TC 21-306

TRACKED COMBAT VEHICLE DRIVER TRAINING

APRIL 2025

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This publication supersedes TC 21-306, dated 27 June 2019.

HEADQUARTERS, DEPARTMENT OF THE ARMY

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Training Circular
No. 21-306

Headquarters
Department of the Army
Washington, DC, 24 April 2025

TRACKED COMBAT VEHICLE DRIVER TRAINING

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Preface

TC 21-306 provides unit commanders and unit master drivers with guidance on developing tracked, combat vehicle driver training programs for their organizations. The Central Army Registry and the Unit Training Assistance Program provide units with resources and guidance to support training that promotes safe driving practices, accident avoidance, and technical competence to produce more lethal and effective combat vehicle crews. Hands-on training in a controlled environment and under the close supervision of qualified and licensed trainers is a must in all phases of driver training.

The principal audience for TC 21-306 is all members of the profession of arms. Commanders and staffs of Army headquarters serving as joint task force or multinational headquarters should also refer to applicable joint or multinational doctrine concerning the range of military operations and joint or multinational forces. Trainers and educators throughout the Army will also use this publication.

Commanders, staffs, and subordinates ensure that their decisions and actions comply with applicable United States, international, and in some cases host-nation laws and regulations. Commanders at all levels ensure that their Service members operate in accordance with the law of armed conflict and the rules of engagement. (See FM 6-27 for legal compliance.)

TC 21-306 applies to the Active Army, Army National Guard/Army National Guard of the United States, and United States Army Reserve unless otherwise stated.

The proponent of TC 21-306 is the United States Army Maneuver Center of Excellence. The preparing agency is the Doctrine and Collective Training Division, Department of Tactics, Training, and Doctrine, United States Army Maneuver Center of Excellence. Send comments and recommendations on DA Form 2028 (*Recommended Changes to Publications and Blank Forms*) to Commander, Maneuver Center of Excellence and Fort Benning, ATZK-TDD (TC 21-306), 1 Karker Street, Fort Benning, GA 31905-5410; or by e-mail to usarmy.benning.mcoe.mbx.doctrine@army.mil; or submit an electronic DA Form 2028.

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Chapter 1
Introduction

Leaders must emphasize driver training within their organizations because of the length, width, and high ground pressure of tracked combat vehicles, the terrain tracked combat vehicles are required to operate in, and the numerous blind spots associated with tracked combat vehicles. These variables demand additional skills and knowledge beyond those required for wheeled vehicles. Unit drivers training programs must challenge drivers to use safe driving practices, increase their awareness to improve accident avoidance, and improve crew performance. Programs must train drivers to understand the operational limitations of the vehicles they are operating so they can negotiate complex terrain under difficult and stressful conditions.

SECTION I – SCOPE

1-1. TC 21-306 provides leaders with the tools they need to produce quality drivers. Leaders must emphasize driver training because of the variety of vehicle characteristics and inherent dangers associated with the platforms. Because of this, tracked combat vehicle drivers must possess excellent driver skills and knowledge beyond that of any other family of tactical vehicles. Operators must know how to operate vehicle equipment effectively in the most challenging environments. Operators must be challenged to use safe driving practices and increased awareness for accident avoidance. Due to the extreme weight and operating characteristics associated with tracked vehicles they have a greater potential to cause fatalities and extreme damage when being operated.

1-2. Vehicle commander (VC) is defined as the occupant of a vehicle assigned responsibility for the overall safe operation and employment of the vehicle, the weapon systems, and any special equipment. The VC is responsible for the safety of all occupants. VCs must be licensed on the vehicle they are responsible for.

1-3. This training circular provides vehicle operators with techniques to enhance their driving skills. This training circular does not replace AR 600-55 that specifies the regulatory requirements for selecting, training, testing, and licensing drivers. Unit commanders have the flexibility to make minor modifications in their training due to the mission set of the unit without compromising the integrity of this training circular and its supporting doctrine. Unit constraints on terrain and resources may also limit the extent to which a training circular can be fully implemented. However, operators must pass the written test for each specific vehicle before issuance of an OF 346 (*U.S. Government Motor Vehicle Operator's Identification Card*) or DA Form 5984-E (*Operator's Permit Record*), according to AR 600-55. The information in this training circular applies to all Department of Defense (DOD) civilians, DOD contractors, Active Army, Army Reserve, and National Guard units that employ tracked combat vehicles.

SECTION II – SUPPORTING MATERIAL

1-4. In addition to TC 21-306, the following training and regulatory materials apply to the conduct of tracked combat vehicle training:

- AR 600-55 describes the following:
  - Responsibilities for conducting the motor vehicle driver program.
  - Licensing requirements for applicants of motor vehicle driver positions.
  - The process for choosing potential drivers.
  - Training programs for operators of all types of vehicles and equipment.
  - Driver testing program.
  - Controls on issuing licenses.
  - Types of licenses that may be issued.
  - Procedures for renewing, revoking, or suspending licenses.
- AR 190-5.
- Applicable technical manual for the tracked vehicle system or variant being operated.

- TC 21-305-2.
- TC 3-21.60.
- TC 3-20.31.

1-5. This training circular provides driver training information, strategies, program development, and training support materials. The following content:

- Emphasizes the importance of safety for all vehicle operators.
- Describes a system for identifying, selecting, and qualifying vehicle drivers.
- Addresses the environment to ensure it is not placed in jeopardy by vehicle operators.
- Provides a sample driver training schedule for adaptation and use.
- Provides a sample driver training course layout and discusses training course procedure.
- Provides lesson plans with Go/No-Go criteria.
- Provides an Army Tracked Vehicle Road Test Score Sheet.
- Provides a sample written examination.
- Provides an example Operator Training Packet.

Chapter 2

Safety Awareness and Environmental Risk Management

This chapter describes the hazards and associated risk management efforts for tracked vehicle driver training programs. Always monitor safety practices and application during the training phase. (See ATP 5-19 for more detailed risk management guidance.)

SECTION I – SAFETY AWARENESS

2-1. Tactical vehicle accidents are a large contributor to on-duty Soldier injury and fatalities. Driving can be one of the deadliest hazards Soldiers face daily. The following paragraphs describe subjects related to tactical vehicle safety. When followed, these areas will aid in the increase of safety awareness and reduce vehicle related accidents.

SEAT BELTS

2-2. The ability to remain restrained to a stable surface is an essential component of safety and survival in the event there is a mishap. With consistent practice, this essential element of tactical discipline becomes second nature. Concerns about one's ability to rapidly exit a vehicle must be tempered by the knowledge that seat belts prevent occupants from being tossed around the vehicle's interior because of enemy action or a vehicle accident. Remaining conscious offers the best chance to escape from a burning or submerged vehicle. All vehicle occupants must wear seatbelts when the vehicle is in motion. If equipped, restraint harnesses will be utilized. Vehicles should have seatbelt cutters for all occupants to cut away the seat belt during an emergency.

2-3. The vehicle commander is responsible for ensuring all Soldiers are properly using the vehicle restraint systems. All crewmembers must be experts in the use and operation of the systems. Checking for and enforcing the use of restraint systems should be done prior to any vehicle movement. Periodic checks during operations should also be conducted.

PERSONAL PROTECTIVE EQUIPMENT

2-4. Hearing loss among Armor crewmembers can occur due to improper fit, wear, and maintenance of combat vehicle crewmember (CVC) helmets. All crewmembers wear CVC helmets: passengers wear earplugs and the advanced combat helmet when the vehicle is operating. When the CVC helmet is worn, crewmembers ensure that the chinstrap is fastened. The CVC helmet does not reduce sound properly unless it is fastened. Tracked combat vehicles are heavily laden with fuel and ammunition; while they are designed to direct explosions away from the crew, there is still a greater risk of fire associated with tracked combat vehicles than other vehicles. When operating a tracked combat vehicle, drivers and other crewmembers will wear the flame-resistant CVC uniform as prescribed in DA Pam 670-1 and in accordance with their unit standard operating procedure (SOP).

SHOP AND MOTOR POOL

2-5. Crewmembers must take certain precautions in a maintenance shop or motor pool. Oil, water, and antifreeze spills can cause serious injury. To prevent injuries, all spills must be cleaned up immediately and the work area should be kept clean. Injuries often result from using the wrong tools and equipment. Trainers must instruct all personnel to properly use the tools and basic issue items associated with their vehicle. To prevent severe injuries to fingers, wrists, and limbs, crewmembers must remove all jewelry before mounting, dismounting, or performing operator maintenance on a vehicle. Vehicle chock blocks must be used when the vehicle is parked. Hair must be worn in a manner that prevents loose or dangling strands from being caught or tangled up in machinery.

MOUNTING AND DISMOUNTING TRACKED COMBAT VEHICLES

2-6. Drivers and track commanders must ensure everyone observes the following rules for mounting and dismounting tracked vehicles:

- Use extreme caution when mounting or dismounting a vehicle.
- Never climb in front of a weapon system to mount the vehicle, and VCs must ensure that all weapon systems are clear and positioned to allow safe access.
- When mounting or dismounting a vehicle with the engine running, ensure the driver is aware of personnel mounting and dismounting.
- Ensure the driver is aware of a crewmember's intention to mount.
- Always maintain three points of contact (one hand and two feet or two hands and one foot) with the vehicle when mounting, dismounting, or moving around on the vehicle.
- Never mount or dismount a moving vehicle, and drivers must bring the vehicle to a complete halt, place the vehicle in neutral, and set parking brake before allowing anyone to mount or dismount.
- Never dismount a vehicle by jumping from it.

HATCH COVERS

2-7. Injuries caused by unsecured hatch covers are common. All crewmembers must check the hatches before operating the vehicle to make sure they are serviceable and locked in the proper position. Many vehicles are equipped with chains to secure the hatches. If the vehicles are equipped with chains, they must be used.

RIDING POSITION

2-8. Crewmembers in tracked combat vehicles must wear CVC helmets and eye protection and ride with only their heads and shoulders extended (nametag defilade) out of the hatches if the operational environment permits it. When a tracked vehicle is involved in a collision or overturns, injuries are usually the result of crewmembers being thrown around inside the vehicle. To prevent injuries during rollovers or collisions, crewmembers and vehicle occupants must be in their assigned positions and wear the proper restraints during vehicle operations.

SLAVE STARTING

2-9. When slave starting a vehicle, crewmembers must observe the following safety guidelines:

- Drivers always position the live vehicle alongside the dead vehicle.
- Drivers never position the vehicles nose-to-nose.
- Crewmembers must not stand between the moving vehicle and the dead vehicle; serious injury or death could result.
- Drivers and crews must consult their vehicle's technical manual to ensure they are performing vehicle slave starting procedures correctly for their specific model of vehicle.

Note. Terrain must be carefully considered prior to conducting slave start operations. It may be necessary to have the vehicle moved to a safe location if the terrain adds an additional danger due to slope/grade or other restrictions. Moving the vehicle may require maintainer assistance.

VEHICLE ACCIDENTS

2-10. As previously mentioned, vehicle accidents contribute to Soldier injury and fatalities. Paragraphs 2-11 through 2-18 describe problematic areas as they pertain to vehicle accidents. Each area discusses the danger and ways to mitigate the hazard. The areas discussed are not all inclusive when identifying hazards related to vehicle accidents. Each platform may have additional associated hazards due to the vehicle's operating characteristics.

FATIGUE AND SLEEP LOSS

2-11. Fatigue and sleep loss are often factors in vehicle accidents. To minimize the effects of sleep loss, commanders must develop and follow a sleep plan based on the following considerations:

- Adequate sleep is required to enable an individual to maintain optimal performance; humans do not adapt well to shortened sleep cycles.
- Physical strength remains unimpaired until extreme levels of sleep deprivation are reached.
- The most difficult jobs for the sleep-deprived are tasks requiring swift decisions or complex planning.
- Sleep loss typically causes errors of omission.
- Prolonged heat exposure, confinement, noise, and vibration degrade performance and ability to cope with sleep loss.
- Diminished awareness:
  - Check operators for symptoms of fatigue or use of controlled substances.
  - Personnel taking prescription drugs that may cause drowsiness should not drive.

SITUATIONAL AWARENESS

2-12. Drivers and track commanders must be alert to avoid situations conducive to accidental injury and to minimize the possibility of injury in those situations that cannot be avoided. Personnel must take extra precautions when the vehicle's surfaces are wet, muddy, or icy. The surface is extremely slippery under those conditions. Likewise, operators and occupants should remain alert to the position of weapons and other metal projections. Ensuring items inside the vehicle are secured in accordance with the load plan to prevent them from becoming projectiles in the event of a rollover or collision will also greatly reduce chances of injury. Adhering to a load plan also provides Soldiers the ability to easily locate and identify mission-essential items during limited visibility.

BLIND SPOTS

2-13. Most tracked vehicles have blind spots where the turret or hull blocks the forward or peripheral vision of the driver preventing them from seeing objects on the ground. The track commander and other crewmembers must help the driver identify objects in the driver's blind spot. The driver should anticipate objects that may fall into their blind spot as they are approached. When in doubt, the VC should use a ground guide to assist the driver.

LOSS OF CONTROL

2-14. Driving too fast for road conditions is one of the leading causes for loss of control in tracked vehicles. If the driver loses control of the vehicle, they must take immediate steps to regain control of the vehicle. The driver must release the accelerator, avoid applying the brakes, and let the vehicle coast to a stop. If the vehicle is sliding, the driver must steer in the direction of the skid to regain control of the vehicle.

ROLLOVERS

2-15. Although tracked combat vehicles generally tend to be stable due to their wide profile, operations still require vigilance to prevent rollovers. There are three rollover types (fall-initiated, maneuver-initiated, and impact-initiated) and fall-initiated rollovers are by far the most common, generally due to poor road conditions. Fall-initiated, rather than maneuver, are likely when operating along roads near ditches, bridges, and culverts incapable of handling the vehicle's weight. Fall-initiated rollovers usually occur on unimproved roads, possibly near bodies of water where the road shoulders are soft. Studies conducted by the Army have found that rollovers in the Bradley fighting vehicle (BFV) family of vehicles were often caused by the BFV's high profile, drivers operating at unsafe speeds, environmental conditions, and lack of platform expertise.

2-16. The safest place for a crew during a rollover is inside the vehicle. If a tracked vehicle is about to rollover, the driver or another crewmember must announce ROLLOVER, ROLLOVER, ROLLOVER! across the vehicle's intercom system so the rest of the crew can drop inside the vehicle and assume a safe position by bracing themselves inside the vehicle. Drivers must lower their seat and brace themselves inside the vehicle. Crews must practice rollover procedures frequently so that they become second nature in the event of a vehicle rollover.

2-17. Leaders incorporate the potential for rollovers into risk assessments by assessing the route, vehicle speed, vehicle limitations, and the environment along the route by—

- Being alert and using caution on roads close to bodies of water.
- Allowing greater clearance when traveling along the edge of a road.
- Considering the probability of the road surface collapsing and pitching the vehicle.
- Ensuring that hazards are briefed to operators before the mission and considering options for alternate or bypass routes.

CREW EVACUATION DRILLS

2-18. Instructors often overlook crew evacuation drills during training. The probability of injuries is reduced significantly if crews practice proper evacuation techniques in different conditions and in response to different situations. Vehicle technical manuals and training support packages (TSPs) provide emergency evacuation procedures, which should be incorporated into driver and crew training programs. Performing emergency evacuation procedures will be rehearsed prior to any vehicle movement.

ACCIDENT PREVENTION

2-19. To prevent accidents, operators must—

- Adjust speed and interval to allow for the condition of road surfaces and the environment.
- Notify the VC when a lack of sleep or fatigue is becoming a danger.
- Employ proper techniques to prevent or recover from a skid.
- Slow down after dropping off the edge of the roadway before pulling back onto the pavement.
- Ensure vehicles have been safety inspected and maintained.
- Use the recommended pumping action in emergencies instead of locking the brakes.
- Allow for the added force of the weight of the vehicle when quick stops are necessary.
- Come to a complete stop and downshift at the crest of hills or steep grades to use the engine as a braking action to control speed.
- Know the distance required for braking at various speeds to make emergency stops safely, which is especially important for vehicles towing or moving heavy loads.
- React and brake to maintain interval with lead vehicles, for instance:
  - The driver ahead has already reacted to something.
  - The follow-on vehicles must slow down or stop in the remaining distance.
- Inspect beneath vehicles for sleeping personnel after rest stops.
- Use tow bars rather than cables to move disabled vehicles on roads, but if tow cables are needed, use a third tracked vehicle of equal weight or heavier as a braking vehicle.
- Inspect personnel heaters to avoid carbon monoxide poisoning.
- Refer to the vehicle's technical manual for specific instructions or safety measures concerning the recovery and towing of a tracked combat vehicle.

FIRE PREVENTION

2-20. All crewmembers and vehicle occupants must be thoroughly knowledgeable on all fire related emergency procedures for their platform. These procedures should be rehearsed and practiced prior to vehicle movement. Flammables and miscellaneous items should not be stored in the vehicle. Leaders should establish simple rules or an SOP to help prevent fires on vehicles.

2-21. Crewmembers must clean up all fuel spills immediately, using only authorized cleaning agents. Leaders must brief vehicle crews on the type and locations of the spill kits provided to their unit.

2-22. All tracked combat vehicles are equipped with fire extinguishers, both fixed and portable. Crewmembers must know how and when to use them. To ensure fire extinguishers are ready for instant use, crewmembers periodically weigh or check them to determine operability and replace them if necessary.

2-23. Fixed fire extinguishers that require only the action of a trip handle or sensor to operate are installed on vehicles to cover areas where fires are most likely to start. They must be inspected during preventive maintenance checks and services (PMCS). Drivers must not start the engine of the tracked vehicle if the fixed fire extinguishers are inoperable or if they have been removed for maintenance.

2-24. Portable extinguishers must be manned whenever the vehicle is being refueled. Portable fire extinguishers are inspected during the PMCS. If they are inoperable, they should be replaced or refilled before the vehicle is started.

REACT TO FIRE ON THE VEHICLE

2-25. The first crewmember to identify that a fire has broken out on the vehicle alerts the rest of the crew. The driver and crew execute the actions for responding to a fire in the engine compartment or the crew compartment of the vehicle. Actions in response to a fire on a tracked vehicle can be found in the driver's TSPs for specific vehicles and the vehicle's technical manuals.

ADDITIONAL VEHICLE TRAINING

2-26. Depending on the vehicle type, there may be other areas that require additional training and consideration. Vehicle heaters can develop leaks and are susceptible to fire. Ammunition racks, if equipped, also require additional awareness and procedures that crewmembers must be proficient with in the event there is an accident. All vehicle specific equipment and procedures must be covered during driver's training and reinforced during subsequent training events.

GROUND GUIDES

2-27. Ground guides are required for tracked vehicles to be moved safely. Leaders must ensure all crewmembers and drivers can recognize standard hand-and-arm and flashlight signals before guiding or driving tracked vehicles. Drivers and ground guides must know and observe the following rules:

- Ground guides are required when a tracked vehicle is moving in a confined or congested area, during limited visibility, or if the driver is in doubt about adequate clearance, for example, on narrow bridges or in passages with low overhead clearances.
- Ground guides should never stand in front of a vehicle when the engine is running but should stand beside the right or left fender when talking to or directing the driver.
- Ground guides must be used in cantonments, bivouac sites, and parking areas.
- Ground guides must never run in front of vehicles or walk backwards while guiding vehicles.
- Ground guides should use flashlights with colored filters when moving vehicles at night.
- Ground guides should walk approximately nine meters in front of and to the left of the vehicle's left track to observe traffic to the front and rear of the vehicle (the ground guide is the correct distance from the tracked vehicle when the driver can see the ground guide's feet).
- Two ground guides must be used any time a tracked vehicle is being moved in reverse, and the rear ground guide must always be visible to the front ground guide.
- Should the driver lose sight of the signal, or if there is any question about the signal from the ground guide, the driver stops until the signal is visible, or the confusion is eliminated.
- The front ground guide immediately signals the driver to stop if the front ground guide is unable to see or identify the signals coming from the rear ground guide.
- When a vehicle arrives at a night parking area (other than the occupation of an assembly area as a part of a tactical operation), a ground guide dismounts and establishes contact with the guard on duty:
  - The guide and the driver must understand where the sleeping area is and where to park the vehicle.
  - The ground guide must search the area for people sleeping on the ground where the vehicle is to park before moving the vehicle into the parking area.
  - As a minimum, blackout drive must be used, and the service drive turned on if conditions permit.
- All tactical sleeping areas must be marked with a chemical light or flashlight and have a guard equipped with night vision goggles:
  - The guard must hand carry a flashlight or chemical light to signal or guide vehicles.
  - Guards must be briefed on their duties and on what actions should be taken when a vehicle drives into the bivouac or assembly area.
  - The guard must carry or have readily accessible, a loud, distinct, and immediately audible warning device in case a vehicle enters the designated sleeping area.

  - Troops designated to sleep in the area must be briefed on what device is being used and what action they should take, and the unit SOP must specify the same information.
  - The guard's priority is to warn sleeping personnel; then attempts are made to gain the attention of the ground guide, vehicle driver, or the VC without endangering themselves.
- All road accesses into the bivouac or assembly area must have a guard posted to warn vehicle crews that there are troops on the ground:
  - The guard should help ground guide the vehicle to its destination ensuring that, as a minimum, blackout drive is used.
  - If conditions permit, service drive should be used.

