONE COPY TO EACH STUDENT).

- d. **Give Closing Statement.** Remember that changes in weather conditions will affect the way your vehicle handles and you must be ready to respond. The first rule is to slow down to make up for reduced visibility and reaction time in any kind of bad weather.

E. SAFETY RESTRICTIONS. None.

F. ADDITIONAL COMMENTS AND INFORMATION. None.

LESSON TITLE: HAZARDS**A. TRAINING OBJECTIVE**

- TASK:** Demonstrate knowledge of procedures to deal with traffic hazards.
- CONDITIONS:** Given instruction in a classroom.
- STANDARD:** Correctly answer verbal questions when called upon.

B. INTERMEDIATE TRAINING. None.**C. ADMINISTRATIVE INSTRUCTIONS**

1. Training time: Recommended instructional time is 0.5 hours.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for each class of 20 students.
6. Training aids and equipment: Overhead projector, transparencies, and screen.
7. References: FM 21-305.

D. SEQUENCE OF ACTIVITY**1. INTRODUCTION.**

a. **Interest Device.** In addition to you and your vehicle, one other major element, the environment (surroundings) affects your driving. Your surroundings include the roadway, weather, buildings, trees, hills, and the like. Living beings also must be recognized as part of the environment, with which you must deal. You must recognize and identify the nature of these different parts of your environment if you are to safely operate on the roadways.

b. **Tie-in.** If you do not fit in or blend with other roadway users and environmental features, there will be problems which can mean delays or accidents. Some of what you will see and interpret in your surroundings will be friendly and

some will be neutral. Unfortunately, some will be hazardous or dangerous. By recognizing all of this, you will be able to adjust your driving accordingly.

c. **Lesson Objective.**

ACTION: After this lesson the student will know the procedures to deal with traffic hazards.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

d. **Procedures.**

(1) *Explanation.*

(2) *Summary.*

2. **EXPLANATION.**

Transparency 4-126

a. **Seeing Hazards.**

(1) *Definition of a hazard.* A hazard is any road condition or other road user (driver, bicyclist, pedestrian) that is a possible danger. For example, a car in front of you is headed towards the freeway exit, but his brake lights come on and he begins braking hard. This could mean that the driver is uncertain about taking the off-ramp. He might suddenly return to the highway. This car is a hazard. If the driver of the car cuts in front of you, it is no longer just a hazard; it is an emergency.

(2) *Seeing hazards lets you be prepared.* You will have time to react if you see hazards before they become emergencies. In the example above, you might make a lane change or slow down to prevent a crash if the car suddenly cuts in front of you. Seeing this hazard gives you time to check your mirrors and signal a lane change. Being prepared reduces the danger. Sudden braking or a quick lane change is more likely to lead to a crash.

(3) *Learn to see hazards.* There are often clues that will help you see hazards.

Transparency 4-127

b. **Hazardous Roads.** Slow down and proceed with caution if you see any of the following road hazards:

(1) **Work zones.** When people are working on the road it is a hazard. There may be narrower lanes, sharp turns, or uneven surfaces. Other drivers are often distracted and drive unsafely. Workers and construction vehicles may get in the way. Drive slowly and carefully near work zones. Use 4-way flashers or brake lights to warn drivers behind you.

(2) **Drop off.** Sometimes the pavement drops off sharply near the edge of the road. Driving too near the road's edge can cause your vehicle to wander off the roadway. It may become difficult to steer as you cross the drop off or try to return to the highway. Here are some guidelines, if you do leave the road:

- Keep a firm grip on the steering wheel and keep the car traveling straight ahead.
- Straddle the edge of the pavement. You will need to fight the tendency of the wheels to pull toward the shoulder if it is soft. You also must resist the urge to immediately whip the vehicle back onto the pavement.
- Ease off the accelerator, allowing the car to slow gradually. Avoid braking, if possible, but if braking is necessary, use a gentle squeeze braking application, which will enable you to control steering.
- Move the off-road tires out about 1 1/2 to 2 feet away from the pavement edge.
- When it is safe and your speed is under control, turn the wheel quickly about a quarter turn to the left or right as necessary. The move permits the tire to climb the pavement edge and get back on the roadway.
- As soon as the front tires are back on the roadway, countersteer quickly to maintain your proper lane.

(3) **Foreign objects.** Things that have fallen on the road can be hazards. They can damage your tires, wheel rims, or electrical and brake lines. Some obstacles which appear to be harmless can be very dangerous. For example, cardboard boxes may be empty, but they may also contain some solid or heavy material capable of causing damage. The same is true of plastic trash bags or paper and cloth sacks. It is important to remain alert for objects on the highway. Recognize hazards early and avoid them without making sudden or unsafe moves.

(4) **Off-ramps/On-ramps.** Freeway and turnpike exits can be particularly dangerous for commercial vehicles. Off-ramps and on-ramps often have speed limit signs posted. Remember, these speeds are the maximum safe

speed for passenger cars and may not be safe for larger vehicles or heavily loaded vehicles. Exits which go downhill and turn at the same time can be especially dangerous. The downgrade makes it difficult to reduce speed. Braking and turning at the same time can be a dangerous practice. Make sure you are going slow enough to negotiate the curved part of an off-ramp or on-ramp.

Transparency 4-128

c. **Drivers Who are Hazards.** In order to protect yourself and others, you must anticipate actions of other drivers. Some clues to these types of hazards are discussed below:

(1) ***Blocked vision.*** Be alert for drivers whose vision is blocked. Vans, loaded station wagons, and cars with the rear window blocked are examples. Rental trucks should be watched carefully. Their drivers are often not use to the limited vision they have to the sides and rear of the trucks. In winter, vehicles with frost, ice, or snow covered windows are hazards.

(2) ***Blind intersections or alleys.*** Vehicles may be partly hidden by blind intersections or alleys. If you only can see the rear or front end of a vehicle but not the driver, then the driver cannot see you. Always be prepared to maneuver around them or stop.

(3) ***Delivery trucks.*** Delivery trucks can present a hazard. The driver's vision is often blocked by packages or vehicle doors. Drivers of step vans, postal vehicles, and local delivery vehicles often are in a hurry and may suddenly step out of their vehicle or drive their vehicle into the traffic lane.

(4) ***Parked vehicles.*** Parked vehicles can be hazards when the people start to get out. Or, they may suddenly start up and drive into your path. Watch for movement inside the vehicle or movement of the vehicle. Watch for brake lights or backup lights, exhaust, and other clues that a driver is about to move.

(5) ***Stopped buses.*** Be careful of a stopped bus. Passengers may cross in front of or behind the bus, and they often cannot see you. Approach stopped school buses and bus stops with extreme caution because of the additional danger of small children.

