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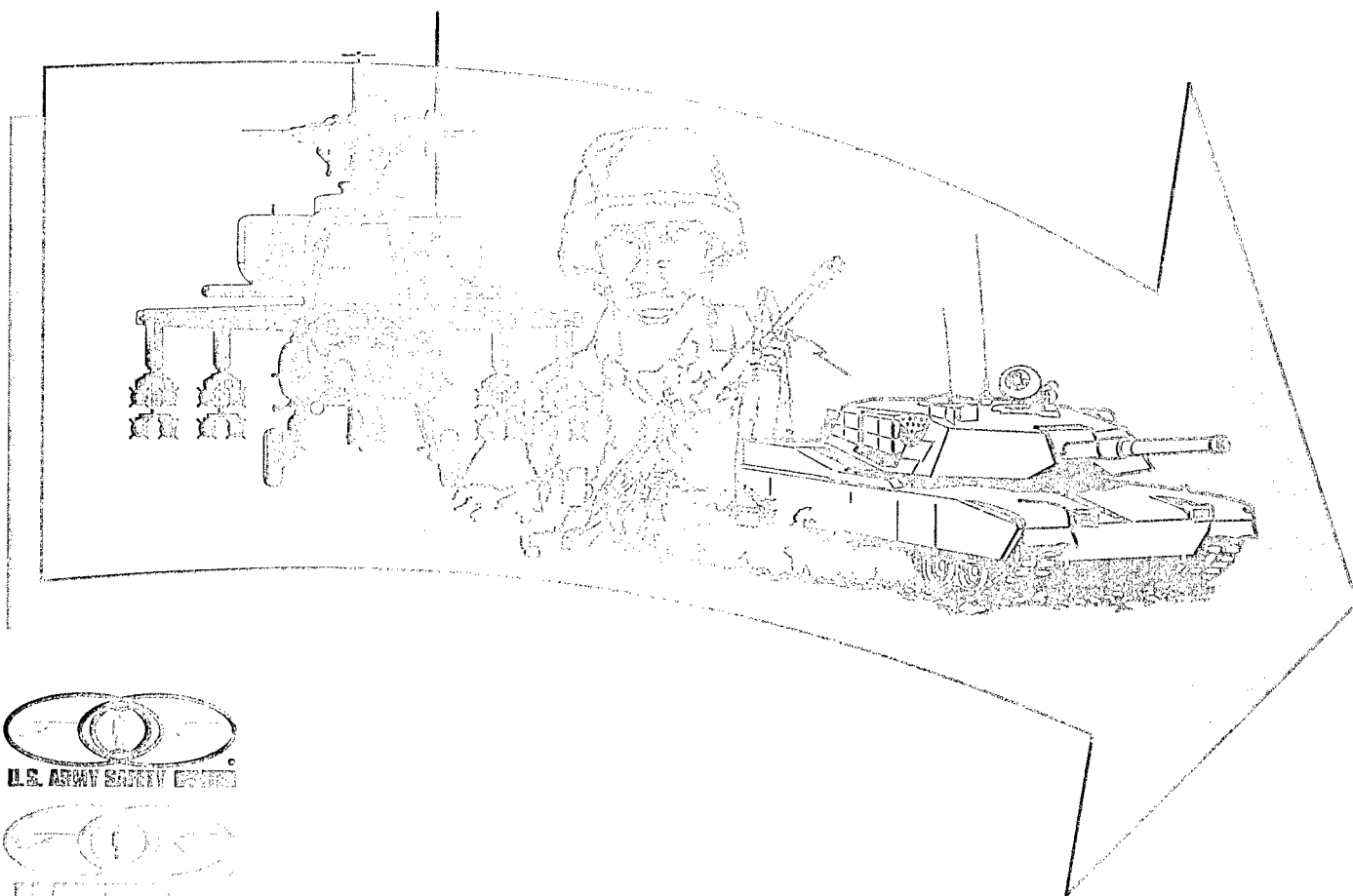
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Leader's Guide to FORCE PROTECTION through RISK MANAGEMENT



October 1995

A comprehensive
reference for the Force Protection Army

PDC 95-10

How To Use This Guide

The *Leader's Guide to Force Protection through Risk Management* is designed to serve as both a quick and a comprehensive reference on risk management and force protection in today's force-projection Army. It is intended for use by commanders and other leaders, planners, and operators in brigades, battalions, and smaller units.

The first section defines risk management and illustrates the relationship between force protection and operations. Section 2 provides examples of hazards associated with common tasks and missions along with control measures to reduce risks associated with the hazards. Subsections are arranged by topic. To use them most efficiently when time is short—

1. Find the task(s) related to your mission.
2. Review the list of possible hazards, and select the appropriate controls to reduce the risks to your force. (It is important to remember that the lists are general and are not all inclusive. Hazards listed should be addressed in addition to—not instead of—the hazards identified by risk assessment of the specific mission.)
3. Embed the selected controls in the appropriate paragraphs or graphics of your OPORD, FRAGO, or plan.
4. Enforce the control measures in the same manner as all other aspects of the order.

Section 3 focuses on special conditions that may produce hazards unique to force-projection operations in various geographical locations. Applicable material in this section should be used to supplement that in section 2.

Section 4 contains additional tactics, techniques, and procedures. Tailor and use these risk-management-integration tools to meet your training and operational requirements.

Remember, no single tool or technique alone can adequately protect the force. And tactics, techniques, and procedures applied without disciplined execution will not work.

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Foreword

This *Leaders' Guide to Force Protection through Risk Management* is for **warfighters**. It is designed for use in tactical units to enhance your capability to protect your troops and thus increase your readiness.

The Army has come a long way in its ability to integrate risk management into training and battlefield operations. Accident reductions in fiscal year 1995 reflect our success. Despite an overall improvement, however, review of recent training-accident fatalities shows that the one common factor was ineffective risk management.