DISABLED VEHICLES

2-28. If a vehicle becomes disabled, the crew should do everything possible not to obstruct traffic or create conditions that might cause an accident. If possible, the operator should move the vehicle out of the way and post guides. Operators warn the approaching vehicles. Flares, warning triangles, flashlights, vehicle flashers, and reflective vests are normally available as warning devices. Operators must carry at least two warning triangles on each vehicle. To alert traffic to a disabled vehicle, the crew should place the triangles on the shoulder of the road 100 meters in front of and behind the vehicle.

VEHICLE RECOVERY OPERATIONS

2-29. Vehicle recovery is difficult and time consuming. ATP 4-31 explains in detail the various techniques and methods of vehicle recovery. Vehicle self-recovery is a critical and perishable skill. All drivers and crews should practice vehicle self-recovery on a regular basis to maintain proficiency. It is important to recognize that vehicle recovery consists of three categories: Self-recovery (in which a vehicle recovers itself under its own power using available equipment), like-vehicle recovery (where a like vehicle is used for recovery), and dedicated recovery (where unit recovery assets are utilized for the recovery effort).

2-30. Self-recovery is a skill in which tracked vehicle crews need to be proficient because of the limited amounts of dedicated recovery assets assigned to units. If environmental factors cause a vehicle to become immobilized, for example mired in wet, loose soil or high centered (bellied) on a rock or stump, the crew can assess the situation and determine if self-recovery is possible. When considering self-recovery operations, crews must consider the tactical situation and whether self-recovery can be completed safely. Even though most tracked vehicles lack winching equipment, self-recovery of tracked vehicles can still be accomplished using the methods described in ATP 4-31. Vehicle self-recovery training, when incorporated into unit drivers training programs, allows units to maximize the limited recovery assets organic to Armored formations by giving crews the skills needed to self-recover.

2-31. When the equipment has a mechanical failure, the operator or crew uses the equipment's technical manual to perform troubleshooting procedures with the tools available in the basic issue items and additional authorized list or on-vehicle equipment. When self-recovery fails, the operator or crew can request assistance from available like vehicles or unit recovery assets.

2-32. The process to recover a mired vehicle begins with acquiring a log long enough to span the width of the vehicle and of sufficient diameter to support the vehicle weight (see figure 2-1). Recovery then requires the following:

- Recovery crews place the log against both tracks.
- Recovery crews then place a tow cable so that one end of the cable goes under the log and through the tracks from the inside.
- Crews place the other end of the tow cable underneath the log and connect the ends of the cable together with a tow hook on the outside of the track to make disconnecting easier.
- Recovery crews follow the same procedure to attach the log to the track on the opposite side of the vehicle:
  - Gradually applying power to the tracks allows for slack to be taken up in the tow cable.
  - This pulls the log underneath the tracks until it meets the obstacle, thereby anchoring the tracks and causing the vehicle to move.

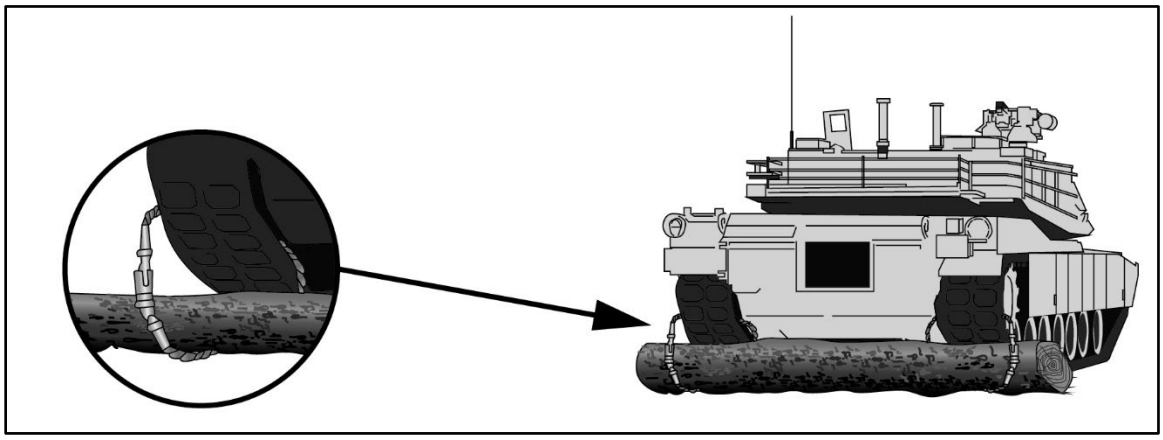


Figure 2-1. Log used to anchor tracks

CAUTION

To prevent damage to the fenders and tow cables, stop the vehicles before the log reaches the fenders or the cable reaches the drive sprocket.

2-33. For a bellied disablement (other than mire), anchor the tracks using two tow cables. Connect the tow cables together with a tow hook. Attach the cables to both tracks by passing the ends of the cables through the tracks from the outside and attaching them to the standing parts of the cables with tow hooks. When power is applied to the tracks, the cable contacts the obstacle and anchors the tracks (see figure 2-2).

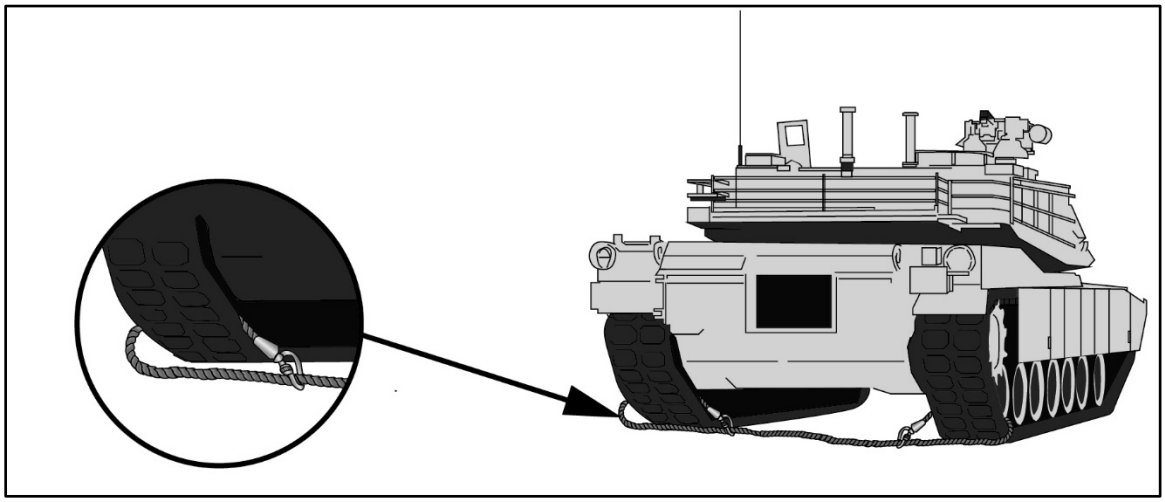


Figure 2-2. Cables used to anchor tracks

NONTACTICAL AND TACTICAL REFUELING OPERATIONS

2-34. When refueling during nontactical operations, the commander assigns each crewmember specific duties and responsibilities. Drivers normally refuel the vehicle while other crewmembers take care of the remaining petroleum, oils, and lubricants requirements. Unit SOPs should include the following safety requirements and guidelines governing refueling operations:

- Use extreme caution when mounting or dismounting a vehicle.
- Any vehicle approaching a refueling point must have two ground guides, one front and one rear.

- All vehicles should park on level ground with the parking brake on.
- Vehicle engine must be off.
- Crewmember or fuel handler on the ground has a portable fire extinguisher available.
- Vehicles must be grounded while refueling.
- No smoking within 15 meters of the vehicle refueling point.
- Clean up any fuel on the vehicle prior to moving out.
- Secure all petroleum, oils, and lubricants products stowed on board prior to moving out.
- Use drip pans under connections and valves to catch spills and drips.
- Ensure proper personal protective equipment is available and used.
- Ensure a spill kit is available.
- Follow federal, state, host-nation laws, and regulations as well as unit SOPs for spill cleanup, reporting, and disposal of waste.

2-35. During tactical operations, the VC assigns each crewmember specific duties and responsibilities during refueling. During tactical refueling, the driver remains in the driver's compartment while the crew refuels the vehicle. Refueling under combat or simulated combat conditions should be the same as under usual conditions with the following exceptions:

- The vehicle continues to run.
- The track commander and one crewmember refuel the vehicle while one crewmember maintains security.
- The second crewmember outside the vehicle must maintain positive control of a portable fire extinguisher and be ready to use it in the event a fire starts.
- A fuel handler is on the ground to supervise the refueling operation and should have a fire extinguisher available in case of fire as well.

RAILHEAD OPERATIONS

2-36. Leaders must conduct a safety briefing before railhead operations. The briefing should include the following:

- Only licensed drivers will drive vehicles on and off railcars during railhead operations.
- There is no smoking during loading operations. A smoking area should be designated at least 15 meters away from the nearest vehicle.
- Wearing protective headgear is required until clear of the railcars.
- Alert for hazards that could cause electrocution, and all antennas and equipment stored on the outside of the vehicle should be removed or secured before moving onto the railcar.
- No standing on top of vehicles.
- Securing all gun tubes, M88 booms, and M578 cranes in travel lock before loading them onto the railcar.
- No standing on moving flatcars.
- Ensuring guide vehicles are at least a one-car interval away from the vehicle that ground guides are guiding onto the flatcar.
- Ground guides never guide from the railcars onto the flatcar where their vehicles are loading.
- No walking backward while ground guiding tracked vehicles.
- Securing all hatches when the rail master has inspected the train and released it for movement.
- Loading is complete when the rail master has inspected the train and released it for movement.

CONVOY OPERATIONS AND TACTICAL FORMATIONS

2-37. The planning and coordination involved in convoy operations require aggressive staff action. ATP 4-11 describes convoy operations, discusses planning procedures, organizing, and controlling them. ATP 4-11 provides additional information for training individual drivers.

2-38. Elements in a column of any length may simultaneously encounter many different types of terrain features, obstacles, or traffic conditions. As a result, different parts of the column tend to move at varying speeds at the same time. To increase safety and reduce column whipping, leaders need to provide VCs with

the column's speed of march, vehicle interval, and maximum catch-up speed. Vehicle crews must receive this information prior to the start of a column's movement.

2-39. If a vehicle becomes disabled, the crew should do everything possible not to obstruct traffic or create conditions that might cause an accident by warning approaching vehicles using flares, warning triangles, flashlights, and wearing reflective vests. Each vehicle should carry at least two warning triangles. To alert traffic to a disabled vehicle, the crew should place the triangles on the shoulder of the road 100 meters in front of and behind the vehicle.

2-40. During limited visibility due to poor environmental conditions, vehicles should maintain twice the normal interval or as specified in a unit's SOP. When driving on extremely dusty roads or trails, use a staggered column formation if traffic conditions permit. The convoy commander should adjust the convoy's speed if any vehicles in the convoy become engulfed in dust. VCs engulfed in dust should alert the convoy commander by radio, move to the right side of the road, and stop to allow the dust to dissipate. Do not back up vehicles while engulfed in dust. Exercise extreme caution to ensure oncoming vehicles are not jeopardized. If vehicles encounter traffic, the lead vehicle must warn following vehicles to move into a column formation if another formation is being used.

2-41. Tactical formation training is critical to the battlefield success of tracked vehicle crews. The ability of a tracked vehicle driver to recognize and anticipate tactical formations during combat operations increases crew survivability and crew lethality. Understanding the hand-and-arm signals that dictate a formation's action during convoys or tactical operations is a critical skill for all crewmembers. TC 3-21.60 discusses information concerning visual signals. Mounted forces frequently use—

- Herring bone.
- Coil.
- Staggered column.
- Echelon left and right.
- Wedge.
- Vee.
- Line.
- Column.
- Traveling overwatch.
- Bounding overwatch.

ESCORT VEHICLES

2-42. A wheeled vehicle with rotating amber warning lights should precede a tracked vehicle or column of tracked vehicles traveling on a road if the tactical situation permits. On high-speed roads (such as an interstate or autobahn), when contact with the enemy is not imminent and traffic is normal, escort vehicles equipped with rotating amber warning lights, and any required convoy signs or flags should be positioned in the front and rear of the convoy according to local command policy.

VEHICLE PREPARATION

2-43. Enhanced survivability involves teamwork. Collective, disciplined, and consistent vehicle preparations mitigate injuries and increase survival rates considerably. Vehicle preparation considerations include the following:

- Loading tracked combat vehicles according to unit SOP or in accordance with the technical manual appropriate for the vehicle.
- Using tie downs or straps to secure loose items within the vehicle to prevent injury in the event of a rollover or impact from enemy contact.
- Avoiding using externally carried fuel cans as they present considerable risk of fire in the event of an accident or enemy contact.
- Never carrying fuel inside compartments of the vehicle.

COMMUNICATION

2-44. Tracked vehicles are not moved until intercommunications have been established among all crewmembers. If communications are lost, the vehicle must halt immediately. The crew should troubleshoot the system and notify organizational maintenance if assistance is required. For safety, the unit commander can authorize the movement or removal of the disabled vehicle.

OPERATING WITH DISMOUNTED TROOPS PRESENT

2-45. During normal operations, tracked vehicle crews can ensure the safety of dismounted personnel and crewmembers by following the guidelines listed below. When operating during limited visibility in nontactical situations, service drive lights should be turned on. During limited visibility or blackout operations, the unit commander and tracked vehicle crew make sure of the following:

- Before moving a vehicle in an assembly area, a crewmember walks completely around the vehicle to ensure that moving the vehicle does not endanger anyone (if not operating in a tactical environment), and the tracked VC gives the command CLEAR to indicate it is safe to start and move the vehicle.
- During combined operations, a safe distance between dismounted troops and moving vehicles is maintained.
- Personnel assigned dismounted tasks during blackout conditions are given ample time to complete their tasks and if possible, a detailed daytime reconnaissance of the terrain should be conducted.
- Individuals who are assigned dismounted tasks are authorized to halt an exercise to correct a hazardous situation, to adjust speed to conditions, or to maintain proper interval during convoy operations.
- If the driver's vision is blocked or the tracked VC's vision devices become obscured, the vehicle is halted.
- The driver's night vision viewers are properly adjusted for maximum resolution.

FALLS

2-46. Soldiers must use three points of contact when on top of the vehicle. Soldiers must not jump from the top of a vehicle to the ground or from vehicle to vehicle.

ENVIRONMENTAL RISK MANAGEMENT

2-47. Reconnoitering the drivers training area helps commanders to develop plans to minimize damage to vegetation and waterways. Using ATP 5-19 as a guide, commanders quantify the risk to the environment resulting from the operation. The environmental risk impact value should be determined conservatively. The installation's environmental management division for other local requirements relating to wildlife and natural vegetation should be consulted. The chain of command (including the installation environmental office, if applicable) should be briefed on proposed plans and pertinent high-risk environmental effects. Risk decisions are made at a level of command that corresponds to the degree of risk. The appropriate land-use and digging permits should be gathered prior to the start of any drivers training activities according to state and federal laws as well as installation policies. To prevent damage to the environment, the steps listed below can be used to mitigate the risk of damage to the environment (see ATP 3-34.5, appendix C, for more information on integrating environmental considerations into the risk management/operational risk management process).

STEP 1

2-48. *Identification of hazards* should be made of potential sources for environmental degradation during an analysis of mission, enemy, terrain and weather, troops, time available and civilian consideration factors. This requires the identification of environmental hazards. An environmental hazard is a condition with the potential for polluting air, soil, water, or destroying significant natural or cultural resources.

STEP 2

2-49. *Assessing hazards* is necessary. The potential severity of environmental degradation should be analyzed. The severity of environmental degradation must be considered when determining the potential

effect an operation has on the environment. The risk impact value is defined as an indicator of the severity of environmental degradation.

STEP 3

2-50. *Developing controls and making risk decisions* are needed actions. Decisions are made by analyzing the environmental risk. It should be determined if alternate actions protect the environment while still accomplishing the mission and if the commander needs to adjust the mission.

STEP 4

2-51. *Implementing controls* to enact environmental protection measures include integrating them into plans, orders, packing lists, SOPs, training performance standards, and rehearsals.

STEP 5

2-52. Sup*ervision and evaluation* are needed. Commanders supervise and enforce environmental protection standards.

Note. Each U.S. installation is subject to local and state environmental regulations in addition to federal legislation. For information specific to the activity, contact the installation environmental office. If personnel are overseas or on deployment, contact the higher battalion or brigade operations staff officer or the assistant chief of staff operations. (For more information see AR 200-1, ATP 3-34.5, DODM 4715.05, Vol. 1, and DODI 4715.22.)

SECTION II – USUAL DRIVING CONDITIONS

OPERATING SPEEDS

2-53. Most operations will not require use of all the speed the tracked vehicle can deliver. Ultimately, the unit commander or the VC determines and sets the rate of movement based on a thorough understanding of METT-TC (I) mission, enemy, terrain and weather, troops and support available, time available, civil considerations, and informational considerations. Operating at high speed in a tactical environment will get vehicle crews into a dangerous situation faster than can be countered or reacted upon. Some things to keep in mind when operating the tracked combat vehicles are:

- Driving at high speed does not increase safety or security during combat operations. Higher speeds reduce driver reaction time, extend stopping distances, and increase roll rates that can lead to tip over or rollover.
- Traveling at high speeds significantly decreases the ability to visually scan the road surface accurately.
- Slow speeds reduce the possibility of an accident, tip, or rollover.

ACCELERATION AND BRAKING

2-54. Emergency stopping procedures in response to the loss of brakes, steering, or engine power is as follows:

- Driver notifies the VC that the brakes, steering, or engine power have malfunctioned.
- Driver moves the gear select to N (neutral). Driver centers the steering column or laterals. Driver lets the vehicle coast to a stop.
- Driver sets the parking brake if the vehicle has one.
- Driver shuts down the engine once the vehicle has stopped.
- VC notifies the chain of command.

2-55. In the event the driver and the VC lose communications, the driver immediately brings the vehicle to a halt and does not move the vehicle until communications have been restored.

BRIDGES AND SOFT SOIL

2-56. Tracked combat vehicle operators along with the VC must make sure that bridge classifications are for tracked combat vehicles. Pre-mission planning should include identifying bypass or alternate routes. Use extreme caution when approaching bridges that are unrated. Mission commanders must seek guidance from combat engineers to determine if the bridge is safe to cross before the execution phase of the mission.

2-57. Bridges may only be rated for the weight of a single tracked combat vehicle. In this case, leaders must—

- Plan for an interval that allows only one vehicle to cross the bridge at a time.
- Post ground guides from lead vehicle or use lead vehicle to block traffic, dependent on tactical situation.
- Pick up ground guides with trail vehicle, if used.

2-58. Soft soil poses a risk to the tracked combat vehicles due to their high ground pressure. As a result of the high ground pressure associated with tracked combat vehicle there is a greater risk of sinking or bogging down in soft soil. Operators must avoid moving too close to the edges of roads that may collapse and cause the vehicle to tip over.

SPEED CONTROL

2-59. Elements in a column of any length may simultaneously encounter many different types of routes and obstacles. This causes different parts of the column to move at varying speeds at the same time. To increase safety and reduce column whipping, the movement or march order should give march speed, vehicle interval, and maximum catch-up speed.

EMERGENCY OR SUDDEN BRAKING

2-60. The VC alerts the driver that the vehicle needs to stop suddenly. The VC cues this action by telling the driver, STOP, STOP, STOP! in rapid succession. Upon hearing the cue, the driver executes emergency or sudden braking procedures.

2-61. The driver uses the recommended pumping action to prevent locking the brakes on the vehicle. During drivers training, after stopping the vehicle, the VC should have the driver reflect on the speed the vehicle was going, the time it took the vehicle to come to a complete stop, and the distance it took the vehicle to stop. Having the driver identify the speed, time, and distance involved in an emergency stop provides them with a frame of reference from which to draw.

VEHICLE HEIGHT

2-62. Tracked combat vehicle drivers are generally unable to determine or see bridge information from their position in the vehicle. It is incumbent on the VC to be cognizant and aware of the vehicle's position on the route and ensure that the vehicle can pass under obstacles safely. With training and time, drivers may develop a general idea of when a vehicle may or may not safely fit beneath a bridge without the assistance of the VC. However, it is still the primary responsibility of the VC to ensure a tracked combat vehicle can safely clear a bridge.

SECTION III – UNUSUAL DRIVING CONDITIONS

RESTRICTIVE TERRAIN AND URBAN AREAS

2-63. The overall size of tracked combat vehicles will limit their mobility in urban and rough terrain conditions. Operators and leaders consider the following information when operating in restricted terrain:

- All operators must be well trained in judging terrain and negotiating various terrain conditions. VCs are a critical part of vehicle operation and due to the restricted view from the driver's station, drivers are dependent on the VC's guidance in negotiating restricted terrain.
- Many operations and movements are at night. Driver training should focus on using the driver's vision enhancer display during training along with any other night-vision devices (NVDs) associated with the type of vehicle being operated.

- Operators should develop the following skills for operation in restricted terrain:
  - Use of momentum and understand the effects of vehicle speed.
  - Knowing the vehicle's capabilities.
  - Estimating and using proper speeds for the appropriate terrain conditions.
- Avoidance of sudden forward and braking thrusts.
- Operators learn to follow and understand the guidance given to them by their VCs.
- Narrow streets and gates may make turns and turning around difficult and could result in severe damage to civilian infrastructure, cause the vehicle to become stuck, or damage the vehicle.
- There is the potential for increased difficulty in navigating through traffic.
- There is special consideration for low-hanging wires. Leaders must account for antenna heights when operating in urban terrain.
- The critical rollover angles vary among tracked combat vehicles and will differ depending on their height, width, and weight.
  - Load heavier items as low in the vehicle as possible to decrease the possibility of rollovers or tip over when operating on side slopes.
  - Information regarding operational restrictions and characteristics for varying tracked combat vehicles can be found in the vehicle's technical manual.