(6) ***Pedestrians and bicyclists.*** Pedestrians and bicyclists can also be hazards. Walkers, joggers, and bicyclists may be on the road with their back to the traffic, so they cannot see you. Sometimes, they wear portable stereos with head sets, so they cannot hear you either. On rainy days,

pedestrians may not see you because of hats or umbrellas. They may be hurrying to get out of the rain and may not pay attention to the traffic.

(7) ***Distractions***. People who are distracted are hazards. If they are looking elsewhere, they cannot see you. Be alert even when they are looking at you. They may believe that they have the right of way. Some examples of this are drivers reading newspapers or magazines, talking on a cellular telephone or CB, putting on makeup, and so on.

(8) ***Children***. Children tend to act quickly without checking traffic. Children playing with one another may not look for traffic.

Transparency 4-129

(9) ***Talkers***. Drivers or pedestrians talking to one another may not be paying close attention to the traffic.

(10) ***Workers***. People working on or near the roadway are a hazard clue. The work creates a distraction for other drivers and the workers themselves may not see you.

(11) ***Vendors***. Vendors include ice cream trucks and sidewalk vendors. People seem to forget there is other traffic when they deal with a neighborhood street vendor. They run or walk across roadways without considering other vehicles. Someone selling ice cream is also a hazard clue. Children may be nearby and may not see you.

(12) ***Disabled vehicle***. Drivers changing a tire or fixing their vehicle often do not pay attention to the traffic. Jacked up wheels or raised hoods are hazard clues.

(13) ***Accidents***. Accidents are particularly hazardous. People involved in the accident may not look for traffic. Passing drivers tend to look at the accident. People often run across the road without looking. Vehicles in your path may slow or stop suddenly.

(14) ***Shoppers***. People in and around shopping areas are often not watching traffic because they are looking for stores or looking into store windows.

(15) ***Confused drivers***. Confused drivers often change direction suddenly or stop without warning. Confusion is common near freeway or major intersections. Tourists unfamiliar with the area can be very hazardous. Clues to tourists include car top luggage and out-of-state license plates. Unexpected actions (stopping, changing lanes, back-up lights suddenly

going on) are clues to confusion. Hesitation is another clue, including driving very slowly, using brakes often, or stopping in the middle of an intersection. You may also see drivers who are looking at street signs, maps, and house numbers. These drivers may not be paying attention to you.

(16) ***Slow drivers.*** Motorists who fail to maintain normal speed are hazards. Seeing slow moving vehicles early can prevent a crash. Some vehicles by their nature are slow and seeing them is a hazard clue (mopeds, farm machinery, construction machinery, tractors, and so on). Some of these may display the “slow moving vehicle” symbol. This is a red triangle with an orange center. Watch for it.

Transparency 4-130

(17) ***Drivers signaling a turn.*** Drivers signaling a turn may be a hazard. They may slow more than expected or even stop. If they are making a tight turn into an alley or driveway they may go very slow. If they are blocked by pedestrians or other vehicles they may have to stop on the roadway. Vehicles turning left may have to stop for oncoming vehicles.

(18) ***Drivers in a hurry.*** Drivers may feel your vehicle is preventing them from getting where they want to go on time. These drivers may pass you without a safe gap in the oncoming traffic, cutting too close in front of you. Drivers entering the road may pull in front of you in order to avoid being stuck behind you, causing you to brake. Watch for drivers who are in a hurry.

(19) ***Impaired drivers.*** Drivers who are sleepy, have had too much to drink, on drugs, or who are ill are hazards. Some clues to these drivers are:

- Weaving from one side of the road to the other or drifting.
- Leaving the road (dropping right wheels onto the shoulder or bumping across a curb in a turn).
- Stopping at the wrong time (stopping at a green light or waiting too long at a stop light or sign).
- Open windows in cold weather.
- Speeds up or slows down suddenly, driving too fast or too slow.

(20) ***Driver body movement.*** Body movement may a clue. Drivers look in the direction they are going to turn. You may sometimes get a clue from a driver’s head and body movements that a driver may be going to make a turn even though the turn signals are not on. Drivers making over-the-shoulder checks may be going to change lanes. These clues are most easily

seen in motorcyclists and bicyclists. Watch other road users and try to anticipate their actions.

(21) **Conflicts.** You are in conflict when you have to change speed and/or direction to avoid hitting something. Conflicts occur at intersections where vehicles meet, at merges (such as turnpike on ramps), and where there are needed lane changes. Other situations include slow moving or stalled vehicles in a traffic lane and accident scenes. Watch other drivers who are in conflict. When they react to this conflict, they may do something that will put them in conflict with you.

3. SUMMARY.

Transparency 4-131

- a. **Recap Main Points.** Call on students to answer questions presented on Transparency 4-131.
- b. **Allow for Questions.**
- c. **Clarify Questions.**
- d. **Give Closing Statement.** You should always be looking for hazards. Learn to recognize hazards on the road. However, do not forget why you are looking for the hazards. They may turn into emergencies. Look for hazards in order to have time to plan a way out of an emergency. When you see a hazard, think about the emergencies that could develop and figure how to avoid it. Always be prepared to take action based on your plans. You need to be a prepared, defensive driver for not only your own safety but the safety of others.

E. SAFETY RESTRICTIONS. None.

F. ADDITIONAL COMMENTS AND INFORMATION. None.

LESSON TITLE: DRIVING EMERGENCIES

A. TRAINING OBJECTIVE

TASK: Demonstrate knowledge of procedures to handle driving emergencies.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

B. INTERMEDIATE TRAINING. None.

C. ADMINISTRATIVE INSTRUCTIONS

1. Training time: Recommended instructional time is 1.0 hour.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for each class of 20 students.
6. Training aids and equipment: Overhead projector, transparencies, and screen.
7. References: FM 21-305 and TC 21-305-100.