Risk management is a logic-based, commonsense approach to making calculated decisions on human, materiel, and environmental factors before, during, and after every operation. It enables commanders to maximize operational capabilities while minimizing risks to the force.

Risk management is not a new bowling ball in the leader's rucksack. It is not an add-on requirement; it provides the "how to," the tool, to meet the demands already set in place by our warfighting doctrine. FM 100-5: *Operations* requires that commanders integrate protection into force-projection operations. Protection is a dynamic of combat power and, therefore, essential for decisive victory.

Many warfighters associate risk management with images of pencil-necked geeks with clipboards checking training. Early attempts to integrate risk management into training and operations were extremely complicated. This Guide is not more of the same. The process has been simplified and tailored to warfighters. It presents risk management as a simple tool with multiple applications. And it works. The tactics, techniques, and procedures offered here have been field-tested by MTO&E units during rotations at combat training centers (CTCs). Units that integrated risk management into CTC operations significantly lowered their casualty rates and preserved more of their combat power for use against the enemy.

Warrior leaders make safety happen!



THOMAS J. KONITZER
Brigadier General, USA
Commanding

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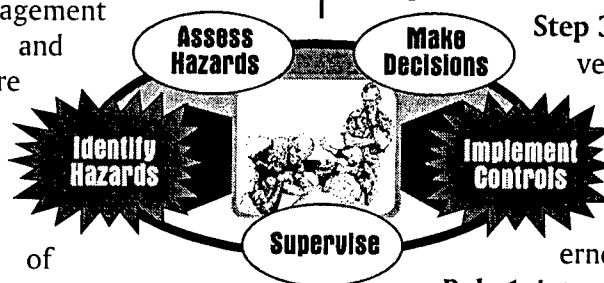
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SECTION 1

Force Protection and Risk Management In Tactical Decision Making

The Army's doctrinal process for identifying and controlling hazards is risk management. Integration of the risk management tactics, techniques, and procedures presented here will help commanders identify hazards and the controls necessary to reduce their risk during planning and execution of tactical operations.

Controlling hazards protects the force from unnecessary risks. Eliminating unnecessary risks opens the way for audacity in execution and preserves combat power. Risk management is a five-step process:



Step 1. Identify hazards.

Step 2. Assess the risk of each hazard.

Step 3. Make risk decisions and develop controls.

Step 4. Implement controls.

Step 5. Supervise.

This five-step process is governed by four rules:

Rule 1. Integrate protection into planning.

Rule 2. Accept no unnecessary risks.

Rule 3. Make risk decisions at the proper level.

Rule 4. Accept risk if benefits outweigh the potential costs.

FM 101-5: *Command and Control for Commanders and Staff* identifies the S3 as the principal staff officer for operations and plans, safety, organizations, and training. Therefore, the S3 has the staff lead for integrating protection into force-projection operations. He or she must do this in the same manner as the other three dynamics of combat power (maneuver, firepower, and leadership).

"Force projection is the movement of military forces from CONUS or a theater in response to requirements of war or operations other than war. Force-projection operations extend from mobilization and deployment of forces, to redeployment to CONUS or home theater, to subsequent demobilization."

— FM 100-5

Risk management supports integration of the "objective" and "security" principles of war during force projection. Actions that do not contribute to achieving the objective must be avoided. Risk management identifies hazards that create unnecessary risks, and controls allow the commander to accomplish the mission.

Mission planning and execution

During planning and execution of assigned missions, commanders and staffs use risk-management procedures to identify and control METT-T hazards. Figure 1 shows the sequen-

tial steps of integrating risk management into the tactical decision-making process. These steps, however, can be tailored based on time available.

When time is limited, the commander and staff must streamline the steps to rapidly select their course of action (COA). When more time is available, more detailed analysis and planning are possible before selecting a COA. In both cases, however, the commander must decide whether to accept the risk of the selected COA or elevate the decision to the next level of command. The deci-

sion to elevate is based on the level of risk-acceptance authority delegated by higher command and the presence of significant hazards that cannot be controlled at his or her command level.

Regardless of the technique used, identifying hazards and selecting controls must not be omitted from the decision-making process. (See sections 4A and 4B for examples of how to integrate risk management into an operations order and a mission training plan task.)

For each battlefield operating system (BOS) function, staff officers apply risk-management procedures to identify the hazards that result in the greatest risk to the mission. They then implement one or more controls for each hazard in each COA, taking care to avoid unnecessary safety restrictions. The staff must not preclude audacity or so overburden the plan with restrictions that decisive victory is impossible.

The executive officer (XO) coordinates the total risk-control effort by reviewing the staff's control options to identify those that have cross-function implications. The XO then recommends to the commander for decision those control options addressing high-risk hazards