ROUGH TERRAIN

2-64. Frequent accidents occur when operators moving cross-country attempt to negotiate obstacles too quickly and they underestimate or fail to see them (such as holes and ditches). Accidental steering loss or stress on the vehicle can cause mechanical failure and crew injuries or casualties.

2-65. The difficulty of negotiating rough terrain is compounded when visibility is poor (such as driving through snow, rain, sleet, fog, dust, or smoke). Operators and VCs must adjust their vehicle speed accordingly to ensure the safety of the occupants and vehicle. Some of the reasons operators may lose control of their vehicle include—

- Loss of steering.
- Loss of brakes.
- Loss of traction.
- Excess speed.
- Over steering.
- Adverse weather conditions.
- Soft shouldered roads.
- Very rough or unstable terrain.

2-66. Operators and VCs should observe the following rules when negotiating rough terrain:

- VCs must alert the driver when approaching rough terrain.
- Scan the area ahead of the vehicle (at least 200 meters) to detect obstacles, holes, and ditches as early as possible.
- Use knowledge of platform capabilities and limitations to judge a safe speed to negotiate obstacles, holes, and ditches.
- Secure all equipment inside the vehicle (especially ammunition and empty canisters) anytime the vehicle is moved.
- If the driver feels they are losing control of the vehicle, the driver must immediately alert the crew and take actions to regain control or stop the vehicle.

2-67. Unit commanders and vehicle operators must remember that the urgency of tactical maneuvering does not outweigh the safety of the occupants and vehicle. It is the responsibility of the VC to ensure the driver operates the vehicle at safe speeds to always allow control of the vehicle. Safe vehicle operation is directly affected by the terrain and weather conditions.

LIMITED VISIBILITY

2-68. Limited visibility conditions are both natural and man-made. Natural conditions include night, fog, rain, snow, smoke, and sandstorms. Urban obstacles such as buildings, overpasses, and narrow streets lined

with parked vehicles and the fact the driver has a limited field of view through the driver's vision enhancer or driver's vision blocks. The tracked combat vehicle driver's view is also restricted by the design of the vehicles themselves, often vehicle armor or gun tubes can obstruct a driver's view.

2-69. Driving a vehicle in limited visibility conditions requires the driver to remain alert and focused on situational awareness. Reduce vehicle speed to provide adequate reaction time for potential hazards. Limited visibility will cause the driver to lose sight of emerging terrain, obstacles, or oncoming traffic. Operators should not look directly into oncoming headlights because this may cause temporary blindness. The driver should watch the right edge of the road until the oncoming vehicle has passed. Once night vision is lost, it takes several minutes to regain it. If a life-threatening situation occurs in a training environment during limited visibility or night driving conditions, the vehicle's service driving lights and interior white lights should be turned on (subject to the unit commander's policies). This action warns other vehicles of the presence of the vehicle, indicates there is an emergency, and lets the crew see. The driver radios the emergency on the unit frequency if the VC is unable to and explains the nature of the problem and the required help. Commanders should specify in the unit SOP or tactical SOP (TACSOP) that blackout marker, or blackout drive as a minimum, be used during all night maneuvers.

2-70. When driving during limited visibility in a nontactical mode, the driver should turn on service drive lights. These rules should be in the unit SOP or TACSOP and applied during normal operations. During limited visibility or blackout operations, the unit commander and vehicle crew should ensure the following safety measures are taken:

- Before moving a vehicle in an assembly area, the driver, VC, or another crewmember—
  - A crewmember walks completely around the vehicle to ensure that moving the vehicle will not endanger anyone.
  - The Soldier then gives the command CLEAR loud and clearly to indicate it is safe to start and move the vehicle or if a vehicle's ramp is going to be lowered or raised.
- During combined operations, a safe distance is maintained between dismounted troops and moving vehicles.
- Anyone is authorized to halt an exercise to correct a hazardous situation, adjust speed to conditions, or maintain proper interval during convoy operations.

DUST AND SMOKE

2-71. During normal operations, operators must be concerned regarding dust when driving in any formation; and smoke will most likely present a problem during field training exercises. Operators and assistant operators should observe the following rules when traveling under dust or smoke conditions:

EXTENDED CONVOY

2-72. Vehicles in an extended convoy should maintain twice the normal interval, or as specified in the unit SOP or TACSOP, during dusty conditions to allow the dust to dissipate. When driving on extremely dusty roads or trails, vehicles use a staggered column formation if traffic conditions permit. If vehicles in a convoy become engulfed in dust, the convoy commander should adjust his convoy's speed accordingly. Any VC who becomes engulfed in dust should alert the convoy commander by radio, move to the right side of the road, and stop to allow the dust to dissipate. Vehicle crews do not back up vehicles while engulfed in dust. Operators observe extreme caution to ensure oncoming vehicles are not jeopardized. The lead vehicle must warn trail vehicles to return to column formation if traffic is encountered.

LINE OR WEDGE FORMATIONS

2-73. If driving in a formation that requires vehicles to be in a line or wedge, vehicles should maintain their distance and adjust speed to dust or smoke conditions. If dust or smoke becomes so thick that total disorientation or vertigo should occur, the platoon leader or sergeant should radio to halt the formation. Vehicles engulfed in dust or smoke must not back up.

FORDING OPERATIONS

2-74. Crossing water obstacles is an extremely dangerous and complex task for Armor crews to conduct safely. Each crewmember has a critical part to play to ensure that the crew and vehicle cross water obstacles

safely and without damaging the vehicle. Normally, armor crews avoid water obstacles, but during combat operations, the tactical situation may force an armor crew to conduct fording operations. Due to the complexity and danger involved with fording operations, training drivers to execute water obstacle tasks is an important part of drivers training. The steps listed below focus on the driver's responsibilities during fording operations. It is important to note that there are more steps than those listed below and that fording operations requires a crew effort. Further guidance concerning crew responsibilities and the steps necessary to prepare a vehicle to conduct fording operations can be found in the vehicle's technical manual. Prior to training fording operations, drivers and VCs need to review the vehicle's technical manual.

- For the BFV, the crew must—
  - Close front and rear hull drain plugs.
  - Check that two final drive hull drain plugs are in place and secured.
  - Check that four upper hull drain plugs are in place and secured.
  - Check bilge pumps operation.
  - Raise the ramp (if not already raised).
  - Open commander's hatch to full open.
  - Open gunner's hatch to full open.
  - Traverse turret to 6400 mils.
  - Set travel lock.
  - Open turret shield door.
  - Open cargo hatch to full open.
  - Open driver's hatch to full open.
  - Lower driver's seat back.
  - Start engine.
  - Move forward and rear bilge pumps to on.
  - Choose a spot to enter and exit the water.
  - Enter, ford, and exit water.
  - After the bilges empty, turn off the pumps.

Note. Use this task when fording water more than 1 and 1/2 feet (.46 meters) deep and less than 3 and 1/2 feet (1.07 meters) deep.

CAUTION

Do not enter water faster than 2 miles per hour (3 kilometers per hour) or at a fast-walking pace. Crawl a vehicle into water. Water can get into an air intake system and damage the engine. A vehicle can be swamped or stranded if underwater obstructions do not support both tracks. Be prepared to stop the vehicle quickly.

Note. Only one vehicle should be in the fording area at a time. Ensure the fording area is clear of vehicles and personnel prior to a vehicle entering the water.

- M1A1 and M1A2 System Enhancement Package (SEP)—
  - Stop the tank at the edge of the water. Open all the vehicle hatches.
  - Ensure the tank commander has placed the tank's turret over the left or right side of the vehicle to facilitate the driver's escape in the event the vehicle begins to sink.
  - Set the TACTICAL IDLE switch to ON. Make sure the drain valves are closed. Release the service brake pedal.
  - At the tank commander's direction, drive the tank slowly into the water.
  - Operate bilge pump if water starts coming into the tank.
  - Drive the tank at 3 to 4 miles per hour (5 to 6 kilometers an hour) or less through the water.
- If the tank fords more than 1 foot (30.5 centimeters) of water and is not engaged in combat operations, after leaving the water, do the following—

- Shut down the engine.
- Open the left and right number 1 skirts.
- Check the idler wheels and road wheel hubs for water in oil (milky look). If water is in the oil, notify field maintenance.
- Close the left and right number 1 skirts.

- Armored multi-purpose vehicle (AMPV)—

WARNING

Vehicles will sink in deep water. Do not drive in water deeper than 3.5 feet (1.07 meters). AMPV has no swim capability and is prohibited from performing swim operations. Failure to comply may result in severe injury or death to personnel or damage to equipment. Seek medical attention in the event of an injury.

Note. This task is performed when fording water more than 1 and 1/2 feet (0.46 meters) deep and less than 3 and 1/2 feet (1.07 meters) deep. Step 1 through Step 3 apply to front and rear hull drain plugs.

- Open front and rear drain plug doors.
- Rotate valve clockwise to close hull drain plug. Ensure bridge plates are fully seated.
- Close front and rear drain plug doors.

Note. There are two final drive hull drain plugs. If one or both are missing, notify maintainer maintenance.

- Ensure two final drive hull drain plugs are in place and secured.
- Verify proper bilge pumps operation.

WARNING

Ensure all outside vehicle security locks and combat locks are removed prior to mission to allow for hatches to be opened during fording operations. Ensure the commander, driver, and escape/cargo hatch are open to their fully open positions to allow egress in the event that vehicle sinks. Ensure driver seat backrest is lowered and driver passageway to crew compartment is clear of all equipment. Whenever a situation allows, the driver should view out of hatch during fording operations to improve situational awareness. Failure to comply may result in severe injury or death to personnel. Seek medical attention in the event of an injury.

- Open and secure commander hatch.
- Open and secure escape hatch.
- Open and secure driver hatch.
- Lower driver seat backrest.
- Start engine and warm up transmission.
- Press TAB softkey to proceed to main screen on Driver Display Unit.
- Press CONTROLS (F7) softkey on main screen.

Note. Selecting FORWARD BILGE (F1) and REAR BILGE (F2) softkey activates FORWARD BILGE and REAR BILGE pumps. Softkey illuminates green and FORWARD BILGE ON and REAR BILGE ON status indicators are displayed.

- Press FORWARD BILGE (F1) and REAR BILGE (F2) softkeys to activate pumps and indicators.

WARNING

Vehicles can roll over on hills or rough terrain. Reduce speeds and avoid bumps and sudden turns. Driving side slopes greater than 40 percent (22 degrees) may cause vehicle rollover. Wear safety belts and CVC helmets. Failure to comply may result in severe injury or death to personnel or damage to equipment. Seek medical attention in the event of an injury.

Note. The commander should assist the driver by communicating the location of navigation obstacles when operating in rough terrain, fording, or when not part of a convoy.

- Look for firm ground without rocks, stumps, or other obstacles.
- Watch out for and avoid steep slopes and soft ground.

CAUTION

Do not enter water faster than 2 miles per hour (3 kilometers per hour) or at a fast-walking pace. Crawl vehicle into water. Water can enter the air intake system and damage the engine. Failure to comply may result in damage to equipment.

Vehicles can become swamped or stranded if underwater obstructions do not support both tracks. Be prepared to stop the vehicle quickly. Failure to comply may result in damage to equipment.

Only one vehicle may be in fording area at a time. Ensure the fording area is clear of vehicles prior to entering water. Failure to comply may result in damage to equipment.

- Drive vehicle and center steering yoke into water.
- Ensure both tracks are on solid ground and ford water.
- Center steering yoke and exit water.
- Ensure both tracks are on solid ground.
- After bilges empty, press FORWARD BILGE (F1) and REAR BILGE (F2) softkeys again to deactivate pumps and indicators on Driver Display Unit.

- M10 Booker combat vehicle.

WARNING

Water deeper than 4 feet (1.2 meters) can enter vehicle and injure crewmembers and damage engine. Do not ford water unless the depth of water is known. Failure to follow this warning may result in serious injury to personnel or damage to equipment. Seek medical attention in the event of an injury.

- Stop vehicle at edge of water.
- Press high idle pushbutton on driver engine keypad, high idle indicator will light.
- Ensure drain valve is closed.
- Release service brake pedal.

CAUTION

Do not stop the engine if the vehicle is in water deeper than the bottom of hull. Water could enter the engine compartment through hull drains and enter bottom of engine through combustor drains. If this occurs, the engine could be damaged.

If the engine stops, the driver should immediately attempt to restart the engine. If engine will not restart, tow vehicle (WP 0330) from the water as soon as possible.

Assure that water level does not rise high enough to enter the engine air intake (approximately 4 feet). Too much water will damage the engine.

- Drive vehicle slowly into water.
- If vehicle must be stopped when fording water, do the following:
- Press on service brake pedal and hold to stop vehicle.
- Release service brake pedal to start vehicle moving.

- If vehicle accidentally enters water deeper than 1.2 meters (4 feet), quickly do the following:
  - Press on service brake pedal and hold to stop vehicle.
  - Set push-button shift selector to R.
  - Release service brake pedal.
  - Slowly drive vehicle out of deep water.
- If more than 1 foot (30.5 centimeters) of water was forded and vehicle is not engaged in combat operations after leaving water, do the following:
  - Shut down engine.
  - Remove left and right number six skirts.
  - Check idler wheels and roadwheel hubs for water in oil (milky look). If water is in oil, notify field maintenance.
  - Reinstall left and right number six skirts.

COLD AND HOT WEATHER OPERATIONS

2-75. Extreme weather conditions require additional precautions and actions by the driver. The driver must adjust speed, following distance, and driving techniques to counter the hazards of snow, ice, and freezing conditions. The unit SOP or TACSOP should list clothing for operators to carry during operations that address the operating environment. VCs should inspect operators to ensure the required clothing is worn in the proper configuration during maneuvers and while conducting vehicle maintenance. Drivers must review the technical manual for their vehicle to ensure that they are conducting maintenance in accordance with the climatic conditions they are operating in. Extreme cold and heat affect the operating capabilities of tracked combat vehicles, ignoring the impact climate has on vehicles will reduce their combat effectiveness.

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR COLLECTIVE PROTECTION SYSTEMS

2-76. Chemical, biological, radiological, and nuclear (CBRN) collective protection systems are organic equipment on most tracked combat vehicles. While there are variations relating to system capabilities, most collective protection systems have gas particulate filter units that remove CBRN contaminants and blowers which provide filtered air to crewmembers protective masks. Some provide overpressure which provides further protection in a CBRN environment.

2-77. Units will train on the aforementioned systems and capabilities as part of the drivers training program. Proficiency should be attained in areas such as system capabilities, maintenance, operation, and use. A thorough understanding of not only the systems but the difficulties and levels of degradation relating to dexterity and vision while wearing protective equipment and operating a tracked vehicle must be reached. (See ATP 3-11.32 for additional information on CBRN collective protection systems in tracked combat vehicles.)

SECTION IV – EMERGENCY PROCEDURES

2-78. Tracked vehicle emergency procedures must be incorporated into the unit's driver training program and should be integrated into other training events such as the unit's gunnery training. Emergency procedures will be conducted in accordance with platform specific technical manuals and should adhere to the following:

- React to a vehicle fire must be practiced and assessed based on platform capabilities and by the type of fire (engine compartment, turret, hull, and so forth).
- Operating the vehicle's portable fire extinguishers and the vehicle automatic fire extinguishing systems in manual mode must be incorporated into the training event.
- Reacting to multiple types of rollovers and the effects of the rollover on normal operation of vehicle components, such as hatches and the evacuation techniques that may differ, will be integrated into the emergency procedure portion of driver training and testing.
- Removing injured personnel may be combined with the rollover portion of the training and assessment.

2-79. The various platforms that are discussed in this publication have additional capabilities that require proficiency in the procedures to execute supplementary emergency procedures. These procedures vary by platform but may consist of emergency shutdown of major components, electrical systems, and operation in degraded modes. Vehicle technical manuals should be fully reviewed during analysis and design of unit driver training. Any additional emergency procedures that are specific to a vehicle or platform variant should be merged into the training.

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Chapter 3

Driver Selection, Training, and Supervision

Chapter 3 outlines a system for identifying, selecting, and qualifying trainers and drivers (see AR 600-55 for more information). The Army vehicle driver's contribution to combat efficiency is not always recognized or appreciated. Soldier performance is a critical factor in keeping a vehicle in operation. Even the best designed vehicles maintained by the best Army operators and mechanics cannot compensate for poor driving practices. Poor driver training and practices can result in accidents, injury to personnel, and damage to equipment.

SECTION I – PREPARATION FOR DRIVER TRAINING

3-1. Effective driver training depends on careful planning and thorough instruction. Before instruction begins, the commander makes a careful and complete estimate of the driver training requirement. Based on this estimate and in accordance with applicable unit SOPs, installation policies, and AR 600-55 the commander or civilian branch chief will—

- Develop plans and schedules.
- Select and train license instructors (LIs) and license examiners (LEs).
- Ensure adequate facilities and equipment are available.
- Ensure the unit has a current file of all Army, post, and unit publications and policies that pertain to driver training.
- Inform students of all regulations during the first phase of training.

3-2. Time permitting, unit leaders or trainers should identify students well in advance of training and provide them with the unit SOP and driver training regulations to study on their own prior to actual training.

ESTIMATE OF DRIVER TRAINING SITUATION

3-3. When preparing to conduct a driver training program, the commander estimates the driver training situation by answering these questions:

- How many personnel require qualification (monthly, annually)?
- How many previously licensed drivers need verification or recertification?
- What are the capabilities and general experiences of new drivers who need qualification?
- What are the seasonal requirements for unit location?
- How much time is available?
- What type of tracked-vehicle accidents has the unit experienced?
- How many licensed instructors are available?
- Will the training be part of unit in processing?
- What special training do the instructors require?
- What facilities, supplies, and equipment (including training aids, vehicles, and driving ranges with varied terrain) are available?
- Does the unit have any major training events scheduled?

3-4. The commander analyzes the answers to help develop and organize an effective plan to carry out the training. In organizing the training program, the commander analyzes the appropriate TSP to determine the following:

- The number of instructors who need training and a schedule for their instruction.
- The duties and responsibilities of each instructor.
- The number of operators who require training or retraining and a schedule for their instruction.
- How students will be grouped and how each group will be rotated.
- What facilities, supplies, and equipment are needed and how to get them ready.
- The standards for training required by the appropriate TSP and your unit's needs.

- What training aids, devices, simulators, and simulations (TADSS) are available to support the driver training strategy.

INSTRUCTOR SELECTION

3-5. The commander selects the best noncommissioned officers for instructors. Normally, a battalion-level officer will be responsible for the selection and training of instructors. All prospective instructors should—

- Be competent and well trained in their military occupational specialty.
- Be qualified to operate the equipment and licensed for 1 year.
- Have technical knowledge of the equipment.
- Have the knowledge and experience needed to instruct.

INSTRUCTOR TRAINING

3-6. Instructors must successfully complete the LI and LE course. The course is provided via distance learning and reservations are made in the Army Training Requirements and Resources System. Instructors should take annual refresher training to sharpen their skills and to help them maintain proficiency. Refresher training should cover all information in the driver training program.

3-7. The commander should emphasize the importance of observing student driving techniques so errors can be corrected immediately.

3-8. The commander provides special training for giving the physical qualifications test, the written tests, and the performance tests. The instructor must understand the purpose and nature of the tests. They must adhere to the regulations, lesson plans, and TSPs. Prior to the examinations, they must know and understand the standards of the test and how it is scored.

SECTION II – DRIVER SELECTION

3-9. Driver selection may be overlooked as a key component to a unit driver training program. Using a specific methodology to select or disqualify a Soldier during the selection process can save time and ultimately lives. The following sections will discuss some of the areas that should be considered during the selection phase of driver training.

SELECTION OF BEST QUALIFIED PERSONNEL

3-10. Poor operators often cause units to lose valuable training time by causing injury to themselves or others and by damaging equipment. In an operational setting, this can jeopardize the mission and Soldier's lives. Therefore, eliminate poor training risks before training starts. When selecting personnel for training as vehicle drivers, it is best to pick those with previous driving experience. However, a person with no previous experience can learn to operate a tracked combat vehicle. Once you have selected a driver, record information obtained from the interview, battery tests, physical qualification tests, and the road test on DA Form 348 (*Equipment Operator's Qualification Record [Except Aircraft*]). See AR 600-55 for proper use of this form.

RECORDS REVIEW

3-11. The commander or the designated representative will review the following records:

- Soldier Talent Profile.
- DA Form 348.
- DA Form 3349-SG (*Physical Profile Record*).

INTERVIEW

3-12. After reviewing the records, an interview will reveal useful information about the individual under consideration. During the interview, any characteristics that might affect driver performance should be noted. Areas of concern include—

- Maturity.
- Attitude.
- Past driving record.

- Hearing and vision.
- Extreme nervousness.
- Any abnormal characteristics.
- Medication that causes drowsiness, impairs vision, or affects coordination. Check with health service support regarding concerns about medication.