D. SEQUENCE OF ACTIVITY

1. INTRODUCTION.

a. **Interest Device.** Emergencies, by definition, happen suddenly – there is little time for evaluation and decision making. As a result, emergencies often lead to panic. However, correct responses to most emergency situations can be learned by thinking through possible emergency situations and mentally rehearsing appropriate responses.

b. **Tie-in.** You might never have an emergency. But, no one is perfect. Chances are something will happen that you do not expect. If you are prepared, you will be able to react correctly and fast enough to avoid an accident.

c. **Lesson Objective.**

ACTION: After this lesson the student will know the procedures to handle driving emergencies.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

d. **Procedures.**

(1) *Explanation.*

(2) *Summary.*

2. **EXPLANATION.***Transparency 4-141*

TRANSITION: Many newer vehicles are equipped with an ABS. The ABS is an advanced electronic braking system that allows the driver to retain control of the vehicle even after slamming on the brakes. The ABS keeps the wheels from locking and prevents the ensuing skid. The ABS can save lives when used correctly, but the system is only as good as the driver. Drivers who do not know how to use the system are endangering themselves and others. Using the ABS incorrectly can increase the chances of having an accident.

a. **Using and Understanding the ABS.** Here is how the ABS works. Let us say the road is wet and you are driving safely. Suddenly an animal jumps out in front of you and you slam on the brakes. Here is what happens with the ABS:

- A computer senses the wheels are slowing down.
- If one of the wheels is about to stop rolling, the computer will separately work the brakes at each front wheel and at the rear wheels.
- The ABS can change the brake pressure faster than any driver could.
- The computer is programmed to make the most of available tire and road conditions. You can steer around the obstacle while braking hard.
- As you brake, your computer keeps receiving updates on wheel speed and controls braking pressure accordingly.

(1) Still need reaction time. Remember, using anti-lock brakes does not change the time you need to get your foot up to the brake pedal. If you get too close to the vehicle in front of you, you will not have time to apply your brakes if that vehicle suddenly slows or stops. Always leave enough room up ahead to stop, even though you have anti-lock brakes.

(2) To use the ABS:

- Do not pump the brakes.
- Just hold the brake pedal down and let the ABS work for you.
- You may feel the brakes vibrate, or you may notice some noise, but this is normal.

Transparency 4-142

(3) Braking in emergencies.

- Use the ABS when needed.
- With the ABS, you can steer and brake at the same time.
- In many emergencies, steering can help you more than even the very best braking.

(4) Rear wheel ABS only.

- Some vehicles (mostly light trucks) are equipped with the ABS on the rear wheels only.
- With these vehicles you must remember that the front wheels have conventional brakes and they can lock up or slide causing you to lose steering control.
- If this happens, release enough pressure on the brakes to get the wheels rolling again so that you can steer.

Transparency 4-143

TRANSITION: Roads that are safe under normal conditions are dangerous when slippery. Ice and snow can easily cause you to skid. Traveling too fast, driving over bridges and hills, around curves, or braking to a stop are dangerous on slippery roads. When driving through standing water, tires may lose contact with the road surface and hydroplane.

b. **Handling Slippery Surfaces.** If you find yourself in any reduced traction situation, do the following:

- (1) Do not make any quick changes in speed or direction.
- (2) Take your foot gradually off the gas pedal.
- (3) Shift to neutral.
- (4) Keep the steering wheel straight. If you have to turn, do it slowly and only as much as you have to.

- (5) If you have to use your brakes, push brakes to friction point and release.

Transparency 4-144

- (6) Do not try to stop rapidly or quickly until your tires are gripping the road again.

- (7) If the vehicle begins to skid, here is how to get out of the skid:

- Stay off the brake. If you hit the brakes, your wheels will lock, and that makes the skid worse.
- Turn quickly. Turn the steering wheel in the direction you want the vehicle to go. This lines the front of the vehicle up with the back.
- Countersteer – turn back the other way. As soon as the vehicle begins to straighten out, turn the wheel back the other way so that the vehicle will not turn too far. If you do not turn the wheel back in time, you will start a new skid.
- Continue to correct your steering, left and right, until you recover from the skid.
- Turn back to straight ahead.

- (8) When under control, return the transmission to a driving gear so that the engine speed matches the road surface.

- (9) If you cannot control your vehicle on a slippery surface, try to find something to stop you. Try to get the wheels on dry pavement or on the shoulder of the road, or slowly edge into a snowbank or bushes.

Transparency 4-145

TRANSITION: Four small patches of rubber, altogether about one square foot, provide all the contact your vehicle has with the road. When it looks as if a collision may happen, many drivers simply hit the brakes. This locks the wheels and puts the vehicle into a skid. Braking might be the right thing to do, but it is not the only option.

- c. **Avoiding Collisions.** To avoid a collision, a driver can stop quickly, turn quickly, or speed up quickly.

- (1) ***Stopping quickly.*** The quickest way to stop on a smooth hard road surface is to press down hard on the brake pedal to just short of lockup. This procedure allows you to continue steering. Here is the way to do it:

- Push the brake pedal down firmly to just short of lockup.
- If the vehicle begins to skid, let up slightly on the brake pedal.

- Squeeze down on the brake pedal again to a point just short of lockup and hold.
- Continue this squeezing action until the vehicle has stopped.
- This method of braking is much more effective than pumping the brakes, which can be dangerous if your vehicle has an ABS.

Transparency 4-146

(2) ***Turning quickly.*** If you cannot stop in time to avoid hitting something, steer around it. Running off the road is usually safer than hitting another vehicle. If you must brake while you turn, squeeze the brake pedal gently to lessen the chance of a skid, particularly if you are turning onto a soft shoulder. At 45 MPH, it takes less than half the time and distance to steer around a problem than to stop a vehicle completely. To turn quickly –

- Keep both hands on the steering wheel. Hold it correctly by placing your hands on opposite sides of the wheel at the 3 and 9 o'clock positions. Get used to holding the steering wheel this way all the time. (For vehicles equipped with air bags, it is better to hold the wheel lower like the 4 and 8 o'clock positions. The reason for this is so that on impact, the air bag does not push your hands away from the steering wheel.)
- To avoid an obstacle, turn the wheel 180 degrees (1/2 turn) away from the obstacle, very quickly, without removing either hand.
- As you clear the obstacle, turn the wheel 360 degrees (one full turn) in the opposite direction.
- As you center in the lane, turn the wheel 180 degrees back to the normal hand position.
- Once you have turned away from something, you must be ready to turn back again. Many people steer away from one collision only to end up in another.

(3) ***Speeding up quickly.*** Sometimes it is necessary to speed up quickly to avoid a collision. This may happen when another vehicle is about to hit you from the side or from behind.

- In a vehicle with a manual transmission, shift quickly into a lower gear and push the gas pedal to the floor.
- If the vehicle has an automatic transmission, just push the gas pedal all the way to the floor and the vehicle will shift gears automatically.

d. **Handling Vehicle Emergencies.** No matter how well you take care of your vehicle, there is still a chance of vehicle failure. Transparencies 4-147 through 4-150 identify some of the more serious vehicle failures and what to do about them.

NOTE: Briefly discuss the items presented on transparencies 4-147 through 4-150.