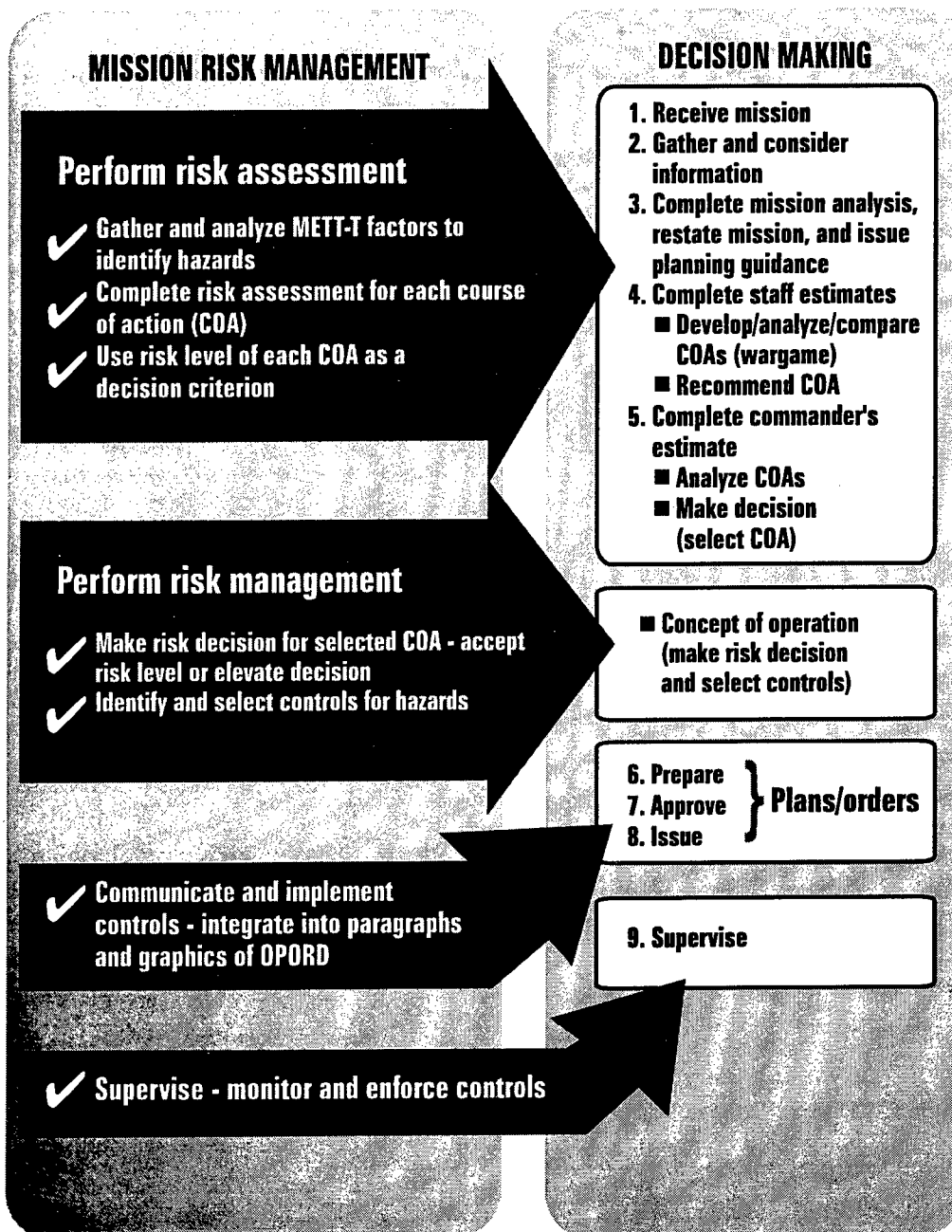


Figure 1—Integration of risk management into decision-making process

and those having a potentially significant impact on the COA.

The greatest effort in risk management should be focused on hazard identification and the development and enforcement of controls.

The staff then refines the controls approved by the commander and integrates them into appropriate paragraphs of the operations order and overlays. The commander, staff, and subordinate leaders then monitor and enforce the controls until the mission is accomplished. New or increased risks that surface during execution are risk managed as they occur during preparation of FRAGOs.

Mission assessment (after-action review)

After the mission, the commander and staff assess the unit's risk-management effectiveness and force-protection performance. They identify needed improvements and initiate action to implement the improvements.

Staff-officer responsibilities

Staff officers assess the effectiveness of each risk-management step within each BOS functional area. They closely examine the mission and determine whether or not the commander's guidance was met. Based on this assessment, each staff officer identifies and initiates action to implement improvements needed within his or her area of responsibility.

S3 (Safety) responsibilities

The S3 collects information from the staff about force-protection shortcomings and needed improvements. He or she then determines which ones are significant or have cross-functional application and reports them to the XO. The XO takes action to implement those he deems necessary and elevates to the commander only those having significant mission impact or high accident risk.

Commander responsibilities

The commander uses this after-action review to determine—

- Whether the unit's risk management and safety performance met his guidance.
- The effectiveness of hazard controls implemented.
- Necessary changes to guidance and controls (including SOPs) for future missions.

Risk-management integration

Commander responsibilities

- Ensure capability of BOS functions to perform to standard in order to prevent human error, materiel failure, and environmental effects.
- Establish force-protection policy and realistic safety goals with objectives and priorities.
- Ensure staff integrates risk management into plans for and execution of all operations.
- Make mission-risk decision or elevate decision to next command level.
- Select, monitor, and enforce implementation of controls for the most severe and most probable hazards.
- Determine whether unit performance met force-protection guidance.
- Determine effectiveness of hazard controls and necessary changes to guidance and controls. Ensure these changes are fed back to subordinates as guidance for future missions and SOPs.

S3 (Safety) responsibilities

- Monitor capability of each BOS to protect the force. Advise commander of any below-standard status that could affect force protection.
- Provide input for commander's force-protection policy and guidance.
- Complete risk assessment for each course of action in tactical decision-making process.
- Assess unit risk-management and force-protection performance during planning and execution. Recommend changes to force-protection guidance as needed.