3-13. Suggested questions for the interview include—

- How much experience have you had in driving a passenger car?
- How many miles have you driven during the past 12 months?
- Have you ever driven a combat vehicle?
- Have you operated any heavy equipment such as tractors, road graders, or bulldozers? If so, for how long?
- How much experience have you had driving a truck of 1/2-ton or greater capacity?
- Have you ever driven a truck with all-wheel drive?
- Have you had an accident in which someone was injured, or property damage exceeded $1,000? If so, explain who was at fault and how, in your opinion, the accident could have been avoided.
- Have you had any traffic violations?
- How do you account for your good or bad driving record?
- Do you think you would make a good driver? If so, why?
- Can you repair automobiles or related machinery? If so, what is your experience with this sort of work?
- Do you have any problems with your eyes that would affect your driving ability (day or night)? Do you wear corrective lenses?
- Do you have any hearing problems?
- Do you know of any physical problems that might affect your ability to drive?
- Have you ever been involved in a drug or alcohol offense?

SECTION III – TRAINING PROGRAM

3-14. The commander develops the training strategy after assessing the strengths and weaknesses of the unit. During the assessment, the commander considers any personnel turbulence (changes) that may affect crew qualifications. The commander's strategy must focus on mission-essential task list, sustaining unit strengths, and correcting its deficiencies. This requires an integrated training strategy. VCs are required to be proficient with all tasks performed on the vehicle, to include tasks associated with driving the vehicle. An assignment as the driver of a tracked combat vehicle is likely to be the initial assignment a crewmember takes when they are assigned to the tracked combat vehicle crew. Because driving the tracked combat vehicle is the initial crew assignment, all other crewmembers should have experience driving and maintaining the vehicle and can therefore advise and assist drivers as needed.

BASIC DRIVER TRAINING

3-15. Basic driver training develops individual skills needed to operate the vehicle. The driver is trained and evaluated on performing—

- All PMCS on the vehicle.
- Operating the vehicle in usual and unusual conditions.
- Recovery operations (self and like vehicle).
- Day and night driving techniques.
- Crew drills.
- Emergency procedures.

3-16. Using TADSS simulates multiple environments in which the driver can gain proficiency with driving and coordination skills without the added cost of using the actual vehicle. Training can also include other driver tasks, such as ground guide, convoy operations, and driving under unusual conditions and in complicated terrain. Commanders should incorporate drivers training using simulation systems prior to executing physical drivers training if the situation and environment allow it.

TRAINING PLANS

3-17. Once the commander has developed the mission-essential task list and thoroughly assessed training proficiency, they will begin the detailed process of developing a training plan.

MASTER DRIVER MANAGER/MASTER DRIVER/LICENSE INSTRUCTOR/LICENSE EXAMINER

3-18. The primary mission of the master driver manager at the brigade is to manage subordinate organization licensing programs. The master driver at the battalion will manage the licensing program. The LI/LE executes the training and administers assessments and evaluations.

3-19. The commander identifies the specific responsibilities. It should include the following:

- Assists the validation or certification of newly assigned Soldiers.
- Sets up or conducts initial skills training for new drivers.
- Assists in training new drivers.
- Trains and certifies driver training instructors and evaluators.
- Assists all elements in the unit concerning operators training.
- Regularly reviews training strategies and plans and recommends changes as needed.
- Forecasts all resources for training.
- Manages driver training records.
- Coordinates and controls the use of TADSS.
- Plans and manages simulator training.
- Incorporates previous lessons learned into the unit training program.
- Conducts reconnaissance and coordinates with range control and other applicable installation activities for approval of driving routes and courses to support driver training.
- Executes operator training.

TRAINING CONDITIONS

3-20. Driving and operational conditions vary so crews must learn to fight in any battlefield environment. Training in a variety of conditions ensures crews can perform in adverse weather and degraded mode operations. Limited visibility aids must not only be used at night, but also during daylight operations in smoke, adverse weather conditions, and concealing terrain.

ADVERSE WEATHER

3-21. Soldiers must know how adverse weather affects their senses. They must also know how to operate the vehicle in these types of conditions:

- Fog.
- Snow.
- Mud.
- Sandstorms.
- Heavy rain.

INCENTIVE PROGRAMS

3-22. Army policy encourages incentive awards programs to motivate personnel to improve their skills. Every organization should have an incentive awards program for its operators to ensure they receive recognition for their efforts. Expert driver badges or certificates presented to qualified operators give them due recognition. To emphasize the importance of the awards, the commander should present them during a ceremony or formation. Requirements for these awards are in AR 600-8-22.

PROGRAM ADMINISTRATION

3-23. Publications, forms, historical records, and reports are part of daily operations. Forms and publications used at the unit level should be part of the driver-training program to ensure proper management control and

compliance with maintenance procedures. AR 600-55 covers forms in detail. Both the commander and trainer must be familiar with the publications that govern driving Army vehicles.

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Appendix A

Tracked Combat Vehicle Characteristics

This appendix discusses the operating characteristics for the following vehicles: M1 Abrams main battle tank series, BFV series, the AMPV series, and the M10 Booker combat vehicle platform. Knowing the specific capabilities and limitations associated with their vehicle allows drivers to determine when their vehicle has met its operational limits or is in danger of exceeding the vehicle's safe operating limits.

ABRAMS MAIN BATTLE TANK

A-1. The Abrams main battle tank operational capabilities are listed in table A-1 and table A-2 on page 30.

Table A-1. M1A1 Abrams main battle tank

Operational		
Forward speed, maximum (paved level surface)		41.5 mph (67 km/h)
Reverse speed, maximum (paved level surface)		25 mph (40.2 km/h)
Range, constant 25 mph (dry, level secondary roads without refueling)		273 to 298 mi (439 to 480 km)
Vertical obstacle vehicle can climb (forward)		49 in (124 cm)
Maximum width of ditch vehicle can cross (forward)		108 in (274 cm)
Fording depth	Without kit	48 in (122 cm)
	With kit	Turret roof
Grade ascending ability, sustained speed at 5 mph (8.0 km/h)		60% (31°)
Grade descending ability (max)		60% (31°)
Side slope (maximum)		40% (31°)
Weight: Combat-loaded (less kits)	With T-156 track	66.2 tons
	With T-158 track	67.6 tons
Dimensions		
Length (overall, main gun rearward)		355.6 in (903.2 cm)
Length (gun forward)		386.9 in (982.7 cm)
Height (ground to turret roof)		96 in (243.8 cm)
Height (maximum overall)		113.6 in (288.5 cm)
Width		143.75 in ± 0.54 in (365.3 cm ± 1.4 cm)
Width (less skirts)		136 in (345 cm)
Ground clearance T-156 track		(center portion of hull structure) 19.0 in (48.3 cm) (other portion of hull structure) 17.0 in (43.2 cm)
Ground clearance T-158 track		(center portion of hull structure) 18.5 in (47.0 cm) (other portion of hull structure) 16.5 in (41.9 cm)

Table A-1. M1A1 Abrams main battle tank (continued)

Fuel Capacities	
Fuel tanks, left front	106.6 gal (403.5 L)
Right front	149.8 gal (567.0 L)
Rear left engine	86.9 gal (328.9 L)
Right engine	57.1 gal (216.1 L)
Left sponson	59.0 gal (223.3 L)
Right sponson	45.0 gal (170.3 L)
Total in rear tank	248.0 gal (938.7 L)
Total in all tanks	504.4 gal (1909.2 L)
Controls	
Brakes	Hydraulic, mechanical service brake (foot)
Steering	Hydraulic, mechanical steering control
Turning capability	360-degree pivot
Legend: °–degrees; %–percent; ASTM–American Society for Testing and Materials; C–Celsius; cm–centimeters; CONUS–continental United States; F–Fahrenheit; gal–gallon; in–inches; km–kilometers; km/h–kilometers/hour; L–liter; mi–miles; mph–miles per hour; NATO–North Atlantic Treaty Organization; OCONUS–outside the continental United States	

Table A-2. M1A2 Abrams tank

Operational		
Forward speed, maximum (paved level surface)		41.5 mph (67 km/h)
Reverse speed, maximum (paved level surface)		25 mph (40.2 km/h)
Range, constant 25 mph		AGT1500: 210 to 220 mi (338 to 354 km)
Vertical obstacle vehicle can climb (forward)		42 in (107 cm)
Maximum width of ditch vehicle can cross (forward)		108 in (274 cm)
Fording depth	Without kit	48 in (122 cm)
	With kit	Turret roof
Grade ascending ability sustained speed at 5 mph (8.0 km/h)		60% (31°)
Grade descending ability (max)		60% (31°)
Side slope (maximum)		40% (22°)
Weight: Combat loaded (less kits)		68.7 tons (69.8 Mg)

Table A-2. M1A2 Abrams tank (continued)

Dimensions	
Length (overall, main gun rearward)	355.6 in (903.2 cm)
Length (gun forward)	386.9 in (982.7 cm)
Height (ground to turret roof)	96 in (243.8 cm)
Height (maximum overall)	113.6 in (288.5 cm)
Width	143.75 in ± 0.54 in (365.3 cm ± 1.4 cm)
Width (less skirts)	136 in (345 cm)
Ground clearance T-156 track	(center portion of hull structure) 19.0 in (48.3 cm) (other portion of hull structure) 17.0 in (43.2 cm)
Ground clearance T-158 track	(center portion of hull structure) 18.5 in (47.0 cm) (other portion of hull structure) 16.5 in (41.9 cm)
Fuel Capacities	
Fuel tanks, left front	106.6 gal (403.5 L)
Right front	149.8 gal (567.0 L)
Rear left engine	86.9 gal (328.9 L)
Right engine	57.1 gal (216.1 L)
Right rear sponson	45.0 gal (170.3 L)
Total in rear tank	189.0 gal (715.5 L)
Total in all tanks	445.4 gal (1,681.0 L)
Controls	
Brakes	Hydraulic, mechanical service brake (foot)
Steering	Hydraulic, mechanical steering control
Turning capability	360-degree pivot
Legend: °–degrees; %–percent; ASTM–American Society for Testing and Materials; C–Celsius; cm–centimeters; CONUS–continental United States; F–Fahrenheit; gal–gallon; in–inches; km–kilometers; km/h–kilometers/hour; L–liter; Mg–megagram; mi–miles; mph–miles per hour; NATO–North Atlantic Treaty Organization; OCONUS–outside the continental United States	

BRADLEY FIGHTING VEHICLE

A-2. The BFV operational capabilities are listed in tables A-3 and A-4.

Table A-3. M2A3

Operational Characteristics	
Speed on land	38 mph (61 km/h)
Cruising range	250 miles (402 km)
Vertical wall climbing	36 in/0.9 m
Trench crossing	100 in/2.5 m
Fording depth	more than 1 1/2 ft (.46 m) deep and less than 3 1/2 ft (1.07 m) deep
Slope	60%
Side slope	no steeper than 40% (22 degrees)
Weight (combat loaded)	74,400 lbs (33,747 kg)
Dimensions	
Length	258 in/6.5 m
Width	129 in/3.2 m
Height (with low tension wire guard included)	130 in/3.3 m
Ground clearance	15 in/0.3 m
Fuel Capacities	
Fuel capacities	175 gal (662 liters)
	155 gal (586 liters) with bladder lining
Controls	
Brakes	Multidisc, oil-cooled
Steering	Hydrostatic
Turning capability	360-degree pivot
Legend: %–percent; ft–feet; gal–gallons; in–inches; kg–kilograms; km–kilometers; km/h–kilometers/hour; lbs–pounds; m–meters; mph–miles per hour	

Table A-4. M2A4

Operational Characteristics	
Speed on land	35 mph (56 km/h)
Cruising range	250 miles (402 km)
Vertical wall climbing	30 in/762 mm
Trench crossing	100 in/2.5 m
Fording depth	more than 1 1/2 ft (.46 m) deep and less than 3 1/2 ft (1.07 m) deep
Slope	60%
Side slope	40%
Weight (combat loaded)	80,000 lbs (36,287 kg)
Dimensions	
Length	258 in/6.5 m
Width	131 in/3.3 m
Height (to CIV)	136 in/3.4 m
Ground clearance	16 in/406 mm
Fuel Capacities	
Fuel capacities	155 gal (587 liters)
Controls	
Brakes	Multidisc, oil-cooled
Steering	Hydrostatic
Turning capability	360-degree pivot
Legend: %–percent; CIV–Commander's Independent Viewer; ft–feet; gal–gallons; in–inches; kg–kilograms; km–kilometers; km/h–kilometers/hour; lbs–pounds; m–meters; mm–millimeters; mph–miles per hour	

ARMORED MULTI-PURPOSE VEHICLE

A-3. The AMPV operational capabilities are listed in table A-5.

Table A-5. Armored multi-purpose vehicle operational capabilities

Operational Characteristics	
Forward speed, maximum (paved level surface)	38 mph (61 km/h)
Acceleration from 0 to 30 mph (0 to 48 km/h)	24 seconds
Cruising range (max) at 30 mph (48 km/h)	225 mi (362 km)
Vertical obstacle vehicle can climb (forward)	24 in (61 cm)
Maximum width of ditch vehicle can cross (forward)	67 in (170 cm)
Fording depth	36 in (91 cm)
Grade ascending ability, sustained speed at 5 mph (8.0 km/h)	60% (31°)
Grade descending ability (max)	60% (31°)
Side slope (maximum)	40% (22°)
Weight: Combat loaded (less kits)	80,203 lbs (36,379.47 kg)
Dimensions	
Length	313.7 in (796.79 cm)
Width	123.1 in (312.7 cm)
Height (with low tension wire guard included)	171.8 in (436.37 cm)
Width (body)	144.9 in (368.04 cm)
Width (track)	115 in (292 cm)
Fuel Capacities	
Fuel capacities	155 gal (587 liters)
Controls	
Brakes	Multidisc, oil-cooled
Steering	Hydrostatic
Turning capability	360-degree pivot
Legend: °–degrees; %–percent; cm–centimeters; gal–gallons; in–inches; kg–kilograms; km–kilometers; km/h–kilometers/hour; lbs–pounds; m–meters; mi–miles; mm–millimeters; mph–miles per hour	

M10 BOOKER COMBAT VEHICLE

A-4. The M10 Booker combat vehicle operational capabilities are listed in table A-6.

Table A-6. M10 Booker combat vehicle operational capabilities

Operational Characteristics	
Forward speed, maximum (paved level surface)	41.5 mph (67 km/h)
Reverse speed, maximum (paved level surface)	25 mph (40.2 km/h)
Range, constant 29 mph (40.2 km/h) (paved level surface)	210 to 220 mi (338 to 354 km)
Vertical obstacle vehicle will climb (forward)	42 in (107 cm)
Maximum width of ditch vehicle will cross (forward)	108 in (274 cm)
Fording depth	48 in (122 cm)
Grade ascending ability, sustained speed at 5 mph (8.3 km/h)	60% (31°)
Grade descending ability (max)	60% (31°)
Side slope (maximum)	40% (22°)
Traverse of turret	360°
Rotation of Commander Independent Tactical Viewer (CITV)	360°
Dimensions	
Weight, combat-loaded (less kits)	42 tons (23 Mg)
Ground pressure	12.9 psi (88.9 kPa)
Length	343.7 in (873 cm)
Height	112 in (284.5 cm)
Width with skirts	132.8 in (337.3 cm)
Width without skirts	127.5 in (323.9 cm)
Ground clearance center portion of hull structure	18.9 in (48.0 cm)
Fuel Capacities	
Fuel capacities	225.0 gal (851.7 liters)
Controls	
Brakes	Hydraulic-mechanical service brake (foot)
Steering	Hydraulic-mechanical steering control
Turning capability	360-degree pivot
Legend: °–degrees; %–percent; cm–centimeters; gal–gallons; in–inches; kg–kilograms; km–kilometers; km/h–kilometers/hour; kPa–kilopascal; mi–miles; Mg–megagram; mi–miles; mph–miles per hour; psi–pounds per square inch	

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Appendix B

Sample Drivers Training Schedule

Note. This is an example training schedule for tracked vehicles. (See TC 21-305-3 and AR 600-55 for wheeled vehicle driver's training.)

Many variables need to be considered when creating a schedule for drivers training. Some factors to consider are the type of equipment being trained, number of personnel being trained, location of training, weather conditions, and available resources. Time to train each subject will vary based on all variables (see table B-1).

Table B-1. Drivers Training Schedule, example

Example Drivers Training Schedule Class Number: XX-XX Class Dates: DD/MM/YY–DD/MM/YY # of Days / # Hours of Training									
TEAM/GROUP	**TRAINING TIME (BEGIN-END)**	**SUBJECT**	**METHOD OF INSTRUCTION: Lecture (DM) Demonstration (SIM) Simulator (PE) Practical Exercise (TE) Test**	**LOCATION**	**INSTRUCTOR**	**UNIFORM**	**REFERENCES**	**TRAINING HOURS**	**REMARKS**
Day 1									
All	8:00-9:00	**Unit A**. Introduction, organization of course, and materials review.	Lecture	Drivers Training Classroom	Master Driver	DUTY	AR 600-55 or TC 21-306	1.0	
All	9:00-10:00	**Unit B.** State, local, host nation, and post traffic regulations and laws.	Lecture	Drivers Training Classroom	Master Driver	DUTY	AR 600-55 or TC 21-306	1.0	
All	10:00-11:00	**Unit C.** Basic regulations, responsibilities, and traffic controls.	Lecture	Drivers Training Classroom	Master Driver	DUTY	AR 600-55 or TC 21-306	1.0	
All	11:00-12:00	**Unit D**. Basic operating procedures.	Lecture	Drivers Training Classroom	Master Driver	DUTY	AR 600-55 or TC 21-306	1.0	
All	12:00-13:00	NOON MEAL	Unit SOP	N/A	N/A	DUTY	N/A	N/A	
All	13:00-14:00	**Unit E**. Emergency procedures.	Lecture	Drivers Training Classroom	Master Driver	DUTY	AR 600-55 or TC 21-306	1.0	
All	1400-15:00	**Unit F.** Accident causes and reports.	Lecture	Drivers Training Classroom	Master Driver	DUTY	AR 600-55 or TC 21-306	1.0	
All	15:00-16:00	**Unit G.** Hazards and safety measures.	Lecture	Drivers Training Classroom	Master Driver	DUTY	AR 600-55 or TC 21-306	1.0	
All	16:00-17:00	**Unit H.** Operation of government vehicles off post/base.	Lecture	Drivers Training Classroom	Master Driver	DUTY	AR 600-55 or TC 21-306	1.0	

EXAMPLE

Table B-1. Drivers Training Schedule, example (continued)

TEAM/GROUP	TRAINING TIME (BEGIN-END)	SUBJECT	METHOD OF INSTRUCTION: Lecture (DM) Demonstration (SIM) Simulator (PE) Practical Exercise (TE) Test	LOCATION	INSTRUCTOR	UNIFORM	REFERENCES	TRAINING HOURS	REMARKS
Day 2									
All	8:00-9:00	**Unit I**. Maintenance responsibilities to include preventive maintenance checks and services and required forms.	Lecture	Drivers Training Classroom	Master Driver	DUTY	AR 600-55 or TC 21-306	1.0	
All	9:00-10:00	**Unit J**. Procedures for transporting personnel.	Lecture	Drivers Training Classroom	Master Driver	DUTY	AR 600-55 or TC 21-306	1.0	
All	10:00-11:00	**Unit K**. Motor marches and convoy operations	Lecture	Drivers Training Classroom	Master Driver	DUTY	AR 600-55 or TC 21-306	1.0	
All	11:00-12:00	**Phase L**: Initial Operator Training Examination Review	Lecture	Drivers Training Classroom	Master Driver	DUTY	AR 600-55 or TC 21-306	1.0	
All	12:00-13:00	NOON MEAL	Unit SOP	N/A	N/A	DUTY	N/A	N/A	
All	13:00-15:00	**Unit L**. Phase I: Initial Operator Training examination.	(TE)	Drivers Training Classroom	License Examiner	DUTY	AR 600-55 or TC 21-306	2.0	
All	15:00-17:00	**Unit M.** Introduction to specific vehicle or equipment.	Lecture	Drivers Training Classroom	License Instructor	DUTY	AR 600-55 or TC 21-306 Vehicle Specific TM	2.0	

EXAMPLE

Table B-1. Drivers Training Schedule, example (continued)

TEAM/GROUP	TRAINING TIME (BEGIN-END)	SUBJECT	METHOD OF INSTRUCTION: Lecture (DM) Demonstration (SIM) Simulator (PE) Practical Exercise (TE) Test	LOCATION	INSTRUCTOR	UNIFORM	REFERENCES	TRAINING HOURS	REMARKS
Day 3									
All	8:00-12:00	**Unit M.** Introduction to specific vehicle or equipment.	(Lecture/DM)	Hands on driver training area	License Instructor	DUTY	AR 600-55 or TC 21-306	4.0	
All	12:00-13:00	NOON MEAL	Unit SOP	N/A	N/A	DUTY	N/A	N/A	
All	13:00-14:00	Vehicle Specific Test Review	Lecture	Drivers Training Classroom	License Instructor	DUTY	AR 600-55 or TC 21-306 Vehicle Specific TM	1.0	
All	14:00-16:00	**Unit N.** Written examination (vehicle specific). When available, use examination from TC. Commands must develop and approve examination for equipment that does not have published TC.	(TE)	Drivers Training Classroom	License Examiner	DUTY	AR 600-55 or TC 21-306 Vehicle Specific TM	2.0	
All	16:00-17:00	Issue trainees OF 346 upon successful completion of written vehicle examination.		Drivers Training Classroom	Master Driver, License Instructor, License Examiner	DUTY	AR 600-55	1.0	