Transparency 4-147

- (1) ***Brake failure.***

Transparency 4-148

- (2) ***Blowout.***

Transparency 4-149

- (3) ***Power steering failure.***
(4) ***Headlight failure.***

Transparency 4-150

- (5) ***Accelerator sticks.***
(6) ***Hood latch failure.***

Transparency 4-151

e. **Emergencies and Restraint Systems.** You are in better shape to handle any emergency if you are wearing your seat belt and shoulder strap. If you wear just a seat belt or shoulder strap your chances of coming out of a collision alive are about twice as good than if you were using no restraint. Your chances are even better when your vehicle is equipped with facial air bag(s) and you are wearing a seat belt and shoulder strap.

- (1) ***Safety belts.***

(a) They keep you from being thrown from the vehicle. Your chances of surviving a crash are up to five times greater if you stay inside the protection of your vehicle.

(b) They slow your body down with your vehicle. If you are not wearing a safety belt and have a collision, here is what happens:

- Your vehicle stops but you keep going at the same speed you were traveling, until you hit the dashboard or windshield.
- At 30 MPH, this is like hitting the ground from the top of a three-story building.

(c) Safety belts also help the driver control the vehicle. Here is how:

- They keep you from moving around on the seat at sudden stops and turns. They keep you behind the wheel no matter what happens. You cannot control your vehicle if you slide from behind the wheel.
- They keep you seated behind the steering wheel. This allows you to steer after a collision.
- If you were struck from the side, the impact could push you across the seat. Belts and straps keep you in position so you can control the vehicle.

(d) They do help you stay alert by keeping you from slouching while you drive. They also help to keep you from getting tired by cutting down on the effort needed to keep your body in the seat as the vehicle bounces or turns.

(e) The only way safety belts can do all these things is if they are buckled. There is no time to buckle them when an emergency happens. Buckle up before you start the vehicle.

(f) Use safety belts properly. Keep the lap belt fairly tight, but comfortably across your lap and hips. Adjust the shoulder strap just loose enough to let your fist go between the belt and your chest. If you wear your safety belts like this, they will be comfortable and they will give you plenty of protection.

(g) Modern safety belts are better designed than earlier models. As a result, safety belts may be used more easily and comfortably than before.

(h) The value of safety belts is so great that states have enacted mandatory seat belt laws.

Transparency 4-152

(2) ***Facial air bags.*** Recently manufactured vehicles have a facial air bag for the driver, while newer vehicles also have an air bag for the front seat passenger. Air bags reduce facial injuries when used with safety belts. Here are the most important things to know about the facial air bag system:

- You can be severely injured or killed in a crash if you are not wearing your safety belt – even if you have an air bag. Wearing your safety belt during a crash helps reduce your chance of hitting things inside the vehicle or being ejected from it.
- The air bag is only a “supplemental restraint.” That is, it works with safety belts but does not replace them.
- Air bags are designed to work only in moderate to severe crashes where the front of your vehicle hits something. They are not designed to inflate at all in rollovers or rear, side, or low-speed frontal crashes.
- Everyone in your vehicle, including the driver, should wear a safety belt properly – whether or not there is an air bag for that person.
- Air bags inflate with great force, faster than the blink of an eye. If you are too close to an inflating air bag, it could seriously injure you. Safety belts help keep you in position for an air bag inflation in a crash. Always wear your safety belt, even with an air bag, and sit as far back as you can while still maintaining control of your vehicle.

(3) ***Side-impact air bags.*** Most recently, some vehicle manufacturers have been installing side-impact air bags on their vehicles. As the name suggests, they are suppose to protect occupants from collision from the side. There is not enough data at this time to determine if or how much safer a vehicle is that is equipped with side-impact air bags.

(4) ***Head restraints.*** Padded head restraints reduce the risk of whiplash in the event of a collision from the rear. If your vehicle has adjustable head restraints, adjust them to the proper height. Normally, the top of the head restraint should be slightly above your ears or at the back of your head, not at the base or curve of your neck.

(5) ***Child safety seats.*** If you have small children, or frequently drive with small children, buying a safety seat would be the ideal thing to do. All states have mandatory child restraint laws which require children, generally up to age four, to be secured in car seats and older children with safety belts.

Transparency 4-153

f. **Protecting Yourself in a Collision.** You may not always be able to avoid a collision. Try everything you can to keep from getting hit. If nothing works, try to keep the injury from being too serious. Through the application of controlled braking and steering, try to collide with the object at an angle.

(1) ***Hit from the rear.*** If you are about to be hit from the rear:

- Be ready to apply your brake so that you will not be pushed into another vehicle.
- If your vehicle has head restraints, press the back of your head firmly against the head restraint.

(2) ***Hit from the side.*** If you are about to be hit from the side:

- Accelerate so that you will be hit behind the rear wheels.
- Get ready to steer quickly so that if you spin around you can try to control the vehicle.
- Brace yourself with the steering wheel to keep from being thrown against the side of the vehicle.

(3) ***Hit from the front.*** If you are about to be hit from the front:

- If you are wearing a shoulder strap, use your arms and hands to protect your face.
- If you are not using a shoulder strap (lap belt only), throw yourself across the seat so that you do not hit the steering column or the windshield.

3. SUMMARY.

Transparency 4-154

- a. **Recap Main Points.** Call on students to answer questions presented on Transparency 4-154.
- b. **Allow for Questions.**
- c. **Clarify Questions.**
- d. **Give Closing Statement.** The best way to handle an emergency is to keep it from happening in the first place. That sounds simple, but most emergencies happen because of driver error. If one or more drivers or other roadway users do something unsafe, an emergency can occur. Obviously, the more emergencies we meet, the greater the risk of collision. Sooner or later, if involved in enough emergencies, a driver will have an accident. Experienced drivers reduce the likelihood of emergencies by employing the skills and knowledge presented in this lesson.

E. SAFETY RESTRICTIONS. None.

F. ADDITIONAL COMMENTS AND INFORMATION. None.

LESSON TITLE: TRAILER OPERATION**A. TRAINING OBJECTIVE**

- TASK:** Know the procedures to safely operate a vehicle with trailer.
- CONDITIONS:** Given instruction in a classroom.
- STANDARD:** Correctly answer verbal questions when called upon.

B. INTERMEDIATE TRAINING. None.**C. ADMINISTRATIVE INSTRUCTIONS**

1. Training time: Recommended instructional time is 0.5 hours.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for each class of 20 students.
6. Training aids and equipment: Overhead projector, transparencies, and screen.
7. References: FM 21-305, TC 21-305-8, and vehicle operator's (or owner's) manual.