Staff responsibilities

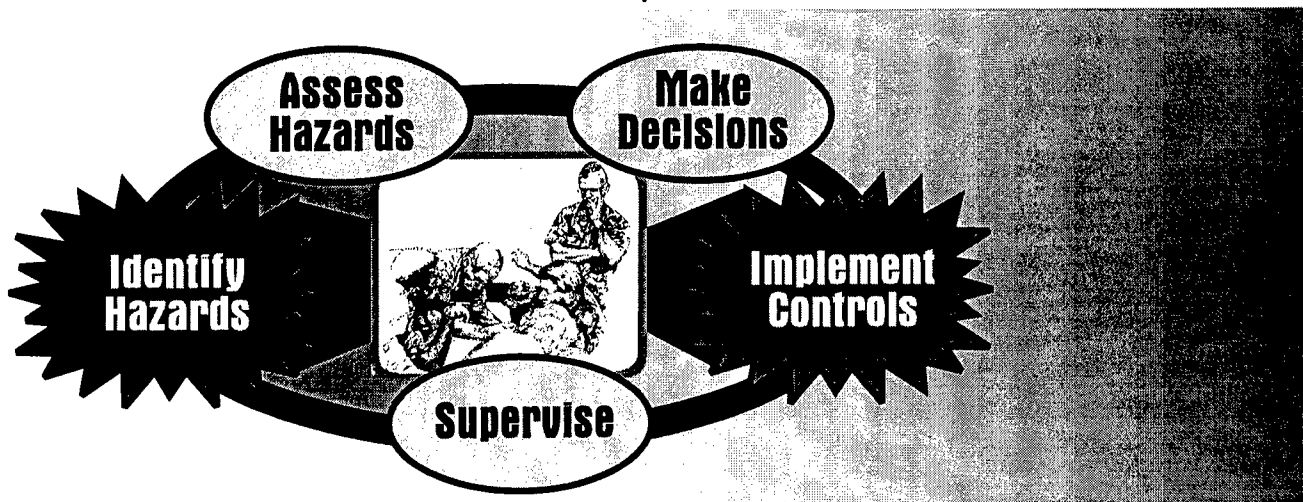
- Provide support needed to meet operational requirements.
- Ensure establishment of procedures and standards that are clear and practical for each specified and implied task.
- Identify force-protection shortcomings in BOS functions and develop control measures.
- Apply risk management to tactical decision-making process. Develop and implement controls for the commander that support the mission and protect the force from unnecessary risks and loss of combat power.

Leader responsibilities

- Enforce performance to standard.
- Execute and enforce control measures selected by commander.
- Provide feedback on effectiveness of controls.
- Apply risk management to planning and execution of all specified and implied tasks.

Individual responsibilities

- Sustain self-disciplined duty performance and conduct.
- Execute risk-management controls selected by the commander and other leaders.



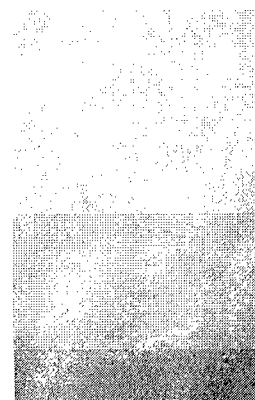
Risk-management integration into tactical decision-making process

The following is an example of how *protection* was integrated into a real-life mission plan and its execution in the same manner as *maneuver, firepower, and leadership*.

The mechanized infantry battalion task force (TF) now occupied an assembly area not far from a port. The TF had been in CONUS just a few weeks earlier when it received a mission from brigade headquarters to occupy a United Nations (U.N.) zone of separation, establish a lodgment within the zone, and prepare to conduct peacekeeping operations.

The peacekeeping operations would include positioning and construction of checkpoints and observation posts throughout the zone. The TF had to be prepared to conduct both mounted and dismounted patrols to verify compliance with the cease-fire separation agreement. If hostilities broke out between the two formerly hostile forces, the TF would also be required to either restore order or withdraw from the zone rapidly. The U.N. would make the decision to fight or leave.

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The OPORD

Immediately following receipt of the OPORD from the brigade staff, the battalion commander and his staff issued a warning order to the companies, the scout platoon, and attachments. The S3 and the commander analyzed the mission to determine the specified and implied tasks. Then the commander issued his initial guidance to the staff based on the analysis.

Command guidance

The battalion commander clearly stated his intent to marshal the TF in their current assembly area, conduct a tactical road march, occupy a new assembly area to establish a lodgment in the U.N. zone of separation, and prepare to conduct peacekeeping operations within the zone. The TF also had to be prepared to redeploy at the conclusion of the peacekeeping mission.

The brigade commander's intent was disseminated as part of the battalion commander's guidance. The brigade commander intended to occupy the zone rapidly without disturbing or alarming the civilian population. He wanted to avoid hostile contact and expected the TF to get into the zone without incidents or accidents. Bad press would adversely affect support for the U.N. mission. Additionally, the TF had to organize to clear main supply routes en route to the lodgment area, protect the force during movement, haul all lodgment construction supplies with the main body, and occupy the lodgment area before nightfall.

Risk-decision guidance

The battalion commander also provided risk-acceptance guidance for the mission: moderate risk could be accepted at company-commander level, high risk could be accepted at the TF-commander level, and extremely high risk had to be forwarded through the TF commander to the brigade commander for acceptance.

Area-recon information

Initial area reconnaissance began almost immediately after the commander issued his guidance. The staff gathered information from the recons, their counterparts on the brigade staff, and local nationals. Significant information that affected the upcoming mission started pouring in as the staff began work to develop courses of action (COAs).

The weather was bad: temperatures ranged from the upper 30s to the lower 40s and steady, sometimes heavy, rains were predicted. Roads throughout the area of operations were extremely poor—unpaved, infrequently repaired, high crowned, and bordered in many places by steep, deep drainage ditches. Surface mud had a high clay content, making the roads very slippery when wet. In many areas, the roads were too narrow to permit two-way traffic.

The area of operations contained many marked and unmarked mine fields on and adjacent to the main roads leading to the lodgment area. Civilian vehicle and pedestrian traffic on the roads was almost nonexistent because of the mine hazard.

Military traffic, consisting mostly of withdrawing hostile forces (moving away from each other in the zone of separation), was limited and confined to daylight hours. Neither of the two hostile forces was likely to impede U.N. movement into the zone of separation.

The current assembly area was very small, and the vehicles were tightly packed in narrow parking areas. Initial marshaling for the tactical road march would be conducted in the dark hours just before sunrise.

The surface of the new assembly area (the lodgment) would probably turn to soupy mud after passage of large numbers of tracked and heavy wheeled vehicles.