EXAMPLE

Table B-1. Drivers Training Schedule, example (continued)

TEAM/GROUP	TRAINING TIME (BEGIN-END)	SUBJECT	METHOD OF INSTRUCTION: Lecture (DM) Demonstration (SIM) Simulator (PE) Practical Exercise (TE) Test	LOCATION	INSTRUCTOR	UNIFORM	REFERENCES	TRAINING HOURS	REMARKS
Day 4									
All	8:00-12:00	**Unit O**. Vehicle operating familiarization using training aids, devices, simulators, and simulations (when available).	(PE/SIM)	Simulator Facility	License Instructor	DUTY/Any required PPE	AR 600-55 or TC 21-306 Vehicle Specific TM	4.0	
All	12:00-13:00	NOON MEAL	Unit SOP	N/A	N/A	DUTY	N/A	N/A	
All	13:00-17:00	**Unit O**. Vehicle operating familiarization using training aids, devices, simulators, and simulations (when available).	(PE/SIM)	Simulator Facility	License Instructor	DUTY/Any required PPE	AR 600-55 or TC 21-306 Vehicle Specific TM	4.0	
Day 5 –6									
All	8:00-12:00	**Unit P.** Usual Conditions: Operate vehicle/equipment under normal conditions on road driving courses and in controlled routes during daylight, and nighttime using headlights. **(Driving routes to be approved by local command.)**	(PE)	Hands on driver training area	License Instructor	DUTY/Any required PPE	AR 600-55 or TC 21-306 Vehicle Specific TM	4.0	
All	12:00-13:00	NOON MEAL	Unit SOP	N/A	N/A	DUTY	N/A	N/A	
All	13:00-17:00	**Unit P.** Usual Conditions: Operate vehicle/equipment under normal conditions on road driving courses and in controlled routes during daylight, and nighttime using headlights. **(Driving routes to be approved by local command.)**	(PE)	Hands on driver training area	License Instructor	DUTY/Any required PPE	AR 600-55 or TC 21-306 Vehicle Specific TM	4.0	

EXAMPLE

Table B-1. Drivers Training Schedule, example (continued)

TEAM/GROUP	TRAINING TIME (BEGIN-END)	SUBJECT	METHOD OF INSTRUCTION: Lecture (DM) Demonstration (SIM) Simulator (PE) Practical Exercise (TE) Test	LOCATION	INSTRUCTOR	UNIFORM	REFERENCES	TRAINING HOURS	REMARKS
Day 7-8									
All	15:00-23:00	**Unit P.** Usual Conditions: Operate vehicle/equipment under normal conditions on road driving courses and in controlled routes during daylight, and nighttime using headlights. **(Driving routes to be approved by local command.)**	(PE)	Hands on driver training area	License Instructor	DUTY/Any required PPE	AR 600-55 or TC 21-306 Vehicle Specific TM	8.0	***Night time Driving with use of head lights***
Day 9-10									
All	8:00-12:00	**Unit Q.** Unusual Conditions: Operate vehicle off-road using training locations approved by local command. Focus training content on the unusual conditions defined in. **(Driving routes to be approved by local command.)**	(PE)	Hands on driver training area	License Instructor	DUTY/Any required PPE	AR 600-55 or TC 21-306 Vehicle Specific TM	4.0	
All	12:00-13:00	NOON MEAL	Unit SOP	N/A	N/A	DUTY	N/A	N/A	
All	13:00-17:00	**Unit Q.** Unusual Conditions: Operate vehicle off-road using training locations approved by local command. Focus training content on the unusual conditions defined in operator TM. **(Driving routes to be approved by local command.)**	(PE)	Hands on driver training area	License Instructor	DUTY/Any required PPE	AR 600-55 or TC 21-306 Vehicle Specific TM	4.0	

EXAMPLE

Table B-1. Drivers Training Schedule, example (continued)

TEAM/GROUP	TRAINING TIME (BEGIN-END)	SUBJECT	METHOD OF INSTRUCTION: Lecture (DM) Demonstration (SIM) Simulator (PE) Practical Exercise (TE) Test	LOCATION	INSTRUCTOR	UNIFORM	REFERENCES	TRAINING HOURS	REMARKS
Day 11									
All	8:00-12:00	**Unit R.** Respond to emergency situations; vehicle malfunctions.	(PE)	Hands on driver training area	License Instructor	DUTY/Any required PPE	AR 600-55 or TC 21-306 Vehicle Specific TM	4.0	
All	12:00-13:00	NOON MEAL	Unit SOP	N/A	N/A	DUTY	N/A	N/A	
All	13:00-17:00	**Unit S.** Self-recovery methods.	Lecture	Hands on driver training area	License Instructor	DUTY/Any required PPE	AR 600-55 or TC 21-306 Vehicle Specific TM	4.0	
Day 12									
All	8:00-12:00	**Unit T.** Operate vehicle specific capabilities. Unit T applies to any additional required training	(PE)	Hands on driver training area	License Instructor	DUTY/Any required PPE	AR 600-55 or TC 21-306 Vehicle Specific TM	4.0	
All	12:00-13:00	NOON MEAL	Unit SOP	N/A	N/A	DUTY	N/A	N/A	
All	13:00-17:00	**Unit T.** Operate vehicle specific capabilities. Unit T applies to any additional required training	(PE)	Hands on driver training area	License Instructor	DUTY/Any required PPE	AR 600-55 or TC 21-306 Vehicle Specific TM	4.0	

EXAMPLE

Table B-1. Drivers Training Schedule, example (continued)

TEAM/GROUP	TRAINING TIME (BEGIN-END)	SUBJECT	METHOD OF INSTRUCTION: Lecture (DM) Demonstration (SIM) Simulator (PE) Practical Exercise (TE) Test	LOCATION	INSTRUCTOR	UNIFORM	REFERENCES	TRAINING HOURS	REMARKS
Day 13									
All	8:00-12:00	**Unit U**. Preventive Maintenance Checks and Services test.	(TE)	Hands on driver training area/ Approved Road Test Route	License Examiner	DUTY/Any required Personal Protective Equipment PPE	AR 600-55 or TC 21-306 Vehicle Specific TM	4.0	
All	12:00-13:00	NOON MEAL	Unit SOP	N/A	N/A	DUTY	N/A	N/A	
All	13:00-17:00	**Unit V.** Vehicle Control test.	(TE)	Hands on driver training area/ Approved Road Test Route	License Examiner	DUTY	AR 600-55 or TC 21-306 Vehicle Specific TM	4.0	
Day 14									
All	8:00-12:00	**Unit W.** Road Test	(TE)	Hands on driver training area/ Approved Road Test Route	License Examiner	DUTY/Any required PPE	AR 600-55 or TC 21-306 Vehicle Specific TM	4.0	
All	12:00-13:00	NOON MEAL	Unit SOP	N/A	N/A	DUTY	N/A	N/A	
All	13:00-16:00	**Unit W**. Road Test	(TE)	Hands on driver training area/ Approved Road Test Route	License Examiner	DUTY/Any required PPE	AR 600-55 or TC 21-306 Vehicle Specific TM	3.0	
All	16:00-17:00	**Issue Army Standard License to trainees that passed course and conduct course after action review.**	(TE)	To Be Determined	Master Driver, License Instructor, License Examiner		AR 600-55 or TC 21-306 Vehicle Specific TM	1.0	

Legend: AR–Army regulation; DM–demonstration; N/A–not applicable; PE–practical exercise; PPE–personal protective equipment; SIM–simulation; SOP–standard operating procedure; TC–training circular; TE–test; TM–technical manual

EXAMPLE

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Appendix C

Driver Training Lesson Plans

Appendix C provides examples of lesson plans for the tracked combat vehicle family of vehicles. These examples may be utilized to draft your unit's training plan. The required number of days for each training event should be determined by vehicle platform and proper training for both the usual and unusual driving conditions. Additional training materials for the tracked combat vehicle family of vehicles can be found at the Unit Training Assistance Program website or Army Publishing Directorate website. These sites should also be reviewed prior to the development of drivers training to ensure that the most recent training materials available are being utilized for drivers training.

Lesson Plan List

1. Complete a DD Form 518 (*Accident Identification Card)* and SF 91 (*Motor Vehicle Accident [Crash] Report)*.
2. Technical manuals and DA forms associated with operating a tracked combat vehicle.
3. Perform preventative maintenance checks and services (PMCS) on a tracked combat vehicle.
4. Operate a tracked combat vehicle under usual conditions.
5. Operate a tracked combat vehicle under unusual conditions.

Complete a DD Form 518 and SF 91

Action: Annotate information pertaining to accident forms.

Conditions: In an operational environment, given instruction and a practical exercise.

Standards: Complete the practical exercise by correctly filling out the DD Form 518 and SF 91 using a given scenario. In accordance with applicable references, and within an allotted time frame. Soldiers must receive a "GO" on all applicable performance measures.

Special Instructions:

1. The following supporting documents can be downloaded:
    a. DD Form 518.
    b. SF 91.
    c. SF 94 (*Statement of Witness)*.
    d. TC 21-306.
2. Additional training resources can also be found on the Unit Training Assistance Program website.

Evaluation Requirements: Students must receive a "GO" on all applicable performance measures during Unit F of the driver training program. The completed DD Form 518 and SF 91 performance checklist will be added to the operator's driver training packet. Students must also pass the written examination during Unit L of the driver training program.

Instructor Guidance: Many variables need to be considered when conducting drivers training. Some factors to consider are the type of equipment being trained, number of personnel being trained, location of training, weather conditions, and available resources. Time required to train this subject will vary based on all variables.

Learning Step Activity 1: Identify Required Entries on the DD Form 518.

Method of Instruction: Lecture/PowerPoint Presentation

DD Form 518:

1. Purpose: DD Form 518 is completed by the operator and given to any persons involved in an accident with all the information that they require from you.

2. General Instructions:

a. Fill this form out at the scene of an accident or as promptly as possible and give it to the person directly concerned.
b. If an accident involves a parked vehicle and the person concerned is not present, place the DD Form 518 inside the vehicle or secure it on the windshield.
c. Notify local authorities and stand by the scene of the accident until they arrive.

3. Completing DD Form 518:

a. Any correspondence regarding the accident should be addressed to: Commanding General, your duty station, ATTN: Claims Office.
b. Date of accident. Fill in the date.
c. Make and type of vehicle. Identify your vehicle - for example, "M915 14 Ton 6x4."
d. Registration number of vehicle. Write the number of your vehicle.
e. Driver. Put your last name, then your first name and middle initial.
f. Social Security number (disclosure of SSN is voluntary).
g. Grade. Your rank.
h. Organization. Name of organization to which you are assigned.

Check on Learning: **Conduct a Check on Learning**

1. What is the form number for the accident investigation card?
2. What is the purpose of the accident investigation card?
3. If the accident occurs with a parked vehicle, where do you place the accident investigation card?
4. What entries are required to be filled out by the vehicle operator on a DD Form 518?

Review Summary: Conduct a Summary Review, allow the students to ask any questions that they have.

Learning Step Activity 2: Identify Required Entries on the SF 91.

Method of Instruction: **Lecture/PowerPoint Presentation**

SF 91:

1. Purpose: Operator's report of motor vehicle accident. It protects both you and the government against claims and exaggerations.

2. General Instructions:

a. Always stop and investigate any accident in which you are involved. The only possible exception to this rule might be in combat or in case of military necessity when you are operating under definite orders not to stop.
b. Secure hard-to-get information first. Your first responsibility is caring for the injured and ensuring your vehicle will not cause another accident. Obtain the names and addresses of the people involved in the accident and all witnesses. This should be done promptly, or else you may end up not getting all the necessary information.
c. Do not leave the scene of the accident until you have carefully noted the condition of the road, the position of the vehicles, an estimate of the amount of damage, and any other such details which you cannot get later.
d. Fill in items which you know or can easily get (such as your own name, the make of your vehicle, and so forth) after you have done everything else. This can be done after you have left the scene of the accident.
e. Be exact. Be sure that your report gives a clear picture of what happened. If another vehicle is involved, your diagram of the accident should show exactly where the vehicles were before and after the crash and exactly what obstacles blocked either driver's view. Every name should be

spelled correctly, and every street address listed by number. State visible damage (such as "crushed right rear wheel, bent or broken axle, crumpled fender"), but do not guess at damages that you cannot see and the value of damaged property. If someone claims that you have damaged property, but you cannot see the damage, note only that the person "claims bent frame," and so forth. Follow the same procedures with injuries.

f. Never express an opinion, either orally or in writing to others. Just be polite and try to get all necessary information.

g. Check each item on the SF 91 carefully.

3. Instructions for filing out the SF 91: Sections I through IX are filled out by the vehicle operator. Section X, items 73 through 83d are filled out by the operator's supervisor. Section XI through XIII are filled out by a crash investigator for bodily injury, fatality, and/or damage exceeding $500.

SECTION I - Federal Vehicle Data:
Block 1 - Driver's name.
Block 2 - Driver's license number/state limitations.
Block 3 - Date of accident.
Block 4a - Department/federal agency permanent office address.
Block 4b - Work telephone number.
Block 4c - E-mail address
Block 5 - Tag or identification number.
Block 6 - Estimated repair cost ($).
Block 7 - Year of vehicle.
Block 8 - Make of vehicle.
Block 9 - Model of vehicle.
Block 10 - Seat belts used (yes or no).
Block 11 - Describe vehicle damage.

SECTION II - Other Vehicle Data (Use Section VIII if additional space is needed):
Block 12 - Driver's name (Last, First, Middle).
Block 13 - Social Security number/tax identification number.
Block 14 - Driver's license numbers/state/limitations.
Block 15a - Driver's work address.
Block 15b - Telephone number.
Block 16a - Driver's home address.
Block 16b - Home telephone number.
Block 17 - Description of vehicle damage.
Block 18 - Estimated repair cost.
Block 19 - Year of vehicle.
Block 20 - Make of vehicle.
Block 21 - Model of vehicle.
Block 22 - Tag number and state.
Block 23a - Driver's insurance company name and address.
Block 23b - Policy number.
Block 23c - Telephone number.
Block 24 - Vehicle is (CO-Owned; Leased; Rental; Privately Owned).
Block 25a - Owner's name(s) (Last, First, Middle).
Block 25b - Telephone number.
Block 26 - Owner's address(es).

SECTION III - Fatality or Injured (Use Section VIII if additional space is needed):
Block 27 - Name (Last, first, middle).
Block 28 - Sex.
Block 29 - Date of birth.
Block 30 - Address.
Block 31 - Mark "X" in two appropriate boxes: (Killed; Injured; Driver; Helper; Passenger; Pedestrian).

Block 32 - Mark “X” in which vehicle: (Federal; Other).
Block 33 - Location in Vehicle.
Block 34 - First aid given by.
Block 35 - Transported by.
Block 36 - Transported to.
Block 37 - Name (Last, First, Middle).
Block 38 - Sex.
Block 39 - Date of birth.
Block 40 - Address.
Block 41 - Mark “X” in two appropriate boxes: (Killed; Injured; Driver; Helper; Passenger; Pedestrian).
Block 42 - Mark “X” in which type of vehicle: (Federal; Other).
Block 43 - Location in vehicle.
Block 44 - First aid given by.
Block 45 - Transported by.
Block 46 - Transported to.
Block 47- Pedestrian.
Block 47a - Name of street or highway.
Block 47b - Direction of pedestrian (SW corner to NW corner, and so forth.) From: To:
Block 47c - Describe what pedestrian was doing at time of crash (crossing intersection with signal, against signal, diagonally; in roadway playing, walking, hitchhiking).

SECTION IV - Crash Time and Location (Use Section VII if additional space is needed):
Block 48 - Date of accident.
Block 49 - Place of accident (street, city, state, zip code; nearest landmark; distance nearest to intersection; type of locality [industrial, business, residential, open country, and so forth]; Road description).
Block 50 - Time of accident (AM or PM).
Block 51 - Indicate on this diagram how the accident happened (sketch the scene; write in street or highway names or numbers):

a. Number the vehicles involved as follows: Government Vehicle (GOV) #1 - Private Vehicle (POV) #2 - Additional Vehicles GOV or POV as #3, and so forth and show direction of travel by arrow.
b. Use solid line to show path before accident and broken line after accident. Show pedestrian.
c. Show railroad.
d. Give names or numbers of streets or highways.
e. Place arrow in circle to indicate north.

Block 52 - Point of impact: (Check one for each vehicle a-h) Mark with “X”
Block 53 - Describe what happened: Refer to vehicles as Fed, 2, 3, and so forth. Include information on posted speed limit, approximate speed of vehicles, road conditions, weather conditions, driver visibility, condition of accident vehicles, traffic controls (warning light, stop signal, and so forth), condition of light (daylight, dusk, dawn, artificial light, and so forth), and driver actions (making U-turn, passing, stopped in traffic, and so forth).

SECTION V - Witness/Passenger (Witness must fill out SF 94) (Continue in Section VIII):
Block 54 - Name (Last, First, Middle).
Block 55 - Work telephone number.
Block 56 - Home telephone number.
Block 57 - Work address.
Block 58 - Home address.
Block 59 - Name (Last, First, Middle).
Block 60 - Work telephone number.
Block 61 - Home telephone number.
Block 62 - Work address.
Block 63 - Home address.

SECTION VI - Property Damage (Use Section VIII if additional space is needed):
Block 64a - Name of owner.
Block 64b - Work telephone number.
Block 64c - Home telephone number.

Block 64d - Work address.
Block 64e - Home address.
Block 65a - Name of insurance company.
Block 65b - Telephone number.
Block 65c - Policy number.
Block 66 - Item damaged.
Block 67 - Location of damaged item.
Block 68 - Estimated cost.

SECTION VII - Police Information:
Block 69a - Name of police officer.
Block 69b - Badge number.
Block 69c - Telephone number.
Block 70 - Precinct or headquarters.
Block 71a - Person charged with accident.
Block 71b - Violation(s).

SECTION VIII - Extra Details:
Space for detailed answers. Indicate section and item number for each answer. If more space is needed, continue on additional sheets of paper.

SECTION IX - Federal Driver Certification: I certify that the information on this form (Sections I through VIII) is correct to the best of my knowledge and belief.
Block 72a - Name and title of driver.
Block 72b - Driver's signature.
Block 72c - Date.

SECTION X - Details of Trip During Which Crash Occurred:
Block 73 - Origin.
Block 74 - Destination.
Block 75 - Exact purpose of trip.
Block 76 - Trip began: date, time (AM, PM).
Block 77 - Accident occurred: date, time (AM, PM).
Block 78 - Authority for the trip was given to the operator: orally or in writing (explain).
Block 79 - Was there any deviation from direct route? Yes or no (explain).
Block 80 - Was the trip made within established working hours? Yes or no (explain).
Block 81 - Did the operator, while en route, engage in any activity other than that for which the trip was authorized? No or yes (explain).
Block 82 - Completed by driver's supervisor:
    a. Did this crash occur within the employee's scope of duty? (Yes; No).
    b. Comments.
Block 83a - Name and title of supervisor.
Block 83b - Supervisor's signature.
Block 83c - Date.
Block 83d - Telephone number.

SECTION XI - Crash Investigation Data:
Block 84 - Did the investigation disclose conflicting information? NO, YES (If checked, explain below).
Block 85 - Persons interviewed- Name: Date:
Block 86 - Additional comments (Indicate section and item number of each comment).

SECTION XII - Attachments:
Block 87 - List all attachments to this report.

SECTION XIII - Comments/Approvals:
Block 88 - Reviewing official's comments.

Block 89 - Crash investigator:

a. Signature.
b. Date.
c. Name - (First, Middle, Last).
d. Title.
e. Office.
f. Office telephone number.
g. E-mail address.
h. Block 90- Crash reviewing official:
    a. Signature.
    b. Date.
    c. Name - (First, Middle, Last) Title.
    d. Office.
    e. Office telephone number.
    f. E-mail address.

Check on Learning: Conduct a Check on Learning

1. What is the form number for Report of Motor Vehicle Accident?
2. What is the purpose of the Report of Motor Vehicle Accident?
3. Which sections are filled out by the vehicle operator?
4. What hard to get information should the operator gather first when filling out a SF 91?
5. What Sections of the SF 91 are filled out by the vehicle operator?
6. When does a crash investigator need to fill out sections XI and XIII?

Review Summary: Conduct a Summary Review, allow the students to ask any questions that they have.

Learning Step Activity 3: Annotate Information Correctly on the DD Form 518 and the SF 91.

Method of Instruction: Practical Exercise

1. Issue detailed instructions on what is expected during the practical exercise.

a. Students will complete the practical exercise by correctly filling out DD Form 518 and SF 91 using a given scenario.
b. Performance Measures:
    1) Enter the following information on DD Form 518.
        (a) Date of accident.
        (b) Make and type of vehicle.
        (c) Registration number of vehicle.
        (d) Your name.
        (e) Your Social Security number (SSN) (optional).
        (f) Your rank.
        (g) Name of organization to which assigned.
    2) Give DD Form 518 to any other person involved in the accident.
    3) Place a DD Form 518 in or on the involved parked vehicle, notify local authorities, and stand by the scene of the accident until the authorities arrive if the accident involves a parked car and the person concerned is not present.
    4) Enter the following information on SF 91.
        (a) Federal Vehicle Data - Section I.
        (b) Other Vehicle Data - Section II.
        (c) Killed or Injured - Section III.