D. SEQUENCE OF ACTIVITY**1. INTRODUCTION.**

- a. **Interest Device.** Many drivers tow boats, campers, or other kinds of trailers behind their passenger cars, vans, or pick-up trucks. Before any driver tows any one of these trailers, it is important to learn the special skills necessary for their operation.
- b. **Tie-in.** Regardless of how skillful you are with a vehicle, you must acquire new skills when hauling a trailer. The movements of a trailer depend almost entirely on the driver.

c. **Lesson Objective.**

ACTION: After this lesson the student will know the procedures to safely operate a vehicle with trailer.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

d. **Procedures.**

(1) *Explanation.*

(2) *Summary.*

2. **EXPLANATION.**

TRANSITION: If you have never hauled a trailer, have had limited experience, or are buying or renting an unfamiliar trailer, ask the dealer to demonstrate hitch attachment and maneuvering. Practice in a vacant parking lot and on a lightly traveled roadway before venturing into heavy traffic or onto a high speed highway. There are specific skills essential for safe operation in pulling a trailer.

Transparency 4-163

a. **General Driving Procedures.** When driving the towing vehicle and trailer, keep the overall length of the unit in mind when passing other vehicles and turning. Before operating a vehicle with trailer, always check towing connections to include safety chains for security and lights and brakes for proper operation. Safely towing a trailer requires increased concentration, alertness, and strict compliance with towing speeds.

(1) Trailers have a tendency to fishtail or swerve very easily when the driver makes an erratic movement of any magnitude. This can be caused by–

- Speed.
- A slight swerve to miss a pothole.
- A quick lane change.
- A slip of the hand on the steering wheel.
- Rough or uneven road.

Transparency 4-164

(2) To prevent trailer fishtail or swerve–

- Never exceed the recommended speed for the trailer that you are towing.
- Never exceed the trailer's maximum recommended weight capacity.
- Always slow down for curves, wet or rough roads, or downgrades.
- Anticipate all stops to take longer as a result of the added weight. Brake early and gently. Do not slam on the brakes.
- On downgrades, slow down before starting downhill. Use a lower gear. Let the engine compression help slow the vehicle.

(3) To correct trailer fishtail or swerve–

- Steer straight ahead.
- Gradually decelerate.
- Do not brake until both the towing vehicle and trailer have stabilized.

Transparency 4-165

b. **Starting.** Bear in mind that maneuverability and acceleration are greatly reduced with a trailer.

- Check traffic carefully and signal before moving.
- Allow a much greater gap before pulling into traffic.
- Start slowly and observe other traffic movement frequently in the mirrors.
- When accelerating from a stop, check both side mirrors to ensure the trailer is not overriding into an adjoining lane of traffic.

c. **Turning Corners.** Allow for the fact that the trailer wheels turn inside the turning radius of the towing vehicle.

(1) To make a right turn–

- Check traffic ahead, to the rear, and to the right side.
- If not in the right-hand lane, be sure that lane is clear, signal, and move into the lane well in advance of the turn.
- Signal for the turn at least 150 feet in advance and reduce speed.
- Check other traffic that is in, at, or approaching the intersection. (Be sure there is no bicycle or motorcycle to the right. Be especially alert for pedestrians.)
- Take a position farthest from the curb or edge of the pavement than you would if driving your car or light truck.

- Drive the towing vehicle straight ahead until the front wheels are well past the curb line (the position of the vehicle at the curb line depends on the length of the trailer). Then cut sharply to the right. This will keep the trailer wheels off the curb.
- During the turn, monitor the right mirror for off-tracking and proper vehicle clearance.
- Keep the vehicle close enough to the edge of the road or curb to prevent following vehicles from trying to pass on the right.
- If swinging wide to the left or oncoming lane, watch oncoming vehicles.
- After completing the turn, cancel the signal.
- When it is safe to do so, steer the vehicle into the desired lane (four-lane roads).

(2) To make a left turn–

- Check traffic ahead, to the rear, and to both sides.
- Signal for the turn at least 150 feet in advance and reduce speed.
- Check other traffic that is in, at, or approaching the intersection.
- Ensure there is an adequate gap to make a turn in front of traffic.
- Before turning, drive the towing vehicle into the center of the intersection to allow for the trailer.
- Turn hard to the left. Watch for oncoming traffic, if applicable.
- During the turn, monitor the mirrors for off-tracking.
- After completing the turn, cancel the signal.
- When it is safe to do so, steer the vehicle into the desired lane (four-lane roads).

Transparency 4-166

d. **Passing.** When executing this maneuver, allow much more distance because of the overall length and weight of the towed vehicle.

- Be sure there is ample, clear distance ahead.
- Check the blind spots to the left and right before starting.
- Turn gently, guard against sudden swerves that may cause the trailer to tilt or sway and possibly make you lose control.
- After passing, observe the overtaken vehicle in the rear-view mirror for clearance before you signal and move back into the right lane.

e. **Being Overtaken.** Your speed may be lower than that of other highway users.

(1) In the case of light vehicles, the situation is the same as when you are driving the car without a trailer.

- When a large vehicle overtakes you, the air it displaces will tend to push your trailer.
- Be aware of this possibility and be prepared to adjust steering to help maintain control.

(2) If you notice vehicles piling up behind you, the courteous thing to do is to find a place to stop and pull off the roadway so other vehicles may pass. Use the stop as an opportunity to recheck your connections and hitch.

Transparency 4-167

f. **Driving Around Curves.**

(1) On roads curving to the right, more distance must be allowed from the edge of the pavement, or the wheels of the trailer may drop to the shoulder, causing a dangerous sway and unnecessary tire wear. Keep toward the center line.

(2) On left turns, keep to the right to prevent the trailer from crossing the center line. Reducing speed before entering curves will provide better vehicle control.

g. **Slowing and Stopping.** Realize that stopping requires much more distance when pulling a trailer.

(1) If the trailer is not equipped with brakes, the entire unit (vehicle and trailer) must be stopped by the brakes on the towing vehicle.

(2) If the trailer is brake-equipped, then the application from the foot brake controls the trailer brake. (In some applications you have an electric brake on the trailer that is controlled by an electric switch mounted in the towing vehicle.)

(3) Practice before entering traffic to be sure the trailer brakes are adjusted to the load.

- Naturally, you must maintain a much greater following distance than usual.
- Planning ahead should lessen the need for sudden slow-downs or stops.
- Avoid high speed lanes on highways and allow for unfavorable road and weather conditions.

Transparency 4-168

h. **Backing a Trailer.** This maneuver causes the most difficulty for the new trailer operator. The most important thing to remember is to avoid backing if possible, even if you must go around the block to do so. However, you still must learn how to back.

(1) Get out of the vehicle and check the area to the sides, rear, underneath, and overhead for obstructions.

- Back slowly, turning the steering wheel to the right to go left and turning it to the left to go right.
- A useful technique is to turn the steering wheel in the proper direction and then straighten it – turn again and straighten as the trailer responds to the action of the vehicle.

(2) Two errors to avoid are turning the steering wheel too much and holding it in the turned position too long.