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Courses of action

Based on the commander's guidance, the executive officer and the battle staff determined early that this would be a five-phase operation: marshal in current assembly area, deploy (tactical road march), occupy assembly area (establish lodgment), conduct peacekeeping operations, and redeploy. Using protection as a weighted decision criterion, the TF staff developed and briefed three COAs to the commander. To illustrate the integration of protection through risk management in the tactical decision-making process, only the tactical-road-march phase of the operation will be discussed in detail in each COA.

- **COA 1:** Move through the zone rapidly with mine roller tanks clearing the routes as part of the advance guard.

- **COA 2:** Move through the zone rapidly with engineer armored combat earth-movers (ACEs) clearing the routes as part of the advance guard.

- **COA 3:** Move through the zone with engineers mounted in M113s and scouts in M3s in the advance guard conducting visual scanning for mines, clearing with mine detectors as necessary.

The greatest weight for each COA was given to the requirements to move rapidly through the zone of separation to the lodgment area, establish the lodgment in daylight, and avoid incidents and accidents en route that would lead to loss of combat power or bad press for the U.N. mission.

Identifying hazards and controls

The staff identified hazards and controls as they examined the battlefield operating systems (BOS) in COA development. They identified hazards with the greatest potential for adverse impact on each COA, then considered control measures for each hazard. The staff was integrating protection into the tactical decision-making process at the same time they were analyzing METT-T to ensure proper integration of maneuver, firepower, and leadership.

- **Hazards.** The staff identified the hazards that were common to all three COAs. The most significant hazards were muddy, slippery roads; deep, steep drainage ditches on the sides of the roads; narrow points on the roads that prohibited two-way traffic; mines on and adjacent to the main roads leading to the lodgment area; and potential for fratricide due to the hostile forces using a mix of Soviet- and American-made armored vehicles.

- **Controls.** Controls included mine-roller-equipped tanks, ACEs loaded to clear

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mines, engineers forward with mine detectors, reduced speeds, increased intervals between vehicles, traffic control points, changes to the tactical SOP (for example, "Do not pull toward the side of the road during halts"), and special markings to distinguish friendly armored vehicles from potentially hostile forces. This last problem was not as significant as it originally appeared in planning because all armored vehicles used by the TF for peacekeeping operations would be painted white and stenciled "U.N." in large, black letters. Additional markings were prepared and applied for possible mission changes. The additional markings were symbols constructed from thermal tape that would be visible to gunners using infrared scopes.

Selecting a COA

The staff then identified hazards peculiar to each COA, developed possible controls, and determined an overall risk level for each COA. The TF commander preferred COA 1 because it had the lowest risk. He wanted mine-roller-equipped tanks to reduce the risk, but he was not task-organized with this equipment. He needed help from the brigade commander to implement this control measure. When the TF commander elevated the decision to the brigade commander, he was told that mine-roller tanks would not be available for this operation. The mine rollers had been committed to another TF with a similar mission in another zone and were not expected to be available before the scheduled start of his movement. Movement time could not be adjusted because the U.N. command wanted the zone occupied without delay.

COA 2 was the TF commander's second choice. The staff had determined that there was a high level of risk associated with using loaded ACEs to clear mines. This was a field-expedient measure that the TF had used frequently in training exercises. The TF engineer believed the ACEs could survive two or three mine strikes before being destroyed. The S2 did not believe the density of the mine fields was likely to subject ACEs to more than one strike because the mines were generally surface-laid throughout the area of operations, particularly on the roads. The risk of strikes could be further reduced by visual scanning for potential minefields. The TF commander weighed the potential costs and benefits and decided to accept this risk. He determined this was a far better control than that afforded by COA 3.

Other control measures identified

War-gaming confirmed identified hazards—poor road conditions and deep, steep drainage ditches—and the controls selected—reduced speed, increased vehicle interval, and changes to the tactical SOP. This management of identified risks would enable the unit to accomplish the mission with less chance of accidental losses.

War-gaming also verified the importance of other control measures. Traffic control points (TCPs) were needed at the narrow points along the route to the lodgment area. The soldiers manning the TCPs would eliminate the possibility of vehicles being forced onto the dangerous road shoulders to allow oncoming traffic to pass. They would control traffic through the narrow points just as road crews control passage around construction sites. Soldiers to man the TCPs would deploy with the advance guard.

Another control measure was load plans found in the unit SOP. Loads had to be properly balanced and secured to prevent shifting on the rough roads. Shifting loads

could injure soldiers and damage equipment. Rollover drills were scheduled into rehearsals to ensure soldiers were prepared for the possibility of rollover caused by the steep drainage ditches and slippery conditions.

Special controls would be needed during movement out of the marshaling area just before daylight. Ground guides would be required front and rear of the vehicles as they were moved to their march order in serials. Service lights would be used throughout the movement because the hostile threat was minimal. Driving during darkness would be with service drive lights on and not require NVGs. Peacekeeping operations demanded a high profile for U.N. vehicles.

Proper lifting techniques and use of the buddy system were emphasized for loading ammo and supplies. These items were extremely heavy, and the unsure footing created by the rain and mud made this task more hazardous than usual.

Dismounted soldiers were to wear rain gear to help prevent hypothermia. Weather conditions were ideal for this hazard, and unsuspecting and unprepared soldiers could become losses.

OPORD issued

The TF OPOD was produced and distributed to the TF elements. The task organization specified loaded ACEs and engineers trained in visual scanning techniques for the advance guard, the control measure for the mine hazard. Paragraph 1, *Situation*, identified minefields and poor road conditions as potential threats (hazards) to the force.

The commander's intent restated the authority levels for risk acceptance. He defined success as incident/accident-free rapid movement into the zone-of-separation lodgment area.

The concept of operations contained the controls for clearing routes with ACEs in the advance guard. These controls were reinforced in the detailed, specific instructions for the engineers and scouts. The specific instructions also addressed TCP organization and tasks at narrow points.