(d) Accident Time and Location - Section IV.
(e) Witness/Passenger - Section V.
(f) Property Damage - Section VI.
(g) Police Information - Section VII.
(h) Extra Details - Section VIII.
(i) Federal Driver Certification - Section IX.
(j) Details of Trip During Which Accident.
(k) Occurred - Section X.
(l) Accident Investigation Data - Section XI.
(m) Attachments - Section XII.
(n) Comments/Approvals - Section XIII.

5) Turn in report to the commanding officer or noncommissioned officer in charge (NCOIC).

2. Issue any required training materials.
3. Observe student performance and provide assistance and coaching throughout the practical exercise.
4. Provide feedback to students based on their performance.
5. Direct students to turn in any issued training materials at completion of training.
6. Performance Measures Checklist:

Complete DD Form 518 and SF 91 Performance Checklist

PERFORMANCE MEASURES	GO	NO-GO	N/A
Entered information correctly on DD Form 518.			
Gave DD Form 518 to any person involved in the accident.			
Placed DD Form 518 in or on the involved parked vehicle, notified local authorities, and stood by the scene of the accident until the authorities arrived.			
Entered information correctly on SF 91.			
Turned in report to the commanding officer or noncommissioned officer in charge (NCOIC).			

7. Example Accident Scenario:

Note. This is an example accident scenario; units should adjust this scenario or create their own to better reflect their location and equipment.

ACCIDENT SCENARIO

Your name is PVT William U. Miller. Your unit address is U.S. Army, Headquarters Co, 58th Trans Battalion, Fort Leonard Wood (FLW), MO 65473. Your telephone number is (777) 555-XXXX. Your driver's license number is G-567-90-7564. On Friday, 11 Dec 20, at 1045 hours, you were operating a 2001 AM General M915, 6x4 Truck/Trailer registration number NP0839, Admin number B33. You were in route to Springfield, MO, from the 58th Trans Motor Pool. The purpose of your trip was to move cargo to the company Field Training Exercise (FTX) site. You started working at 0745 hours. You were given verbal instructions by your Platoon Sergeant, SFC Isabella A. Davis that there would be no deviation from the prescribed route given and the trip is within the established working hours. There are no outside activities authorized. You were going south through Lebanon, MO, on Kansas Avenue.

As you approached the intersection stop sign on Kansas Avenue and Ohio Street, you noticed a vehicle crossing the intersection on Ohio Street. You were traveling too fast to stop (40 MPH). You applied your brakes, but not in time. You struck the right passenger door of the other vehicle. You estimate that the speed of the other vehicle was 40 MPH. You were on the right side of the street. The other vehicle was going west, and he was on the right side of Ohio Street. The posted speed limit was 45 MPH. The roadway was constructed of asphalt and was dry. The weather was sunny and clear. The other vehicle was a 2002 Lexus 4-door sedan. The owner and operator was Mr. Liam R. Smith; vehicle license number is Missouri (MO) LXW368. His driver's license number is GO-155-30-6121. He has no restrictions. His address is 213 Pen Street, Lebanon, MO 65847. His telephone number is (777) 555-XXXX. Mr. Smith is unemployed. His vehicle was damaged on the right door; estimated amount of damage is $450.00.

Damage to your military vehicle was the bumper and grill, estimated amount of damage $250.00. No other property damage was done. No one was injured; seat belts were worn. Mr. Smith stated he is ensured by Shelter Insurance Company, 210 West Street, Lebanon, MO 65847. The policy number is S-1586 and the telephone number is (777) 555-XXXX. SGT Emma C. Johnson, your squad leader, was riding with you. His home address is 35 Elm Drive, Fort Leonard Wood, MO 65473. His home telephone number is (777) 555-XXXX; work (777) 555-XXXX. There was one witness, Mr. Santiago L. Garcia. He was crossing the intersection going north on Kansas Avenue. His address is 15 Oak Street, Lebanon, MO; telephone number is (777) 555-XXXX. He stated that he worked at Burger King in food management; phone number (777) 555-XXXX.

Officer Ava D. Brown from the Lebanon Police Department arrived to investigate the accident. Her Badge Number is 3485; telephone number (777) 555-XXXX. No medical aid was given. PVT Miller was charged with failure to stop at a stop sign. PVT Miller stated the Company Commander's instructions are that all reports regarding accidents should be addressed to the Commanding General, Fort Leonard Wood, MO 65473.

Interpret Technical Manuals and DA Forms Associated with Tracked Combat Vehicles

Action: Interpret the use of technical manuals and forms.

Conditions: In an operational environment, given instruction and provided applicable technical manuals and forms.

Standards: Students must pass the written examination during Unit L (appendix B) of the driver training program. Students will also use the skills learned during this lesson to perform PMCS on a tracked combat vehicle.

Special Instructions:
1. The following supporting documents can be downloaded.
- Appropriate vehicle technical manual.
- DA Form 5987-E (*Motor Equipment Dispatch)*.
- DA Form 5988-E (*Equipment Maintenance and Inspection Worksheet)*.
- TC 21-306.

2. Additional training resources can also be found on the Unit Training Assistance Program website.

Evaluation Requirements: Students must pass the written examination during Unit L of the driver training program. Students will use the skills learned during this lesson to perform PMCS on a tracked combat vehicle and must pass the PMCS test during Unit U of the driver training program.

Instructor Guidance: Many variables need to be considered when conducting drivers training. Some factors to consider are the type of equipment being trained, number of personnel being trained, location of training, weather conditions, and available resources. Time required to train this subject will vary based on all variables.

Learning Step Activity 1: Interpret the use of Technical Manuals.

Method of Instruction: Lecture/PowerPoint Presentation

NOTE: The instructor will provide students with an appropriate technical manual handout for this lesson.

Technical Manuals:

A. **Purpose:** Technical manuals provide specific information and guidance on the proper operation and maintenance of a single system or series of vehicles. Included are descriptions of the equipment, characteristics, capabilities, usual and unusual operating procedures, maintenance instructions, and essential items required to operate and maintain the vehicle.

B. **Scope:** The technical manual provides the information needed to operate and maintain a tracked vehicle. Before starting any task/procedure or before applying power to a vehicle, ensure each operator reads and understands the appropriate technical manual.

C. **What is in the technical manual:** Information contained in a technical manual is presented in chapters. Chapters are divided into work packets (WPs) that provide operating procedures, troubleshooting procedures, maintenance procedures, and other information for specific systems or components. Page numbers consist of the WP number followed by a dash and another number. For example, “0001-9” means WP 0001, page 9 of the WP.

D. **Numbering System:** The number codes identify a specific vehicle, piece of a specific vehicle, or piece of equipment. Each set of numbers in **TM 9-2350-418-10** identifies a certain specific category within the Army supply system.

(1) **9:** Indicates ordnance material.

(2) **2350:** Identifies the federal supply classification number for Combat, Assault, and Tactical Vehicles, Tracked.

(3) **418:** Identifies the manual designator for a specific series or model of vehicles.
(4) **10:** Specifies echelon level of maintenance for a particular series of vehicle.

NOTE: There are five echelon levels. The operator is the first echelon level of maintenance and the technical manual (commonly referred to as -10), indicates operator level maintenance responsibilities and procedures. The remaining echelons are used by different levels of maintenance.

(1) Single digit at the end of the technical manual number: Specifies the volume number of a set of manuals for example, TM X-XXX-XX-XX-2 indicates that the manual is volume 2 and there are at least two parts to the manual.
(2) "P" at the end indicates it is a part manual for the specific echelon level of maintenance for example, TM X-XX-XX-XXP is the manual a unit mechanic would use to order parts for a specific vehicle.

NOTE: Layout of the technical manual can vary between type of vehicle and year of publication. The layout listed below is from TM 9-2350-412-10-1 dated 15 February 2023 and covers the M1A2 (SEPv3) Abrams tank.

E. **Chapters:**
(1) Chapter 1 - General Information, Equipment Description, and Theory of Operation.
(2) Chapter 2 - Operator Instructions: Description and Use of Controls and Indicators.
(3) Chapter 3 - Operator Instructions: Operate Under Usual Conditions - All Stations.
(4) Chapter 4 - Operator Instructions: Operation Under Usual Conditions - Driver's Station.

F. **Warnings, Cautions and Notes:** (Operators must read and adhere to all Warnings, Cautions, and Notes).
(1) **Warnings** - Prevent the operator from getting injured.
(2) **Cautions** - Prevent the operator from damaging the equipment.
(3) **Notes** - Are statements that add, clarify, or emphasize essential information.

G. **Leakage Definitions:**
(1) **Class I Leak** - Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
(2) **Class II Leak** - Seepage of fluid great enough to form drops, but not enough to cause drops to drip from the checked item.
(3) **Class III Leak** - Leakage of fluid great enough to form drops that fall from the checked item.
(4) **Operation with Fluid Leaks**:
(a) Equipment operation is allowable with minor leakages (Classes I or II) (**except for fuel**).
(b) When operating with Classes I or II leaks, continuously check fluid levels.

H. **Operator Responsibility:** The vehicle operator is ultimately responsible and liable for the proper operation and care of the vehicle and its load. An operator can be held liable for damage to the vehicle if the operator fails to properly inspect and annotate discrepancies (see Title 49, CFR).

I. **PMCS Defined**:
(1) PMCS is the systematic care and inspection of all Army vehicles and equipment which includes inspecting, cleaning, adjusting, servicing, preserving, lubricating, and repairing items essential to maintaining the mission readiness of the Army.
(2) PMCS performed to keep the vehicle in operating condition. The checks are used to find, correct, or report problems. PMCS is conducted every day the vehicle is operated using the PMCS tables in the technical manual.

J. **Explanation of the PMCS Table:**
(1) Item Number Column - Item numbers appear in the order that you must perform PMCS for the intervals listed.
(2) Interval Column - This column tells you when to perform the procedure.
(a) Before (B): Before-operation inspection is a visual inspection to make sure the vehicle is safe and in good operating condition before you operate or use the vehicle.

(b) During (D): During-operation inspection is conducted during the operation of the vehicle. Some items cannot be checked unless the equipment is running or operating as intended.

(c) After (A): After-operation inspections are performed immediately after operating the vehicle. This interval is designed as the most important interval since it prepares the vehicle for its next mission.

(d) Weekly (W): Weekly-operation inspections are performed once every seven days.

NOTE: When the vehicle is being operated for the first time, perform both before and weekly checks.

(e) Monthly (M): Monthly-operation inspections are performed every 30 days.

(f) Yearly (Y): Yearly-operation inspections are performed yearly and referred to Annual Services.

(g) Shortened Intervals: Shorten intervals if operating equipment under adverse or unusual conditions, including longer than usual operating hours, desert environment, mud, fording, and so forth.

(3) Item to Check/Service Column - Provides location and item(s) to be checked or serviced.

(4) Procedure Column - Provides procedures to inspect and service the item(s) listed in the check/service column. This column also includes notes, warnings, and cautions for protecting the operator and vehicle from damage.

(5) Equipment Not Ready/Available If Column - Provides specific information to determine if a vehicle is capable of performing the mission. This column lists the conditions that make a vehicle unsafe to operate or may cause damage.

K. **Work Packages (WP):**

(1) Located throughout the technical manual.

(2) Provides detailed instructions for operator level maintenance and operating procedures.

Check on Learning: Conduct the Following Check on Learning

1. Explain the purpose of a Training Manual.
2. What is the purpose of Warnings, Cautions, and Notes?

Review Summary: Conduct a Summary Review, allow the students to ask any questions that they have.

Learning Step Activity 2: Interpret the DA Form 5988-E.

Method of Instruction: Lecture/PowerPoint Presentation

NOTE: Instructor will provide Students with a DA Form 5988-E handout for this lesson.

A. **PURPOSE:**

(1) Used to record faults found during an inspection. These faults include PMCS maintenance.

(2) Activity inspections, diagnostic checks, and spot checks.

(3) Tracks and records actions taken during unit/organizational level services for quality control.

(4) Documents faults and repairs required for estimated cost of damage reports.

(5) Used to perform Battlefield Damage Assessment and Repair.

(6) Tracks ordered parts.

B. **DISPOSITION:** The DA Form 5988-E is a running form if no faults are noted during the inspection, the form can be used for the next time the vehicle is used or inspected. Once a fault is found and recorded the form is closed out and turned over to the supervisor or unit maintenance personnel.

(1) Operators are responsible for keeping information current and correct.

(2) Keep DA Form 5988-E in the Equipment Record Folder if no faults are recorded.

(3) Turn in DA Form 5988-E to the maintenance supervisor if faults are found.

C. **HEADER AND EQUIPMENT DATA:**

(1) Date: Date the DA Form 5988-E issued.

(2) UIC: Unit Identification Code of Dispatch/Name.

(3) Address: Unit address.

(4) Admin No: Company UIC and Vehicle bumper number.

(5) Serial Number: Vehicle serial number.
(6) Model: Vehicle model.
(7) Equip Number: Computer generated ID number unique to vehicle.
(8) Equip NSN: Vehicle/equipment's National Stock Number.
(9) Equip Noun: Vehicle/equipment name.
(10) Current Reading (Top Block): The vehicle's mileage at the time of DA Form 5988-E issue. Circle mileage if correct.
(11) Current Reading (Bottom Block): If the computer-generated mileage is incorrect draw a single line through it and annotate the correct mileage here.
(12) Inspector Name: A space for the inspector to enter their name.
(13) Date/Time: The date/time the inspection was completed.
(14) Signature: The operator or supervisor signs name and rank when a deficiency or shortcoming is found. The Unit Commander assumes responsibility and signs name and rank when making a status symbol change or when changing an X to a CIRCLED X for one-time operation.

D. **SERVICE DATA:**
(1) Service Type: What service is due next.
(2) Service Due: When the next service is due.
(3) Reading Due: The projected mileage of the vehicle for service
(4) Usage Remaining: How many miles at left until service is due.
(5) Unit of Measure: Whether using miles, kilometers, hours and so forth.

E. **FAULTS & PARTS REQUESTED:**
(1) Notification: Computer generated ID number.
(2) Tech Status of the vehicle.
(3) Notification Date: Date that the action/fault was annotated.
(4) Fault Description: Brief description of action/issue.
(5) Work Order: The tracking number of the work order.

NOTE: Each fault annotated will have the following information listed directly below:

(a) Operator level.
(b) Description: repeat of fault description.
(c) Est Time: Estimated time it will take to repair.
(d) Act Time: Actual time took for repair.
(e) Maintainer ID: ID of individual who does the repair.
(f) NIIN: National Item Identification Number for the any parts needed for the repair.
(g) Material Description: Name of part.
(h) Requested Date: Date part was ordered.
(i) Issued Date: Date that the part was given to the individual for repair.
(j) QtyOrd: Number of parts ordered.
(k) QtyIss: Number of parts turned in for repair.
(l) Prio: The priority that the part was ordered.

F. **MAINTENANCE FAULTS:**
- Describes faults found during inspection.
- Gives maintenance reference to faults found.
- Undocumented Fault: If you can repair the fault, fix but do not document (Example, Undocumented Fault: Driver side windshield wiper missing; maintenance has one in stock. Correct fault, but do not document).
- Documented Fault: If you cannot repair the fault, it must be documented on the form.
- Skip lines between faults to give maintenance room for notes.

(1) Item number: Write the PMCS item number that applies to the fault listed in this column. If the PMCS has no item numbers, list the page, paragraph, or sequence number. Circle the number if fault is listed in the "Equipment Is Not Ready/Available If" column or "Not Mission Capable If" column of the PMCS.

(2) Tech status: Status symbols are used on automated forms and records to show the seriousness of equipment faults or problems. There are three status symbols; enter the status symbol that applies to the fault or deficiency.

(a) Diagonal dash (/): Indicates a material defect other than a deficiency which must be corrected to increase efficiency or to make the item completely serviceable.

(b) "X": Indicates a deficiency in the equipment that places it in an inoperative status (deadline).

(c) Circled X: Means the equipment has a deficiency, but may be operated under set limitations, usually for a one-time only operation. The commander or commander's designated representative must authorize limited operation. The commander must sign the signature block on page 1 of the DA Form 5988-E. The limited operation is usually for a one-time only operation (but is dependent on the mission and the type of fault).

(3) Fault date: Date fault was found.

(4) Fault description:

(a) If a fault can be repaired, stop the PMCS and correct the fault.

(b) Do not enter faults that have been repaired or are already listed on the worksheet.

(c) Briefly describe the fault.

(d) Continue the PMCS to make sure no other faults exist.

(e) Briefly describe fault while skipping one or two lines between faults, this will give maintenance room to note actions they take.

(f) Place the day's date in this section if no new faults are found.

G. **CORRECTIVE ACTION:** Show corrective action for deficiency or shortcoming listed under Fault Description.

H. **INITIAL:** Initials in this column indicate that the vehicle is ready for use.

(1) The operator will place their initials in this column if no faults are found during the after PMCS showing vehicle is ready for next use.

(2) If a fault was corrected and annotated in the Corrective Action column, the individual that made the correction will place their initials in this column.

Check on Learning: Conduct the Following Check on Learning:

1. Explain the purpose of DA Form 5988-E.
2. Give an example of a documented and undocumented maintenance fault.

Review Summary: Conduct a Summary Review, allow the students to ask any questions that they have.

(1) Item number: Write the PMCS item number that applies to the fault listed in this column. If the PMCS has no item numbers, list the page, paragraph, or sequence number. Circle the number if fault is listed in the "Equipment Is Not Ready/Available If" column or "Not Mission Capable If" column of the PMCS.

(2) Tech status: Status symbols are used on automated forms and records to show the seriousness of equipment faults or problems. There are three status symbols; enter the status symbol that applies to the fault or deficiency.

(a) Diagonal dash (/): Indicates a material defect other than a deficiency which must be corrected to increase efficiency or to make the item completely serviceable.

(b) "X": Indicates a deficiency in the equipment that places it in an inoperative status (deadline).

(c) Circled X: Means the equipment has a deficiency, but may be operated under set limitations, usually for a one-time only operation. The commander or commander's designated representative must authorize limited operation. The commander must sign the signature block on page 1 of the DA Form 5988-E. The limited operation is usually for a one-time only operation (but is dependent on the mission and the type of fault).

(3) Fault date: Date fault was found.

(4) Fault description:

(a) If a fault can be repaired, stop the PMCS and correct the fault.

(b) Do not enter faults that have been repaired or are already listed on the worksheet.

(c) Briefly describe fault while skipping one or two lines between faults, this will give maintenance room to note actions they take.

(d) Continue the PMCS to make sure no other faults exist.
(e) Place the day's date in this section if no new faults are found.

I. **CORRECTIVE ACTION:** Show corrective action for deficiency or shortcoming listed under Fault Description.

J. **INITIAL:** Initials in this column indicates that the vehicle is ready for use.
(3) The operator will place their initials in this column if no faults are found during the after PMCS showing vehicle is ready for next use.
(4) If a fault was corrected and annotated in the Corrective Action column, the individual that made the correction will place their initials in this column.

Check on Learning: Conduct the Following Check on Learning:
3. Explain the purpose of DA Form 5988-E.
4. Give an example of a documented and undocumented maintenance fault.

Review Summary: Conduct a Summary Review, allow the students to ask any questions that they have.

Learning Step Activity 3: Interpret the DA Form 5987-E.

Method of Instruction: Lecture/PowerPoint Presentation

NOTE: Instructor will provide Students with a DA Form 5987-E handout for this lesson.

Equipment Dispatch (DA Form 5987-E):

A. **Purpose:**
(1) Record of motor equipment usage.
(2) Documentation of oil and fuel usage.

B. **General information:**
(1) Used for regular and alert dispatches.
(2) Required for all equipment being dispatched.
(3) The DA Form 5987-E is produced electronically by the Global Combat Support System-Army (GCSS-Army).
(4) The Unit Commander or a designated representative must approve off-post travel.

Check on Learning: Conduct the Following Check on Learning:
1. In what situations do you need to fill out DA Form 5987-E?
2. What Army system produces DA Form 5987-E?

Review Summary: Conduct a Summary Review, allow the students to ask any questions that they have.

Perform Preventive Maintenance Checks and Services on a Tracked Combat Vehicle

Action: Perform preventive maintenance check and services (PMCS).

Conditions: In an operational environment, provided a tracked combat vehicle with appropriate technical manual, vehicle specific basic issue item (BII), and DA Form 5988-E.

Standards: Perform PMCS on a tracked combat vehicle. In accordance with applicable references while complying with warnings, cautions, notes, and instructions contained in the appropriate technical manual. Must identify and annotate, on the DA Form 5988-E, all deficiencies using either a specially prepared vehicle or given by an instructor. Soldiers must receive a "GO" on all applicable performance measures.

Special Instructions:

1. The following supporting documents can be downloaded from the Army Publishing Directorate website and the Central Army Registry website.
    - Lesson Plan - Perform PMCS On a Tracked Combat Vehicle.
    - Vehicle technical manual.
    - TC 21-306.

2. Additional training resources can also be found on the Unit Training Assistance Program website.

Evaluation Requirements: Students must receive a "GO" on all performance measures listed in each learning step activity during drivers training. Soldier performance will be recorded on the Perform PMCS on a Tracked Combat Vehicle Performance Checklist, be annotated on the students' DA Form 7932 (*Army Tracked Vehicle [ATV] Operators Evaluation Score Sheet)*, and DA Form 348. The DA Form 5988-E or DA Form 2404 (*Equipment Inspection and Maintenance Worksheet*) that was used for the inspection, Performance Checklist, and DA Form 7932 will be added to the students' driver training packet.