- Holding the steering wheel too long can cause the trailer and vehicle to jackknife.
- Holding the steering wheel at the bottom will help you better decide which direction to turn it.

(3) Whenever you back into a position where a turn is required, you will find it easier to back in such a way that the trailer turns toward the left side (sight side) of your vehicle so you can look over your left shoulder.

- This is much easier than negotiating the backing maneuver from the opposite direction, where the trailer turns toward the right side of the vehicle (blind side).
- This may mean going around the block to come down the street from the opposite direction to back into a driveway.

(4) Some people can back a trailer almost perfectly by using outside mirrors.

- Others find it helpful to open the vehicle door and look back.
- When mirrors do not show the action of the trailer, stick your head out the window to see.

(5) It will help if you have another person guide you as you back.

- Even an expert appreciates assistance in this difficult task.
- Practice is essential, particularly in developing the skill necessary to place the trailer in a parking space.

Transparency 4-169

i. **Laws and Regulations for Trailers.** The use of trailers, especially as it applies to registration, insurance, brake requirements, lights, reflectors, towing hitches, safety chains, speed, and weight and size limits, involve driver and owner responsibility. Make sure you check state regulations (and military) for any special requirements in each state where you travel.

j. **Care and Maintenance.** Since the vehicle (car, van, or pick-up) used for trailer hauling is performing a service for which it was not intended, extra care must be taken in its operation and maintenance.

(1) Radiators must be able to work at full capacity.

(2) Oil changes and proper chassis and running gear lubrication are needed more frequently.

(3) Tires carry a greater load than normal, so acceleration and braking will cause extra wear. Even heavier tires and added air pressure will not eliminate the problem entirely.

(4) Springs, shackles, and wheel bearings of the trailer need lubrication.

(5) Thorough inspection of the frame, hitch, and wheels should be made at regular specified intervals.

(6) Electricity from the vehicle battery operates additional trailer lights (stop, clearance, turn, and brake lights). In some cases, electrical brakes come from the vehicle battery. Therefore, it is essential the battery be fully charged.

3. SUMMARY.

Transparency 4-170

- a. **Recap Main Points.** Call on students to answer questions presented on Transparency 4-170.
- b. **Allow for Questions.**
- c. **Clarify Questions.**
- d. **Give Closing Statement.** Most vehicles towing trailers are longer, higher, and wider than passenger vehicles. They accelerate and stop much slower and require more room to turn. Remember – towing a trailer or boat requires special skill, as well as consideration on the part of each driver.

E. SAFETY RESTRICTIONS. None.

F. ADDITIONAL COMMENTS AND INFORMATION. None.

LESSON TITLE: ACCIDENT PROCEDURES**A. TRAINING OBJECTIVE**

- TASK:** Demonstrate knowledge of procedures for handling accidents.
- CONDITIONS:** Given instruction in a classroom.
- STANDARD:** Correctly answer verbal questions when called upon.

B. INTERMEDIATE TRAINING. None.**C. ADMINISTRATIVE INSTRUCTIONS**

1. Training time: Recommended instructional time is 0.5 hours.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for each class of 20 students.
6. Training aids and equipment: Overhead projector, transparencies, and screen.
7. References: FM 21-305.

D. SEQUENCE OF ACTIVITY**1. INTRODUCTION.**

a. **Interest Device.** No matter how safe you drive, chances are someday you will be involved in an accident. Regardless of who is at fault, it is important that you know what to do.

b. **Tie-in.** If you are in an accident and not seriously hurt you need to act to prevent further damage or injury. The legal steps you are required to take at any accident are as follows: Step 1 - protect the area; Step 2 - notify authorities; Step 3 - care for injured; and Step 4 - collect information. (The above steps are not necessarily performed in that order. Each accident must be assessed to determine what should be done and in what order.)

c. **Lesson Objective.**

ACTION: After this lesson the student will know the procedures for handling accidents.

CONDITIONS: Given instruction in a classroom.

STANDARD: Correctly answer verbal questions when called upon.

d. **Procedures.**

(1) *Explanation.*

(2) *Summary.*

2. **EXPLANATION.**

Transparency 4-175

a. **Protect the Area.** The first thing to do at the scene is to keep other accidents from happening. Do the following to protect the accident area:

(1) If your vehicle is involved in the accident, try to get off the road. This will help prevent another accident and allow traffic to move. (Even before the arrival of police, you may move the vehicles if they are a traffic hazard.)

(2) If you are stopping to help, park away from the accident. The area immediately around the accident will be needed for emergency vehicles.

(3) Put on your flashers.

(4) Set out reflective triangles or flares (if you have these emergency items) to warn other traffic. Make sure they are located in an area where other drivers can see them in time to avoid the accident.

b. **Notification of Authorities.** Notify authorities (civil or military depending on who has jurisdiction) for emergency services (police, ambulance, rescue, or fire fighting). If you have a cellular telephone, call the emergency help number or the local emergency information number (or if you have a CB, call the emergency channel), before you get out of your vehicle if possible. If not, wait until after the accident scene has been properly protected, then telephone or send someone to telephone the police. Try to determine the exact location of the accident.

c. **Care for Injured.** If a qualified person is at the accident scene and helping, stay out of the way unless asked to assist. Otherwise, do the best you can to help any injured parties. Follow these procedures when giving assistance:

- (1) Do not move an injured person from a wrecked vehicle unless you have the necessary medical training or there is another immediate danger, such as a fire.
- (2) Stop heavy bleeding by applying direct pressure to the wound.
- (3) Keep the injured person warm.

d. **Collect Information.**

- (1) Exchange information with other people involved in the accident.
 - Name, address, and driver's license number of other drivers.
 - License plate numbers of other vehicles.
 - Names and addresses of any people who were injured.
 - Names and addresses of any witnesses.
 - Name, address, insurance company, and insurance policy number from other vehicle owners.
- (2) Be exact. (Spell names correctly. Give street addresses by number. State visible damage. Note the date and time of the accident and road conditions that may have contributed to the accident. Show exactly where vehicles were before and after the accident and what obstacles blocked the driver's view.)
- (3) Give no opinion about who was at fault. Be polite. Try to get all the necessary information.

Transparency 4-176

e. **Unattended Vehicles.**

- (1) You must make a reasonable effort to find the owner of an unattended vehicle or other property that may be damaged as a result of an accident.

(2) If no one can be located, leave a note that can easily be found at the scene of the accident.

- Include your name, address, driver's license number, the date and time of the accident, and an estimate of the damage.
- You must also report the accident to the police (normally within 24 hours).

f. Arriving at an Accident.

(1) Someday you may come upon the scene of a traffic accident in which there are serious injuries and people who need help immediately.