The coordinating instructions contained the controls for the poor roads and steep drainage ditches. A change was issued for the tactical SOP as part of the tactical road march annex. Specific control measures were printed on driver strip maps (issued prior to start point). Another control was rollover drills, which were scheduled for rehearsals and emphasized in the coordinating instructions along with guidance for vehicle load plans and securing of loads for movement over rough terrain.

Supervision was accomplished by the chain of command.

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SECTION 2

Hazards and Controls

This section identifies potential hazards in force-projection operations. Also included are control measures to reduce the risks of those hazards.

To use this section, first identify the potential hazards associated with the specified and implied tasks of your assigned mission. Then select the control measures most appropriate to reduce the risks. Integrate the control measures into the appropriate paragraphs and overlays of your OPORD or FRAGO and disseminate them to all soldiers participating in the mission.

Strong command and discipline are essential for the control measures to be effective; *the controls must be enforced*. In addition, the hazards and control measures must be addressed in the after-action review to capture lessons learned for future operations.

The hazards and controls presented here are not all inclusive. They are based on analysis of historical accident data and represent the problems you're most likely to encounter. The unique cir-

Hazard: Any real or potential condition that can cause injury, illness, or death to personnel or damage to or loss of equipment or property.

—AR 310-25

cumstances of each force-projection operation may create unforeseen hazards that require new control measures. Therefore, examine each new mission carefully to properly identify the potential hazards associated with its specified and implied tasks. Also see section 3 for supplemental information on special conditions unique to various geographical areas.

SECTION 2A

Vehicle Operations

This subsection contains control measures for hazards involved in vehicle operations. Hazards appear in boldface type; control measures follow in bullet format.

All vehicles

Hazard: Backing in congested motor parks or assembly areas without ground guides.

- Ensure drivers use ground guides.
- Ensure drivers and ground guides know the proper procedures for ground guiding (positioning, signals, etc.).

Hazard: Lack of crew coordination.

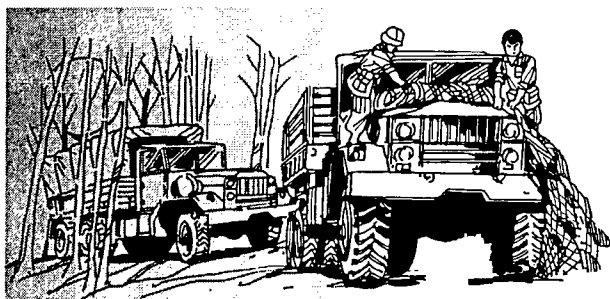
- Stress the importance of maintaining crew communications. The driver must not be the only awake and alert person in the vehicle.
- Caution drivers and track commanders to warn crews and passengers when they are about to cross a ditch, climb an obstacle, or take any action likely to catch occupants off guard.

Hazard: Improper driver selection.

- Match the driver to the task.
- Pair an experienced driver with an inexperienced one to provide supervision and hands-on training.

Hazard: Unfamiliar local-driving customs.

- Provide instruction on local driving customs and practices.
- Stress need for constant alertness and always to expect drivers of civilian vehicles to do the unexpected.
- Ensure all drivers understand they should not expect local drivers to respond or react to situations in the same manner as drivers in their hometown.

**Hazard: Off-road driving.**

- Remind drivers to review the "Operating Under Unusual Conditions" section of the vehicle operators manual.
- Give drivers hands-on training on the type of terrain they're likely to encounter (mud, snow, rocky and steep terrain, sand, narrow and unimproved roads, heavily wooded areas, etc.).
- Use experienced drivers in difficult terrain.

Hazard: Improper loading and securing of passengers and cargo.

- Enforce the use of safety belts and helmets.
- Use fixed seating in truck cargo beds whenever possible.
- Require passengers to remain seated within truck body in cargo beds without fixed seating.
- Ensure that load plans provide for loads to be properly secured and the weight properly distributed.
- Supervise cargo loading to ensure that load is secure and weight is correctly distributed.

Hazard: Lack of PMCS.

- Stress that daily PMCS is critical during force-projection operations even if equipment is not used.
- Remind drivers to review and perform special requirements covered in the "Operating Under Unusual Conditions" section of the operators manual.
- Ensure that chock blocks are used as required.

Hazard: Rear-end collisions from following too close.

- Establish and enforce safe following distances.
- Provide for use of increased following distances if conditions worsen during the mission.
- Caution drivers under blackout conditions to watch the rear blackout marker lights of the vehicle ahead. Ensure that they know the distances different marker readings indicate. (When a driver sees one point of red light at each rear lamp of the vehicle ahead, he is more than 180 feet behind it; if he sees two points of light, he is following 60 to 180 feet behind it; if he sees four lights or two pairs of "cat eyes," he is less than 60 feet behind it.)
- Establish speed limits for blackout conditions consistent with the environmental conditions.
- Establish procedures for vehicle stops and breakdowns to warn approaching vehicles in blackout or other restricted visibility conditions.

Hazard: Rollovers.

- Rehearse rollover crew drills frequently.
- Instruct drivers on conditions that can lead to rollovers: steep slopes, ditches, sharp curves, etc.
- Enforce the use of safety belts by all crew and passengers.
- Ensure load plans allow all cargo to be secured to prevent injury from falling or shifting cargo in the event of a rollover.
- Enforce established speed limits.
- Require drivers to slow down in limited visibility, on rough terrain, and during inclement weather.
- Avoid steep slopes and narrow trails whenever possible when planning vehicle moves.

- Ensure drivers give special care to tires, tracks, and suspension inspections.

Hazard: Failure to use safety belts.

- Enforce the use of safety belts in all vehicles in which they are installed.

Hazard: Excessive speed for conditions.

- Establish and enforce safe speed limits for various vehicles, roads, and environmental conditions.

Convoys

Hazard: Inadequate clearance.