Instructor Guidance: Many variables need to be considered when conducting drivers training. Some factors to consider are the type of equipment being trained, number of personnel being trained, location of training, weather conditions, and available resources. Time required to train this subject will vary based on all variables.

Learning Step Activity 1: Demonstrate Preventive Maintenance Checks and Services on a Tracked Combat Vehicle.

Method of Instruction: Demonstration

1. Conduct a safety briefing to include environmental considerations.

2. Issue Students the following:
    A. Vehicle specific technical manual/PMCS table.
    B. Clipboard.
    C. DA Form 5988-E or DA Form 2404.

3. Demonstrate how to prepare for inspection by gathering all required items such as:
    A. Replacement parts (indicated by DA Form 5988-E or DA Form 2404, under "parts requested"). Oil and lubricants in accordance with technical manual as needed.
    B. BII, rags, and other tools as required (authorized for operator level maintenance only).
    C. On DA Form 5988-E, check for correct preprinted information in header area. On DA Form 2404 ensure header information is filled in.
    D. Flashlight, work gloves, eye protection, and hearing protection as needed.
    E. Applicable vehicle technical manual.
    F. Review documentation and ensure that driver information is shown on all required forms.

4. Inform students that prior to operation of a vehicle you must perform before, after, and weekly checks if:
   A. You are the assigned driver but have not operated the vehicle since the last weekly inspection.
   B. You are operating the vehicle for the first time.

5. This demonstration will include the instructor using the vehicle specific technical manual to perform all the before, during, after, weekly, and monthly checks covered in the PMCS tables.

6. Perform a 360 degree walk around explaining the importance of this step.

7. Instructor begins PMCS with Item Number 1 in the Before checks.

8. Students will follow along with their PMCS tables as the instructor performs the PMCS.

9. Instructor continues in order until all Before, During, After, Weekly, and Monthly PMCS checks have been demonstrated/completed.

10. Reinforce the following during this demonstration:
   A. Use of the correct and current technical manual that supports the vehicle being used.
   B. Cleanliness: Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Use dry cleaning solvent on metal surfaces where directed.
   C. Bolts, Nuts, and Screws: Check bolts, nuts, and screws for obvious looseness and missing, bent, or broken conditions. Look for chipped paint and bare metal or rust around bolt heads. If any part seems to be loose, tighten it or notify Unit Maintenance.
   D. Welds: Look for loose or chipped paint, rust, or gaps where parts are welded together. If a bad weld is found, notify Unit Maintenance.
   E. Electrical Wires and Connections: Look for cracked or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors and make sure wires are in good shape. If a bad wire or connector is found, notify Unit Maintenance.
   F. Hoses, Hydraulic Lines, and Fittings: Look for wear, damage, and leaks; make sure clamps and fittings are tight. Wet spots show leaks. A stain around a fitting or connector can mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, notify Unit Maintenance.
   G. Classes of fluid leaks:
      (1) Class I - Seepage of fluid (indicated by wetness or discoloration) not great enough to form drops.
      (2) Class II - Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being inspected.
      (3) Class III - Leakage of fluid great enough to cause drops to drip from item being checked.
   H. PMCS Intervals:
      (1) Before.
      (2) During.
      (3) After.
      (4) Weekly.
      (5) Monthly.
   I. Operators must read and adhere to all warnings, cautions, and notes:
      (1) Warnings: Prevent the operator from getting injured.
      (2) Cautions: Prevent the operator from damaging the equipment.
      (3) Notes: Are statements that add, clarify, or emphasize essential information.
   J. Recording findings on the DA Form 5988-E or DA Form 2404.

Check on Learning: Conduct the following check on learning questions and open the floor to any questions the students may have.
1. What is the purpose of the PMCS?
2. What are the PMCS intervals?
3. What PPE is needed if it is required?
4. Please explain why operators must read and adhere to all warnings, cautions, and notes?

Review Summary: Conduct a Summary Review, allow the students to ask any questions that they have.

Learning Step Activity 2: Perform Preventive Maintenance Checks and Services on a Tracked Combat Vehicle.

Method of Instruction: Practical Exercise

1. Conduct a safety briefing to include environmental considerations.

2. Issue detailed instructions on what is expected during this practical exercise (Performance Steps):

A. Prepare for inspection.

(1) Gather the following items needed for the inspection.

a. Replacement parts (indicated by DA Form 5988-E or DA Form 2404, under "parts requested").

b. Oil and lubricants in accordance with technical manual as needed.

c. BII, rags, and other tools as required (authorized for operator level maintenance only).

d. On DA Form 5988-E, check for correct preprinted information in the header area. On DA Form 2404 ensure header information is filled in.

e. Flashlight, work gloves, eye protection and hearing protection as needed.

f. Applicable vehicle technical manual (-10, -12, or -13 series).

(2) Review documentation and ensure that driver information is shown on all required forms.

B. Perform Before operation inspection as listed in appropriate vehicle operator's technical manual. If deficiencies are found ensure that they are annotated on DA Form 5988-E or DA Form 2404.

(1) Isolate the malfunction by applying step-by-step troubleshooting procedures.

(2) Determine classification of any fluid seepage or leakage.

a. Class I - Seepage of fluid (indicated by wetness or discoloration) not great enough to form drops.

b. Class II - Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being inspected.

c. Class III - Leakage of fluid great enough to cause drops to drip from item being checked.

(4) Correct all deficiencies (faults) within the operator's level of maintenance.

(5) Record all deficiencies under fault description of DA Form 5988-E, Deficiencies and Shortcomings in item block 10c of DA Form 2404. When a deficiency or shortcoming is found using DA Form 5988-E, the operator or supervisor enters a signature and time. For DA Form 2404, the operator or supervisor signs and enters the rank.

(6) If no faults are found during the Before operation inspection, write the calendar date under the fault description column.

C. Perform During operation inspection as listed in the appropriate vehicle operator's technical manual.

(1) If no deficiencies are noted, make no entries.

(2) If deficiencies are noted, follow steps B, 1-5 above.

D. Perform After operation inspection as listed in the appropriate vehicle operator's technical manual.

(1) If no deficiencies are noted on DA Form 5988-E, place the first letter of the type of inspection performed under the corrective action column. For DA Form 2404, put initials in the initials column.

(2) If deficiencies are noted follow steps 2 above.

E. Perform weekly operation inspection as listed in the appropriate vehicle operator's technical manual.

(1) If no deficiencies are noted on DA Form 5988-E place the first letter of the type of inspection performed under the corrective action column. For DA Form 2404 put initials in the initials column.

(2) If deficiencies are noted follow steps B, 1-5 above.

F. Perform monthly operation inspection as listed in the appropriate vehicle operator's technical manual.

(1) If no deficiencies are noted on DA Form 5988-E place the first letter of the type of inspection performed under the corrective action column. For DA Form 2404 put initials in the initials column.

(2) If deficiencies are noted follow steps B, 1-5 above.

G. Turn in DA Form 5988-E or DA Form 2404 to the maintenance supervisor or designated authority.

H. Retain DA Form 5988-E or DA Form 2404 in equipment records folder if no faults are recorded.

I. Perform preventive maintenance checks on installed components (as applicable, in accordance with the appropriate technical manual).

3. Instructor should interject throughout this exercise, giving students faults to annotate on their maintenance worksheets for additional practice.

4. Divide class into specific groups (if applicable).

5. Issue the required training materials for the practical exercise.
   A. Vehicle specific technical manual/PMCS table.
   B. Clipboard.
   C. DA Form 5988-E or DA Form 2404.

6. Observe student performance.

7. Provide assistance and coaching throughout this practical exercise.

8. Provide feedback to students based on their performance.

9. Direct students to turn in any issued training materials at completion of training.

10. Performance measures checklist:

Perform Preventive Maintenance Checks and Services on a Tracked Combat Vehicle Performance Checklist

PERFORMANCE MEASURES	GO	NO-GO	N/A
Prepared for inspection.			
Performed **Before** operation inspection as listed in the appropriate vehicle operator's technical manual.			
Performed **During** operation inspection as listed in the appropriate vehicle operator's TM.			
Performed **After** operation inspection as listed in the appropriate vehicle operator's TM.			
Performed **Weekly** operation inspection as listed in the appropriate vehicle operator's TM.			
Performed **Monthly** operation inspection as listed in the appropriate vehicle operator's TM.			
Recorded findings correctly on the DA Form 5988-E or DA Form 2404.			
Turned in DA Form 5988-E or DA Form 2404 *(Equipment Inspection and Maintenance Worksheet*) to the maintenance supervisor or designated authority.			
Retained DA Form 5988-E or DA Form 2404 in equipment records folder if no faults are recorded.			
Performed preventive maintenance checks on additional installed components in accordance with the appropriate TM. (If applicable)			
Additional Comments			

Operate a Tracked Combat Vehicle Under Usual Conditions

Action: Operate a Tracked Combat Vehicle Under Usual Conditions.

Conditions: In an operational environment, provided a tracked combat vehicle with appropriate technical manual, vehicle specific basic issue item (BII).

Standards: Operate a tracked combat vehicle under usual conditions without damage to equipment or injury to personnel. In accordance with applicable references while complying with warnings, cautions, notes, and instructions contained in the appropriate technical manual. Soldiers must receive a "GO" on all applicable performance measures.

Special Instructions:
1. The following supporting documents can be downloaded from the Army Publishing Directorate or the Central Army Registry website.
- Individual Task 171-19K-1020 (*Drive an M1A2 SEP Tank*).
- Individual Task 171-BFV-0004 (*Drive a Bradley Fighting Vehicle [BFV]).*
- TSP 071-W-BFVS (*Bradley Fighting Vehicle [BFV] Driver Training Support Package*).
- TSP 171-A-1002 (*M1A1 Tank Driver Training Support Package*).
- Vehicle technical manual.
- TC 21-306.

2. Additional training resources can also be found on the Unit Training Assistance Program website.

Evaluation Requirements: Students must receive a "GO" on all applicable performance measures during Unit P (see appendix B of this publication) of the driver training program. The completed Tracked Combat Vehicle Basic Operations Performance Checklist will be added to the operator's driver training packet.

Instructor Guidance: Many variables need to be considered when conducting drivers training. Some factors to consider are the type of equipment being trained, number of personnel being trained, location of training, weather conditions, and available resources. Time required to train this subject will vary based on all variables. **Train to standard, not time.**

Learning Step Activity 1: Communicate Methods for Tracked Combat Vehicle Operations Under Usual Conditions.

Method of Instruction: Lecture

1. The vehicles technical manual/operator's manual outlines specific procedures for operation of the vehicle under usual conditions, these procedures are broken down into work packages. Work packages contained in the technical manual are standard and common operating procedures under moderate temperature, humidity, and terrain condition. These procedures need to be followed to ensure safe operation of the vehicle and to ensure no damage occurs to the vehicle due to improper operating practices or procedures.

2. The following are some of the work packages or procedures listed within a technical manual:
   A. Starting the Engine.
   B. Parking Brake Operation.
   C. Placing Vehicle in Motion.
   D. Pivot Steering.
   E. Stopping the Vehicle and Engine.
   F. Operation of Vehicle Light Switch.
   G. Adjusting Driver's Seat.
   H. Slave Starting Operation.

3. The following are general guidelines and graded performance measures for operating a vehicle under usual conditions:

A. Prepare for vehicle operation:
   (1) Ensure all operator maintenance, dispatch and accident documentation is present in the equipment records folder.
   (2) Adjust the seats (as needed).
   (3) Adjust driver's vision enhancer (if necessary).
   (4) Fasten seat belt.
   (5) Ensure the parking brake is applied.
   (6) Don and secure the CVC helmet.
   (7) Start vehicle engine (refer to technical manual).
   (8) Observe all instruments and warning lights and buzzers for proper operation (refer to technical manual).

B. Set the vehicle in motion:
   (1) Release parking brake.
   (2) Depress throttle and follow the vehicle commander's instructions.
   (3) Steer the vehicle as directed by the vehicle commander.
   (4) When prompted by the vehicle commander pivot steer the vehicle left or right.

C. Stop the vehicle (nonemergency).
   (1) Remove foot from accelerator.
   (2) Apply engine retarder if equipped and as needed.
   (3) Apply service brakes as needed to bring vehicle to complete and safe stop.

D. React to fire on vehicle.
   (1) Announce fire to the crew.
   (2) Simulate performing fire suppression measures listed in the vehicle technical manual.

E. Back the vehicle.
   (1) With vehicle at a complete stop, set the parking brake.
   (2) Place transmission in Neutral (N).
   (3) Post ground guides.
   (4) Check behind vehicle to ensure there are no obstructions or personnel.
   (5) Sound horn (if tactically permitted).
   (6) Place transmission in Reverse (R).
   (7) Release parking brake. observe, and adhere to signals from ground guide to move vehicle into position.
   (8) Stop the vehicle.

F. Park the vehicle.
   (1) Place the transmission selector lever in Neutral (N).
   (2) Set the parking brake.
   (3) Shutdown the engine (refer to technical manual).
   (4) Emplace chocks blocks and drip pan as needed.

Check on Learning: Conduct the following check on learning.

NOTE: The following check on learning questions refer to the general guidelines for operating a vehicle under the usual conditions listed above.

1. Describe what the driver needs to do to prepare the vehicle for operation.
2. Describe start up procedures for the vehicle.
3. Describe how to pivot steer the vehicle.
4. Describe how to safely park the vehicle.
5. Explain how and when ground guide(s) are used.
6. Explain why the procedures set forth in the technical manual need to be followed.
7. Explain what it means to be safe when operating a vehicle.

Review Summary: Conduct a summary review, allow the students to ask any questions that they have.

NOTE: Also ask 1 to 2 questions that are specific to the vehicle you will test the learners on.

Learning Step Activity 2: Operate a Tracked Combat Vehicle Under Usual Conditions.

Method of Instruction: Practical Exercise

1. Conduct a safety briefing to include environmental considerations.
2. Issue detailed instructions on what is expected during this practical exercise that is specific to the vehicle that will be used by the learners.
3. Conduct performance measures checklist using DA Form 7932 (*Army Tracked Vehicle [ATV] Operators Evaluation Score Sheet)* (see figure C-1 on page 66):



ARMY TRACKED VEHICLE (ATV) OPERATORS EVALUATION SCORE SHEET

For Use of this form, see TC 21-306; the proponent agency is TRADOC.

OPERATOR / UNIT INFORMATION

NAME OF OPERATOR	DOD ID NUMBER
Miller, William U	1234567891
DATE *(YYYYMMDD)*	**UNIT**
20241122	E TRP 2-15 CAV

Administrative Notes:

*The evaluator is responsible for the safe administration of the evaluation. Any act that is deemed unsafe, dangerous, or puts the vehicle or crew in danger will result in an immediate stoppage of the evaluation.

*The evaluator acting as the VC will give each command during the evaluation.

*The evaluator will annotate all failed tasks in the "NO-GO" blocks during the road test. The total number of "NO-GO" tasks and type of retraining will be annotated in the notes section upon completion of the road test. Any failed tasks must be retrained and reassessed. The task will then be updated as a "GO". Soldiers must achieve an overall "GO" on all performance measures to pass the road test.

*All performance measures will be conducted IAW vehicle specific TM.

USUAL CONDITIONS

PERFORMANCE MEASURES (USUAL)	GO	NO-GO	RETEST	PERFORMANCE MEASURES (USUAL)	GO	NO-GO	RETEST
Conducted PMCS.	✓			Performed 45-degree left turn in reverse.	✓		
Mounted vehicle and entered driver station.	✓			Performed 90-degree right turn in reverse.	✓		
Prepared driver station for operation.	✓			Performed 90-degtree left turn in reverse.	✓		
Started vehicle.	✓			Stopped vehicle.	✓		
Began movement.	✓			Placed gear selector in PVT.	✓		
Accelerated to designated speed.	✓			Performed pivot-steer left.	✓		
Performed 45-degree right turn.	✓			Performed pivot-steer right.	✓		
Performed 45-degree left turn.	✓			Drove over a raised obstacle.	✓		
Performed 90-degree right turn.	✓			Drove up/down hills.	✓		
Performed 90-degtree left turn.	✓			Drove across a ditch.	✓		
Stopped vehicle.	✓			Performed sudden braking.	✓		
Placed gear selector in reverse.	✓			Reacted to loss of communication.	✓		
Accelerated in reverse.	✓			Reacted to loss of brakes/steering.	✓		
Performed 45-degree right turn in reverse.	✓			Performed shutdown procedures.	✓		

UNUSUAL AND EMERGENCY CONDITIONS

PERFORMANCE MEASURES (UNUSUAL)	GO	NO-GO	RETEST	PERFORMANCE MEASURES (UNUSUAL)	GO	NO-GO	RETEST
Operated in dust, sand, mud, or snow.	✓			Towed disabled vehicle.	✓		
Conducted slave start.	✓			Retrieved mired vehicle.	✓		
Forded shallow water.	✓			Drove over trench.	✓		
PERFORMANCE MEASURES (EMERGENCY)	**GO**	**NO-GO**	**RETEST**	**PERFORMANCE MEASURES (EMERGENCY)**	**GO**	**NO-GO**	**RETEST**
Reacted to fire.	✓			Reacted to rollover.	✓		
Operated portable fire extinguisher/manual modes.	✓			Removed injured crew member/personnel.	✓		

OVERALL RATING AND OPERATOR/EXAMINER SIGNATURES

OVERALL RATING *(GO/NO-GO)*	EXAMINER NAME
38 ___	Hart, Jasper K.

OPERATOR SIGNATURE	DATE *(YYYYMMDD)*	EXAMINER SIGNATURE	DATE *(YYYYMMDD)*
MILLER, WILLIAM U. 1234567891 Digitally signed by WILLIAM, MILLER U.1234567891 Date: 2024.10.16 09:56:39 -04'00'	20241122	HART, JASPER K. 1234567890 Digitally signed by HART, JASPER K. 1234567890 Date: 2024.10.16 09:56:39 -04'00'	20241122

DA FORM 7932, NOV 2024

APD AEM v1.00ES

SAMPLE

Figure C-1. DA Form 7932 (Army Tracked Vehicle [ATV] Operators Evaluation Score Sheet)

Appendix D

Examination Sample

Appendix D provides the trainer with a sample driver training examination. Personnel developing examination materials for the driver's exam should ensure that the reference materials and technical manuals they are using are current.

M1A2 SEP Driver Training
Written Evaluation
(SAMPLE)

DRIVERS PERFORM BEFORE OPERATION CHECKS AND SERVICES ON AN M1A2 SEP TANK.

Situation: You are performing before operations preventive maintenance checks and services and notice a leakage of fluid large enough to form drops, but not large enough to cause drops to drip from the item being checked or inspected.

1. Which class of leak is described above?
   a. I.
   b. II.
   c. III.
   d. IV.

2. Based on the classification of the leak described above would equipment operation still be permissible?
   a. Yes.
   b. No.

Situation: You continue with the before operation checks and services and are ready to perform a parking brake check. You have started the engine.

3. How long should you warm up the engine before performing the parking brake check to prevent engine or transmission damage?
   a. 30 seconds.
   b. 1 minute.
   c. 90 seconds.
   d. 2 minutes.

Situation: You are now ready to begin checking the steer-throttle control.

4. The steer-throttle control should be checked for which of the following?
   a. The throttle grips do not return to the forward position.
   b. The throttle grips do not go into Position 3.
   c. The steer-throttle control can be easily removed for cleaning.
   d. The steer-throttle control has freedom of movement.

PREPARE THE DRIVER S STATION FOR OPERATION ON AN M1A2 SEP TANK.

Situation: You are the driver of an M1A2 SEP tank and have been ordered to prepare your tank for operation. You entered the tank through the loader's hatch and you are ready to enter the driver's station.

5. What is the first thing you will check or do when entering the driver s station?
   a. Make sure the headrest is in the UP position. If not, move it to the UP position.
   b. Make sure parking brake is set by pressing parking brake pedal with foot.
   c. Set the dome light to the OFF position.
   d. Turn on the MASTER POWER switch.

REACT TO A FIRE ON AN M1A2 SEP TANK.

Situation: The tank's engine compartment has caught fire, and the crew has been unable to extinguish the fire.

6. According to the M1A2 SEP TM what is the guidance given for the distance and direction of the tank crews assembly area once the tank commander has determined the fire cannot be extinguished?
   a. 50 meters to the rear of the tank.
   b. 75 meters to the front of the tank.
   c. 80 meters to the front of the tank.
   d. 100 meters to the rear of the tank.

Situation: You are the driver of an M1A2 SEP tank, and a fire has started in the tank's engine compartment.

7. The turret and gun tube should immediately be positioned in which direction?
   a. Over either side of the tank.
   b. Over the rear of the back deck.
   c. The position of the turret and gun tube does not matter.
   d. Over the second and third road wheel on the tank commander's side of the vehicle.

START/STOP THE ENGINE ON AN M1A2 SEP TANK.

Situation: You are the driver of an M1A2 SEP tank and have been ordered to prepare your tank for operation. You have pressed the MASTER POWER pushbutton on the improved driver's integrated display.

8. How long after pressing the MASTER POWER button should you give the main menu to appear on the improved driver's integrated display before executing troubleshooting procedures on the improved driver's integrated display?
   a. 20 seconds.
   b. 35 seconds.
   c. 60 seconds.
   d. 90 seconds.

DESCRIBE SAFE PRACTICES AND ACCIDENT-AVOIDANCE PROCEDURES WHILE DRIVING THE M1-SERIES TANK.

Situation: The tank commander has told you to begin driving and that you are scheduled to drive for the next 5 hours.