(2) If police or medical help is already there, do not complicate the situation by stopping or blocking the roadway to see what has happened. Move on as officers direct.

(3) If you are the first one there, you should stop and try to do everything you can to help the victims.

(4) Even if you have no knowledge of first aid, you can still be of assistance by warning other traffic and sending someone for help.

(5) Do what you can, then wait for qualified help to arrive.

3. SUMMARY.

Transparency 4-177

a. **Recap Main Points.** Call on students to answer questions presented on Transparency 4-177.

b. **Allow for Questions.**

c. **Clarify Questions.**

d. **Give Closing Statement.** If you are involved in a motor vehicle accident, take certain steps to protect your own interest and to aid others involved in the accident. Remember all motor vehicle accidents must be reported to police.

E. SAFETY RESTRICTIONS. None.

F. ADDITIONAL COMMENTS AND INFORMATION. None.

GLOSSARY

ABS anti-lock braking system
AFIF Armed forces information films
AMV Army motor vehicle
AR Army regulation
ARNG Army Reserve National Guard
ASAP as soon as possible
ATTN attention
BAC blood alcohol concentration
CB citizens band (radio)
CONUS continental United States
DA Department of the Army
D.C. District of Columbia
DRL daytime running light
F Fahrenheit
FM field manual
GT general technical
HN host nation
MOS military occupational specialty
MPH miles per hour
No. number
OCONUS outside continental United States
OJT on-the-job training
PAN peroxyacyl nitrate
PIN production identification number
PMCS preventive maintenance checks and services
POV privately owned vehicle
Qty quantity
rqr requirement
SOFA (page 4-43) - Status of Forces Agreement
SOP standing operating procedure
SPC specialist
TC training circular
TF training film
TM technical manual
TVT training videotape
US United States (of America)
USAR United States Army Reserve
VCR video cassette recorder
VT videotape

REFERENCES

SOURCES USED

These are the sources quoted or paraphrased in this publication.

- *AR 385-55. *Prevention of Motor Vehicle Accidents*. 12 March 1987.
- *AR 600-55. *The Army Driver and Operator Standardization Program (Selection, Training, Testing, and Licensing)*. 31 December 1993.
- DA Form 348. *Equipment Operator's Qualification Record (Except Aircraft)*. October 1964.
- DA Form 2028. *Recommended Changes to Publications and Blank Forms*. February 1974.
- **"Battle on the Highways". *Countermeasure*. Volume 16, Number 6, June 1995.
- *DA Pamphlet 738-750. *Functional Users Manual for the Army Maintenance Management System (TAMMS)*. 1 August 1994.
- *FM 21-305. *Manual for the Wheeled Vehicle Driver*. 27 August 1993.
- *TC 21-305-100. *The Military Commercial Driver's License Drivers Manual*. **

DOCUMENTS NEEDED

These documents must be available to the intended users of this publication.

- TC 21-305-1. *Training Program for the Heavy Expanded Mobility Tactical Truck (HEMTT)*. 3 October 1995.
- TC 21-305-2. *Night Vision Goggles: Training Program for Night Vision Goggle Driving Operations*. 14 November 1990.
- TC 21-305-3. *5-Ton Tactical Cargo Vehicle: Training Program for the M939 Series 5-Ton Tactical Cargo Vehicle (M923 and M924)*. 10 December 1990.
- TC 21-305-4. *Training Program for the High Mobility Multipurpose Wheeled Vehicle*. 31 May 1991.
- TC 21-305-5. *Training Program for Equipment Transporters (C-HET, MET, and LET)*. 12 December 1991.
- TC 21-305-6. *Training Program for the Tractor and Semitrailer (M915, M931 and M932)*. 31 December 1991.
- TC 21-305-7. *Training Program for Light Vehicles*. 16 September 1992.
- *TC 21-305-8. *Training Program for Medium Vehicles*. 16 September 1992.
- TC 21-305-10. *Training Program for the Palletized Load System*. 20 September 1994.

*This source was also used to develop this publication.

**This publication is scheduled to be available first quarter FY 97 through the Pinpoint Publications Distribution System.

INDEX

ABS (using and understanding), 4-133 and 4-134, 4-141 and 4-142
 accident procedures, 4-171 through 4-177
 arriving at an accident, 4-174, 4-176
 care for injured, 4-173, 4-175
 collect information, 4-173, 4-175
 notification of authorities, 4-172, 4-175
 protect the area, 4-172, 4-175
 recap main points, 4-177
 unattended vehicles, 4-173 and 4-174, 4-176
 accident risk assessment, 3-4
 adjust seat and mirrors, 4-31, 4-38
 administrative data, 1-1
 alcohol and driving, 4-3 through 4-5, 4-10 and 4-11
 alertness, 4-3, 4-9
 arriving at an accident, 4-174, 4-176
 avoiding collisions, 4-135 and 4-136, 4-145 and 4-146
 backing a trailer, 4-160 and 4-161, 4-168
 be ready to drive, 4-2 and 4-3, 4-8
 being overtaken, 4-159, 4-166
 care and maintenance (trailer operation), 4-161, 4-169
 care for injured, 4-173, 4-175
 clear windows and mirrors, 4-30 and 4-31, 4-38
 collect information (accident procedures), 4-173, 4-175
 communicating means, 4-41, 4-46
 communication, 4-40 through 4-53
 communicating means, 4-41, 4-46
 keep your vehicle where it can be seen, 4-43, 4-49
 recap main points, 4-53
 signal when changing direction, 4-44 and 4-45, 4-51
 signal when slowing down or stopping, 4-45, 4-52
 using emergency signals, 4-43 and 4-44, 4-50
 using headlights, 4-41 and 4-42, 4-47
 using horn, 4-42 and 4-43, 4-48
 conditions affecting safe speed, 4-55 and 4-56, 4-61
 course summary, 2-1
 dew, 4-102, 4-109
 drivers who are hazards, 4-122 through 4-125, 4-128 through 4-130
 driving around curves, 4-159, 4-167
 driving emergencies, 4-132 through 4-154
 avoiding collisions, 4-135 and 4-136, 4-145 and 4-146
 emergencies and restraint systems, 4-137 through 4-139, 4-151 and 4-152
 handling slippery surfaces, 4-134 and 4-135, 4-143 and 4-144
 handling vehicle emergencies, 4-136 and 4-137, 4-147 through 4-150