- Conduct reconnaissance of route for bridges that may be too low for large vehicles.
- Conduct reconnaissance of route for bridges with weight capacities that may be exceeded by large vehicles.
- Conduct reconnaissance of route for sharp turns and narrow passages that might require special control measures.
- Ensure that operators know weight and height of load and trailer.

Hazard: Unexpected narrow points and intersections along route.

- Perform route reconnaissance and establish traffic controls points at hazardous locations.
- Brief drivers on traffic control points.

Hazard: Improper convoy organization, trailer connections, and driving procedures.

- Do not place vehicles transporting troops, ammunition, or POL last in a serial or march unit.
- Ensure that all prime movers and trailer brake systems are properly connected and fully operational.
- Reinforce braking and downhill driving procedures with all operators.

Hazard: Unfamiliar and unusual driving practices.

- Provide instruction in local driving customs and practices.
- Avoid areas of high civilian vehicle concentrations.

- Stress staying alert and expect civilian vehicles to do the unexpected. Include in pre-march briefing.

Hazard: Loss of control/rollovers.

- Use experienced drivers in difficult terrain.
- Conduct a physical reconnaissance of the route whenever possible to avoid the worst terrain hazards. Mark unavoidable hazards on strip maps and include them in the pre-march briefing.
- Check loads to ensure that cargo is correctly secured. Stress even load distribution, especially when traveling over rough terrain.

Hazard: Materiel failure.

- Have all drivers perform PMCS before beginning mission, during halts, and after mission completion.
- During halts, in addition to normal during-operation PMCS, emphasize need to check for loose lug nuts, tire/track-pad condition, and security of loads.
- During operation, have drivers pay particular attention to air cleaner and water and transmission gauges.
- Ensure that operators know and follow proper cool-down procedures spelled out in operators manuals for their vehicles.
- Ensure that vehicle basic-issue items, pioneer tools, highway warning devices, and fire extinguishers are present on every vehicle.
- Ensure that disabled vehicles are moved completely off the road.

Hazard: Injuries from being thrown around inside or out of vehicles.

- Enforce requirement to wear available safety belts, shoulder harnesses, and helmets.
- Use fixed seating in truck cargo beds.
- Ensure that tailgates and safety straps are secured.

Hazard: Rear-end collisions from following too close.

- Provide driver rest before starting.
- Establish speed and following distances.
- Increase following distance in bad weather

and darkness; increase in pre-march briefing.

- Establish procedures for vehicle stops and breakdowns to warn approaching vehicles.

Hazard: Accidents from excessive speed.

- Establish and enforce safe convoy and catch-up speeds for expected road and environmental conditions. Include in pre-march briefing.
- Set speed limits based on personnel, training, terrain, environment, and equipment.

Maintenance

Hazard: Batteries.

- Ensure mechanics keep air vents clean to allow gas release and avoid pressure buildup.
- Require that fluid levels be checked often, especially in hot weather. In cold weather, levels will be lower and overfill must be avoided.
- Require use of slave cables; allow use of jumper cables only as last resort. Remind personnel to beware of sparks as cables are attached around the battery's gaseous vapors.
- Ensure that mechanics adjust voltage regulators to lowest setting possible to avoid overcharging.
- Require use of face shields, goggles, rubber gloves, and aprons when servicing batteries.

Hazard: Eye injuries.

- Require the use of goggles for work underneath vehicles.
- Require that proper tools be used for every job.
- Require the use of goggles during work around batteries.

Hazard: Electrocution.

- Ensure that portable electrical equipment and power-generation equipment are properly grounded.

Hazard: POL handling.

- Remind POL handlers to use extreme care when changing hot lubricants.
- Caution POL handlers to take care to prevent sand, dirt, and dust contamination of POL.

Hazard: Radiators/coolant.

- Stress need for caution when removing radiator caps (use hand only if cap is cool to touch; turn cap slowly to release pressure).
- Require that radiators and airflow areas be kept clean and free of debris.
- Require frequent testing of radiator caps (caps control pressure).

Hazard: Improper procedures during recovery operations.

- Remind crews to use a braking vehicle when required by TM and to always use correct hookup procedures.
- Ensure that all vehicles are properly equipped for self-recovery (tow ropes or cables, rope ladders, pierced-steel planking or other traction material to put under tires).
- Caution soldiers to keep hands and clothing at least 5 feet from rewinding cable after recovery operations.
- Do not allow personnel to get between vehicles due to chance of being crushed between the vehicles.
- Enforce safe towing speeds.
- Match driver skills to the mission.
- Fabricate ground-support devices for outrigger support in soft soil.

Hazard: Failure to check tires for defects.

- Ensure that tires are checked often for cuts and wear.
- Remind drivers to check for rocks between duals and to check tire pressure often.
- Remind drivers that rough terrain, extreme temperatures (high or low), and sand shorten tire life.

Hazard: Improper tire-repair procedures.

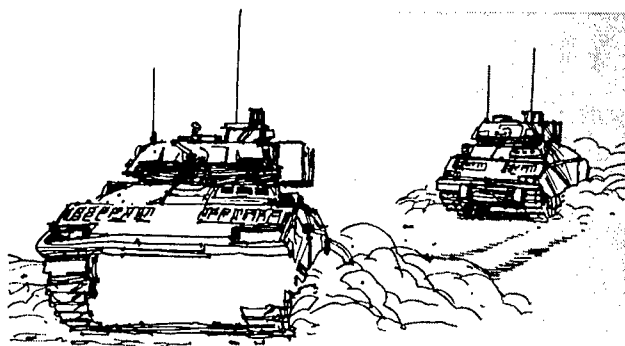
- Require the use of a tire cage.
- Require mechanics to use only the proper tools, to keep their hands out of the cage while inflating tires, and to use an extension.
- Require mechanics to use the buddy system when lifting, removing, and installing large tires.

Hazard: Undetected track defects.