9. As a driver how often are you required to take a 15-minute break?
   a. Every two to three hours of driving or every 175 to 225 kilometers (100 to 150 miles).
   b. Every three to four hours of driving or every 150 to 200 kilometers (93 to 124 miles).
   c. Every one to two hours of driving or every 200 kilometers (124 miles).
   d. Every four to five hours of driving or every 200 to 250 kilometers (124 to 155 miles).

10. Sleeping in a parked vehicle with the engine or _____ running is prohibited.
   a. Night-vision device (NVD).
   b. Chemical, biological, radiological, and nuclear collective protection system.
   c. Heater.
   d. Vehicle service drive lights on.

USE VISUAL SIGNALING TECHNIQUES.

Situation: You are following the directions of a ground guide.

11. What is the ground guide in the picture signaling the driver to do? (See figure D-1.)
   a. Move forward.
   b. Neutral steer, right.
   c. Turn left.
   d. Turn right.

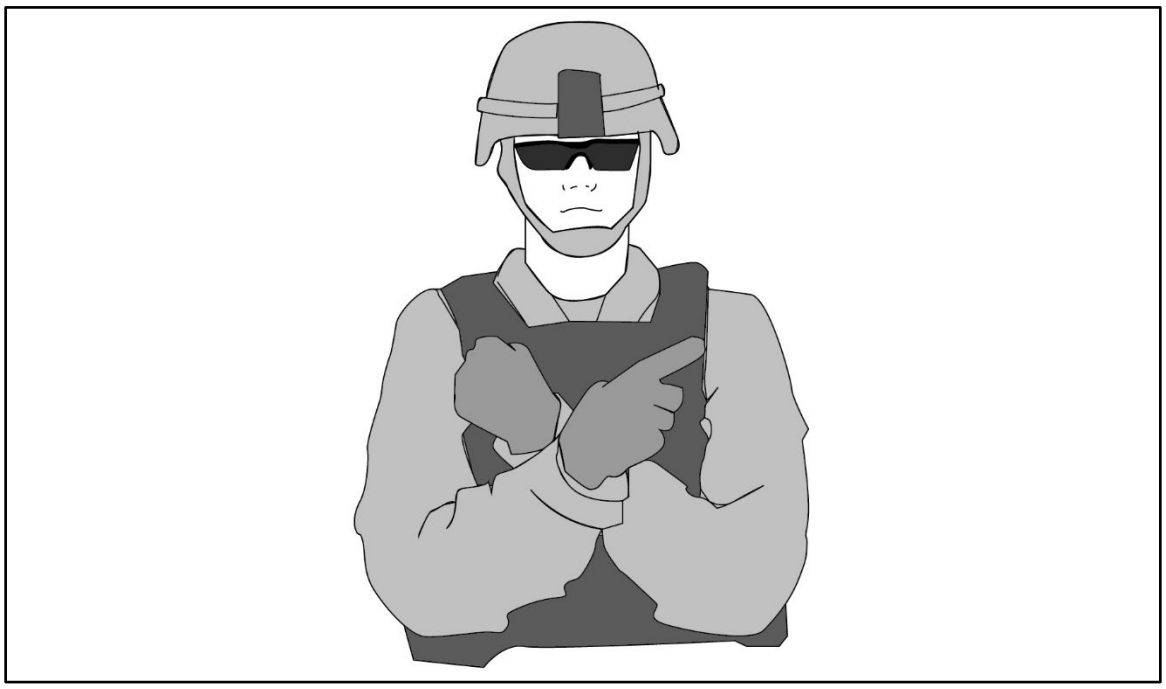


Figure D-1. Question number 11 illustration

12. What is the ground guide in the picture signaling the driver to do? (See figure D-2 on page 70.)
   a. Move forward.
   b. Stop.
   c. Move in reverse.
   d. Dismount.

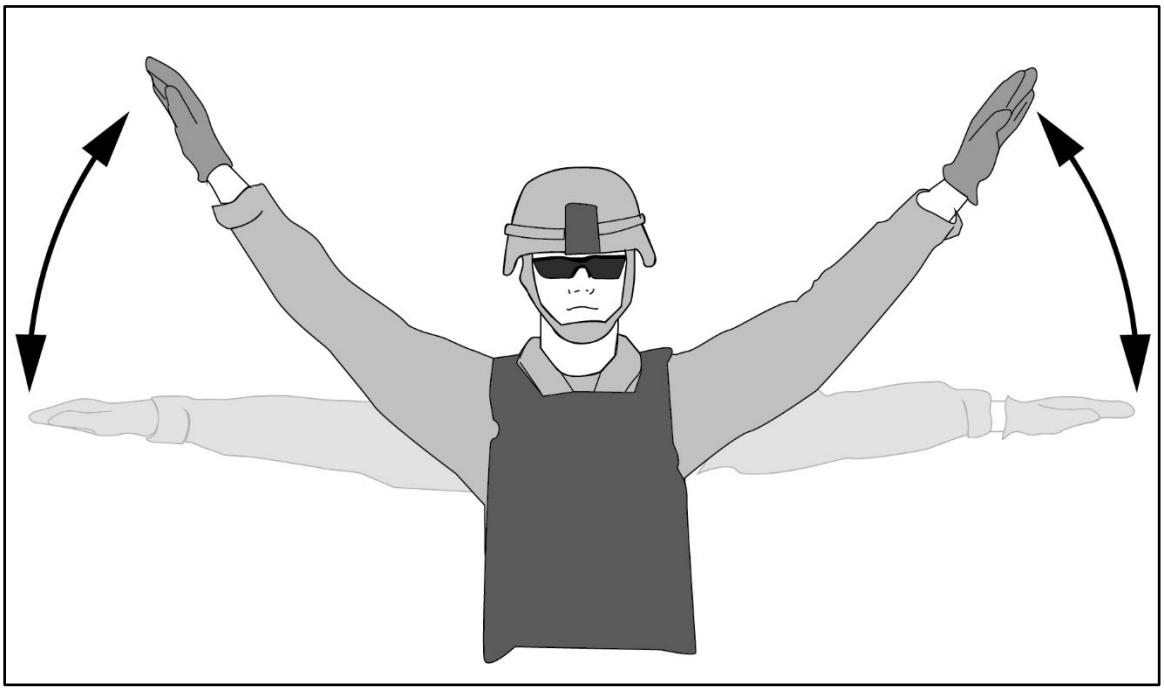


Figure D-2. Question number 12 illustration

DRIVE AN M1A2 SEP TANK.

Situation: You are the driver on an M1A2 SEP tank. The engine is running, and the tank commander gives you the command to move out.

13. Before moving out, the revolutions per minute (RPM) indicator must indicate the following: (normal _____ - _____RPM, tactical idle _____ - _____).

a. Normal 800 - 900 RPM, tactical idle 1200 - 1400 RPM.
b. Normal 850 - 950 RPM, tactical idle 1200 - 1400 RPM.
c. Normal 850 - 950 RPM, tactical idle 1100 - 1150 RPM.
d. Normal 700 - 750 RPM, tactical idle 1420 - 1500 RPM.

Situation: You have been driving over even terrain when you notice the path ahead begins to slope to the side on the tank commander's side of the vehicle.

14. What is the maximum side slope the vehicle can safely negotiate before the vehicle could lose traction and begin to slide?

a. 32 degrees.
b. 22 degrees.
c. 31 degrees.
d. 15 degrees.

OPERATE THE AN/VVS-2 NIGHT VISION VIEWER IN THE DRIVER'S HATCH ON AN M1A2 SEP TANK.

Situation: The tank commander has ordered you to prepare the vehicle for night driving.

15. What must you remove and stow from the night vision viewer before connecting the power cable?
    a. The driver's periscope.
    b. The infrared lenses on the headlights.
    c. The NVD batteries.
    d. The NVD battery cable.

APPLY NIGHT VISION PRINCIPLES TO TRACKED VEHICLE DRIVING.

Situation: You are the driver of an M1A2 SEP tank conducting a night mission and you are using an NVD.

16. To provide the best view possible, the driver's seat should be adjusted so that the viewing distance (eye to viewing lens) is how many inches?
    a. 6 to 10 inches.
    b. 4 to 5 inches.
    c. 12 to 15 inches.
    d. 15 to 20 inches.

DESCRIBE SAFE DRIVING PRACTICES AND ACCIDENT AVOIDANCE PROCEDURES WHILE DRIVING THE M-1 SERIES TANK.

Situation: While driving your tank at night, you begin to feel the vehicle skidding off the road.

17. If your vehicle starts to slide, what is the first thing you should do?
    a. Put the engine in reverse.
    b. Steer in the opposite direction of the skid.
    c. Reduce engine speed to idle.
    d. Shut down the MASTER POWER switch.

SLAVE START AN M1A2 SEP TANK.

Situation: You tried to start the engine; it failed to start due to dead batteries. You secure assistance from a second live tank and two crewmembers. You must slave start your tank.

18. Which direction should the turret and main gun be facing during slave start operations?
    a. Forward over the driver's hatch.
    b. Facing the opposite direction of the live tank.
    c. Over the back deck.
    d. The orientation of the gun and turret does not matter.

19. How long should the live tank idle to charge the batteries on the dead tank?
    a. 15 minutes.
    b. 30 minutes.
    c. 10 minutes.
    d. 60 minutes.

SECURE THE DRIVER'S STATION ON AN M1A2 SEP TANK.

Situation: The tank commander is in the turret. The driver's hatch is closed, and you have been told to secure the driver's station.

20. If the advisory, “ENGINE SHOULD BE SHUT DOWN PRIOR TO MASTER POWER DOWN. DAMAGE MAY OCCUR,” is displayed, what should you do?

a. Shut down the main engine.
b. Press the reset button.
c. Shut down the external auxiliary power unit.
d. Call unit maintenance.

21. What position should the driver’s seat be in before closing the hatch?

a. Head rest in the down (stowed) position.
b. Seat locked up and head rest down.
c. Upper seat back raised.
d. Seat lowered.

END OF EVALUATION

Appendix E

Drivers Training Testing

Appendix E provides recommendations for the physical standards and design of the drivers training course. If an obstacle is not available a substitution may be used in accordance with AR 600-55. Commanders may modify or alter recommended designs and obstacles to suit their unit driver's training program or available facilities, but courses must allow drivers to complete the tasks listed in the DA Form 7932 (*Army Tracked Vehicle [ATV] Operators Evaluation Score Sheet*).

OVERVIEW

E-1. Incorporating situations simulating what drivers encounter while assigned as tracked combat vehicle drivers improves their ability to operate and maneuver their vehicles and prepares them to command these vehicles later in their careers. Encountering terrain features requiring the driver to decide whether the vehicle can negotiate obstacles encountered in a field environment gives them valuable knowledge of the capabilities and limitations of the vehicles. Drivers should encounter and negotiate various urban terrain obstacles as well, for instance a bridge (simulated) the vehicle must cross and an overpass or wire they may have to go under (simulated). Gaining this knowledge reduces accidents or injuries during future operations in real-world environments. Instructors should conduct these the tasks during the day as well as during periods of limited visibility using night vision devices.

DRIVERS TRAINING COURSES (USUAL/UNUSUAL/EMERGENCY CONDITIONS)

E-2. The tasks identified in tables E-1 through E-3 on page 74 are part of a driver's training program. Commanders and master drivers can use the template to guide them in the development of their drivers training course. Prior to the execution of training trainers must consult vehicle technical manuals to ensure that all tasks' drivers will complete on the course are within the safe operating parameters of the vehicles being operated. If any portion of the course presents unsafe conditions training must be halted until the safety hazard has been addressed.

Table E-1. Usual conditions template, example

Conduct preventive maintenance checks and services	Perform 45-degree left turn in reverse
Mount vehicle and enter driver station	Perform 90-degree right turn in reverse
Prepare driver station for operation	Perform 90-degtree left turn in reverse
Start vehicle	Stop vehicle
Begin movement	Place gear selector in pivot
Accelerate to designated speed	Perform pivot-steer left
Perform 45-degree right turn	Perform pivot-steer right
Perform 45-degree left turn	Drive over a raised obstacle
Perform 90-degree right turn	Drive up/down hills
Perform 90-degtree left turn	Drive across a ditch
Stop vehicle	Perform sudden braking
Place gear selector in reverse	React to loss of communication
Accelerate in reverse	React to loss of brakes/steering
Perform 45-degree right turn in reverse	Perform shutdown procedures
Operated in dust, sand, mud, or snow	Towed disabled vehicle
Conducted slave start	Retrieved mired vehicle
Forded shallow water	Drove over a trench

Table E-2. Unusual conditions, example

Operated in dust, sand, mud, or snow	Towed disabled vehicle
Conducted slave start	Retrieved mired vehicle
Forded shallow water	Drove over a trench

Table E-3. Emergency procedures, example

Reacted to a fire	Reacted to rollover
Operated portable fire extinguisher/manual modes	Removed injured crewmember/personnel

Appendix F

Operator Training Packet

The documents found on pages 76 through 77 include the operator training lesson plan performance measures checklists. Once completed by the LI/LE's, these documents should be uploaded to the Global Combat Support System-Army (GCSS-Army) as part of the individual Soldier's operator training packet. Other documents that instructors may need include:

- Commander's interview.
- Photocopy of civilian driver's license.
- Copy of manual DA Form 348.
- DA Form 348-1 (*Equipment Operator`s Qualification Record [Except Aircraft*]), when required.
- Original copies of examination score sheets.
- DA Form 7932 (*Army Tracked Vehicle [ATV] Operators Evaluation Score Sheet)*.
- Memorandum for record-to-record of satisfactory performance of training validation and performance of road test on track vehicles, mechanical, and ground support equipment (for all qualifications obtained in current organization, annual check rides, and refresher training).
- NVD training certificate/memorandum for record.
- Other documents necessary as per appendix L of AR 600-55.

Operator Training Packet Content

1. Complete DD Form 518 and SF 91 check sheet.
2. Perform preventive maintenance checks and services (PMCS) on a tracked combat vehicle.
3. Tracked Combat Vehicle Driver Score Sheet Usual Conditions check sheet.
4. Tracked Combat Vehicle Written Test Score Sheet.
5. Tracked Combat Vehicle Driver Operator Score Sheet.
6. Operator Qualification Record (see figure F-1 on page 78).

Complete DD Form 518 and SF 91 Performance Checklist

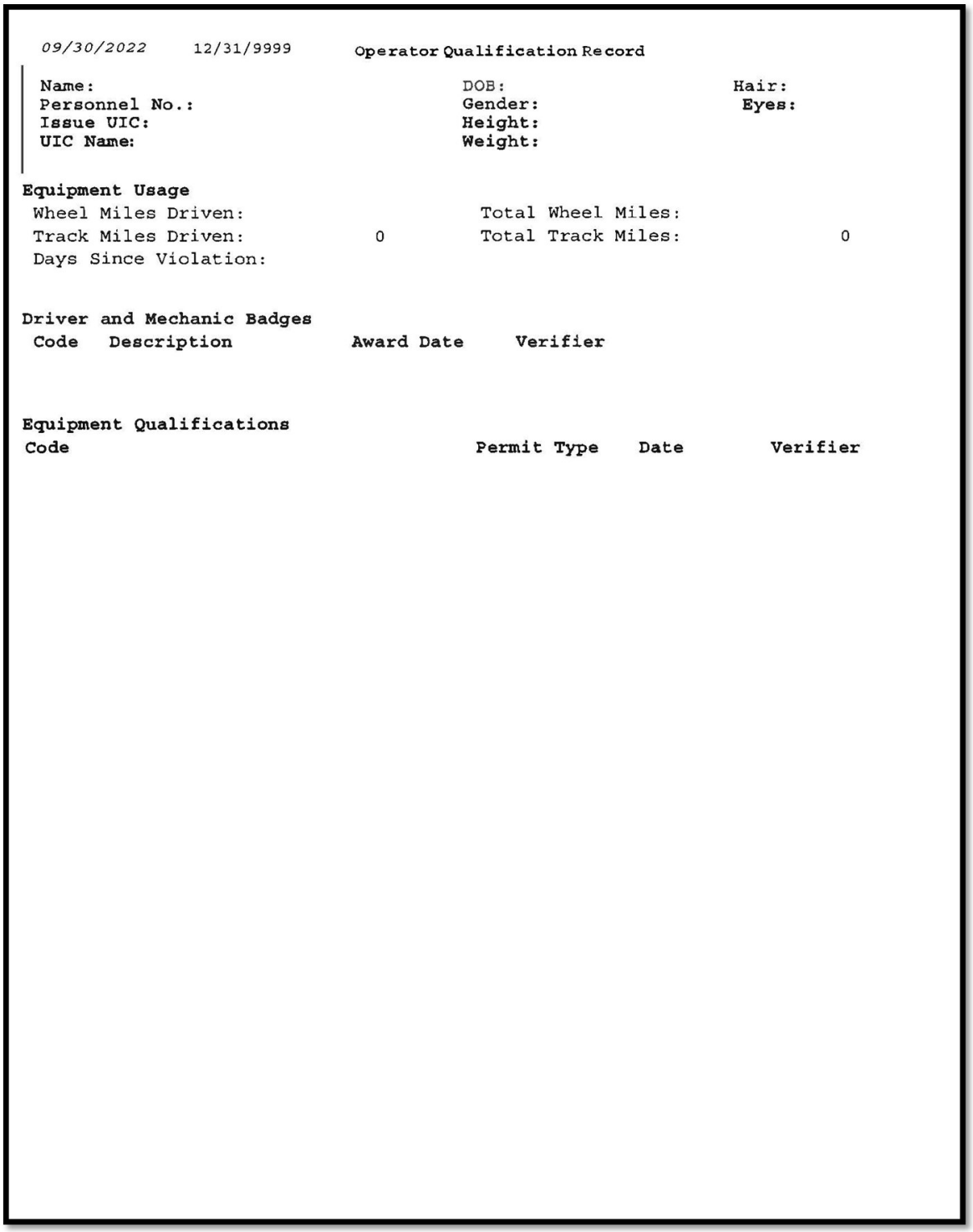
PERFORMANCE MEASURES	GO	NO-GO	N/A
Entered information correctly on DD Form 518.			
Gave DD Form 518 to any person involved in the accident.			
Placed DD Form 518 in or on the involved parked vehicle, notified local authorities, and stood by the scene of the accident until the authorities arrived.			
Entered information correctly on SF 91.			
Turned in report to the commanding officer or noncommissioned officer in charge (NCOIC).			
Additional Comments			

Perform PMCS on a Tracked Combat Vehicle Performance Checklist

PERFORMANCE MEASURES	GO	NO-GO	N/A
Prepared for inspection.			
Performed **Before** operation inspection as listed in the appropriate vehicle operator's Technical Manual.			
Performed **During** operation inspection as listed in the appropriate vehicle operator's TM.			
Performed **After** operation inspection as listed in the appropriate vehicle operator's TM.			
Performed **Weekly** operation inspection as listed in the appropriate vehicle operator's TM.			
Performed **Monthly** operation inspection as listed in the appropriate vehicle operator's TM.			
Recorded findings correctly on the DA Form 5988-E or DA Form 2404 (*Equipment Inspection and Maintenance Worksheet)*.			
Turned in DA Form 5988-E or DA Form 2404 to the maintenance supervisor or designated authority.			
Retained DA Form 5988-E or DA Form 2404 in equipment records folder if no faults are recorded.			
Performed preventive maintenance checks on additional installed components in accordance with the appropriate TM. (If applicable.)			
Additional Comments			

Tracked Combat Vehicle Written Test Score Sheet, format

Date		
Start Time		
End Time		
Location		
Initial Examiner – Name & Date:	**Initial Grade:** **/100**	
Retesting Examiner – Name & Date:	**Retest** **/100**	
Additional Comments		



09/30/2022 12/31/9999 Operator Qualification Record

Name: DOB: Hair:
Personnel No.: Gender: Eyes:
Issue UIC: Height:
UIC Name: Weight:

Equipment Usage

Wheel Miles Driven: Total Wheel Miles:
Track Miles Driven: 0 Total Track Miles: 0
Days Since Violation:

Driver and Mechanic Badges

Code	Description	Award Date	Verifier

Equipment Qualifications

Code	Permit Type	Date	Verifier

Figure F-1. Operator Qualification Record format

Glossary

AMPV	armored multi-purpose vehicle
AR	Army regulation
ATP	Army technical publication
BFV	Bradley fighting vehicle
BII	basic issue item
CBRN	chemical, biological, radiological, and nuclear
CFR	Code of Federal Regulations
CVC	combat vehicle crewmember
DA	Department of Army
DA Pam	Department of Army pamphlet
DD	Department of Defense form
DOD	Department of Defense
DODI	Department of Defense Instruction
DODM	Department of Defense Manual
FM	field manual
GCSS-Army	Global Combat Support System-Army
LE	license examiner
LI	license instructor
LSA	learning step activity
METT-TC(I)	mission, enemy, terrain and weather, troops and support available, time available, civil considerations, and informational considerations
NVD	night-vision device
OF	optional form
PMCS	preventive maintenance checks and services
RPM	revolutions per minute
SEP	system enhancement package
SF	standard form
SOP	standard operating procedure
TACSOP	tactical standard operating procedure
TADSS	training aids, devices, simulators, and simulations
TC	training circular
TM	technical manual
TSP	training support package
VC	vehicle commander
WP	work packet

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

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PRESCRIBED FORMS

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DA Form 7932. *Army Tracked Vehicle [ATV] Operators Evaluation Score Sheet.*

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TC 21-306

24 April 2024

By Order of the Secretary of the Army:

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