- protecting yourself in a collision, 4-139 and 4-140, 4-153
- recap main points, 4-154
- using and understanding the ABS, 4-133 and 4-134, 4-141 and 4-142
- effect of speed and stopping distance, 4-57, 4-63
- emergencies and restraint systems, 4-137 through 4-139, 4-151 and 4-152
- emotions, 4-6, 4-13
- fog, 4-100 through 4-102, 4-107 and 4-108
- general driving procedures (trailer operation), 4-156 and 4-157, 4-163 and 4-164
- handling slippery surfaces, 4-134 and 4-135, 4-143 and 4-144
- handling vehicle emergencies, 4-136 and 4-137, 4-147 through 4-150
- hazardous roads, 4-121 and 4-122, 4-127
- hazards, 4-119 through 4-131
 - drivers who are hazards, 4-122 through 4-125, 4-128 through 4-130
 - hazardous roads, 4-121 and 4-122, 4-127
 - recap main points, 4-131
 - seeing hazards, 4-120, 4-126
- ice, 4-98 through 4-100, 4-105 through 4-107
- illness, 4-6, 4-13
- keep your vehicle where it can be seen, 4-43, 4-49
- laws and regulations for trailers, 4-161, 4-169
- looking ahead, 4-26 and 4-27, 4-33
- looking behind, 4-28 through 4-30, 4-36 and 4-37
- looking to the sides, 4-27 and 4-28, 4-34 and 4-35]
- manage space, 4-68 through 4-82
 - recap main points, 4-82
 - sharing space, 4-72 through 4-75, 4-80 and 4-81
 - space ahead, 4-69 and 4-70, 4-77
 - space behind, 4-72, 4-79
 - space to the sides, 4-71 and 4-72, 4-78
- manage speed, 4-54 through 4-67
 - conditions affecting safe speed, 4-55 and 4-56, 4-61
 - effect of speed and stopping distance, 4-57, 4-63
 - manage speed, 4-55, 4-60
 - matching speed to the road surface, 4-57 and 4-58, 4-64 and 4-65
 - recap main points, 4-67
 - speed and curves, 4-58 and 4-59, 4-66
 - speed and distance ahead, 4-57, 4-63
 - speed and stopping distance, 4-56, 4-62
 - speed and traffic flow, 4-57, 4-63
- matching speed to the road surface, 4-57 and 4-58, 4-64 and 4-65
- night driving factors, 4-84 through 4-86, 4-90 and 4-91
- night driving procedures, 4-87 and 4-88, 4-92 through 4-94
- night driving risks, 4-84, 4-89
- notification of authorities, 4-172, 4-175

- other drugs, 4-5 and 4-6, 4-12
- operate vehicle at night, 4-83 through 4-95
 - night driving factors, 4-84 through 4-86, 4-90 and 4-91
 - night driving procedures, 4-87 and 4-88, 4-92 through 4-94
 - night driving risks, 4-84, 4-89
 - recap main points, 4-95
- passing, 4-158, 4-166
- protect the area (accident procedures), 4-172, 4-175
- protecting yourself in a collision, 4-139 and 4-140, 4-153
- rains, 4-97 and 4-98, 4-104
- risk management pointer, 3-3
- safety rules and procedures for driving under adverse weather conditions
 - dew, 4-102, 4-109
 - fog, 4-100 through 4-102, 4-107 and 4-108
 - ice, 4-98 through 4-100, 4-105 through 4-107
 - rains, 4-97 and 4-98, 4-104
 - recap main points, 4-111
 - smog, 4-102, 4-109
 - thunderstorms, 4-102 and 4-103, 4-110
 - weather evaluation guide, 4-112 through 4-118
- seeing hazards, 4-120, 4-126
- sharing space, 4-72 through 4-75, 4-80 and 4-81
- signal when changing direction, 4-44 and 4-45, 4-51
- signal when slowing down or stopping, 4-45, 4-52
- slowing and stopping, 4-159 and 4-160, 4-167
- smog, 4-102, 4-109
- space ahead, 4-69 and 4-70, 4-77
- space behind, 4-72, 4-79
- space to the sides, 4-71 and 4-72, 4-78
- speed and curves, 4-58 and 4-59, 4-66
- speed and distance ahead, 4-57, 4-63
- speed and stopping distance, 4-56, 4-62
- speed and traffic flow, 4-57, 4-63
- starting, 4-157, 4-165
- staying alert and fit to drive, 4-1 through 4-14
 - alertness, 4-3, 4-9
 - alcohol and driving, 4-3 through 4-5, 4-10 and 4-11
 - be ready to drive, 4-2 and 4-3, 4-8
 - illness, 4-6, 4-13
 - emotions, 4-6, 4-13
 - other drugs, 4-5 and 4-6, 4-12
 - recap main points, 4-14
 - vision and hearing, 4-6 and 4-7, 4-13

- thunderstorms, 4-102 and 4-103, 4-110
- trailer operation, 4-155 through 4-170
 - backing a trailer, 4-160 and 4-161, 4-168
 - being overtaken, 4-159, 4-166
 - care and maintenance, 4-161, 4-169
 - driving around curves, 4-159, 4-167
 - general driving procedures, 4-156 and 4-157, 4-163 and 4-164
 - laws and regulations for trailers, 4-161, 4-169
 - passing, 4-158, 4-166
 - recap main points, 4-170
 - slowing and stopping, 4-159 and 4-160, 4-167
 - starting, 4-157, 4-165
 - turning corners, 4-157 and 4-158, 4-165
- turning corners, 4-157 and 4-158, 4-165
- unattended vehicles, 4-173 and 4-174, 4-176
- using and understanding the ABS, 4-133 and 4-134, 4-141 and 4-142
- using emergency signals, 4-43 and 4-44, 4-50
- using headlights, 4-41 and 4-42, 4-47
- using horn, 4-42 and 4-43, 4-48
- vehicle inspection, 4-15 through 4-24
 - additional training aid, 4-17
 - general, 4-16
 - recap main points, 4-24
 - vehicle inspection checks, 4-16 and 4-17, 4-19 through 4-23
- vehicle inspection checks, 4-16 and 4-17, 4-19 through 4-23
- vision and hearing, 4-6 and 4-7, 4-13
- visual search, 4-25 through 4-39
 - adjust seat and mirrors, 4-31, 4-38
 - clear windows and mirrors, 4-30 and 4-31, 4-38
 - looking ahead, 4-26 and 4-27, 4-33
 - looking behind, 4-28 through 4-30, 4-36 and 4-37
 - looking to the sides, 4-27 and 4-28, 4-34 and 4-35]
 - recap main points, 4-39
- weather evaluation guide, 4-112 through 4-118
- wheeled vehicle risk, 3-1

TC 21-305
19 AUGUST 1996

By Order of the Secretary of the Army:

DENNIS J. REIMER
General, United States Army
Chief of Staff

Official:


JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
02223

DISTRIBUTION:

Active Army, Army National Guard, and U.S. Army Reserve: To be distributed in accordance with the initial distribution number 114975, requirements for TC 21-305.