- Ensure that proper PMCS is conducted.
- Ensure that vehicle suspension is checked for excessive wear and loose, broken, or missing bolts before, during, and after operation.
- Ensure that tracks are lubed often to flush out sand, dirt, and grease.

Tracked vehicles**Hazard: Vehicle fires.**

- Frequently rehearse crew drills for emergency fire escape.
- Require complete electrical inspection in accordance with appropriate operators manual (no loose connections, no frayed or worn wires, and no wires that run over hot or sharp objects).
- Ensure that fuel systems are inspected for leaks, and ensure that lines do not run over or rub against sharp objects that can cause breaks or tears.



- Ensure that training and supervision of crews involved in ammunition handling are in accordance with published standards.
- Require inspection of fire extinguishers to ensure they have been tested/weighed and are properly connected to discharge lines and external pull handles.
- Require inspection of fire extinguishers and refresher training for crewmembers in proper extinguisher operation.

Hazard: Improperly secured hatches and malfunctioning latches.

- Make sure pins are present, operational, and used.
- Require daily PMCS checks to ensure hatches and doors are functioning correctly.
- Notify crew of hatches and doors that are unserviceable.
- Ensure unserviceable latches and pins are replaced immediately.
- Ensure helmets are worn.
- Require crews to check hatches, latches, and pin functions before and after mission.

Hazard: Slips, trips, and falls on and around vehicles.

- Ensure that soldiers get help to mount or load heavy objects.
- Require that helmets be worn in and around vehicles.
- Require that footgear be cleaned of slippery foreign substances before mounting vehicles.
- Enforce standard of three points of contact at all times when moving on vehicles.
- Enforce use of gloves when working with extremely hot or cold surfaces.
- Do not allow soldiers to jump from vehicles.
- Enforce the use of ground guides in assembly areas and when coming within 20 meters of another vehicle.

Hazard: Moving turrets.

- Ensure crews maintain proper communications between crewmembers at all times.
- Frequently brief and train crewmembers and passengers about turret hazards. Review the warnings and cautions in the TM.
- Advise crew and passengers on the tactical situation so they can anticipate turret movements.
- Stress the importance of announcing "power" before traversing the turret.
- Ensure that crews turn turret power off before leaving station.

SECTION 2B

Ground Operations

This subsection contains control measures for hazards involved in ground operations. Hazards appear in boldface type; control measures follow in bullet format.

Ammunition and explosives

Hazard: Fire.

- Prohibit flammable materials and flame- and spark-producing devices in areas near ammo and explosives. These include matches, lighted cigarettes, petroleum products, and vehicles with leaking fluids.

- Ensure that fire extinguishers are present wherever ammo is handled, stored, or transported.

- Establish fire-evacuation procedures (evacuate to a distance of at least 400 meters and take cover).

- Post "Add No Water" signs to ammo-containing materials such as thermite or triethyl aluminum (TEA/TPA) that react violently with water; such fires should be smothered with sand or dirt.

Hazard: Improper handling, storage, and safety precautions.

- Expose to ammo and explosives only the minimum number of people and amount of equipment necessary.

- Emphasize careful handling of ammunition. Containers must not be tumbled, dropped, thrown, rolled, or dragged (unless designed for dragging).

- Make provisions to evaluate and, if necessary, segregate damaged ammunition.

- Coordinate with quartermaster laundry to wash clothing with an anti-static additive to reduce static electricity.

- Prohibit use of sparking metallic tools on explosives.

- Establish lightning-protection procedures.

- Do not allow soldiers to collect dud rounds as souvenirs.

- Monitor suspension/restriction notices. Suspended lots should be visibly marked and physi-

cally separated from serviceable lots.

- Prohibit removal of ammo from its packaging until time of use; ammo containers protect against moisture and static electricity.

- Require use of leather gloves for working with banding materials or wooden boxes.



- Keep area within 50 feet of ammo clear of vegetation, refuse, empty packing materials, and other fire hazards.

- Keep water barrels at locations where WP/PWP ammo is kept for use as first-aid for burns and to immerse leaking rounds.

- In hot climates, store ammunition in dug-outs/depressions below ground level to reduce exposure to heat.

Hazard: Improper loading.

- Remind soldiers to make sure brakes are set, engine is off, and at least one wheel is chocked during loading and unloading.

- Establish procedures to ensure ammo weight

is evenly distributed and the load is secured to prevent movement.

- Ensure that vehicles and trailers loaded with ammunition are parked at least 50 feet from vehicles and trailers loaded with flammable liquids.

- Ensure that tailgates and safety straps are secured.

Hazard: Mishandling pyrotechnics.

- Remind soldiers that simulator flash powder ignites instantly and explosively and that simulators should not be exposed to intense heat and direct sunlight.

- Prohibit the cutting open and hand-ignition of simulators.

- Instruct soldiers to mark and report duds to EOD for disposal.

- Remind soldiers that they should never throw or detonate simulators, flares, or smoke devices near troops, tents, vehicles, or other flammable or combustible material.

- Require that soldiers roll down sleeves and wear gloves and helmets when using simulators.

- Ensure that all crewmembers are in vehicle when using Hoffman and that crews clear the rear when using ATWESS.

- Remind soldiers to beware of missile hazards when simulators are used on rocky terrain.

Hazard: Improper storage.

- Ensure that ammunition, particularly unpacked ammo, is protected from direct sunlight. Remind soldiers that tarpaulins or other covers placed directly on ammo could cause deterioration, so ventilation space must be provided.

- Disperse ammunition to minimize loss in the event of fire, accidental explosion, or enemy action.

- Conform to quantity-distance standards for storage of ammo and explosives.

- Ensure that ammo of unknown origin and captured ammunition are examined, evaluated, and classified by qualified personnel and stored at a designated collection point.

- Use sand dunes, earth berms, barriers, buildings, and similar structures to prevent propagation and to protect personnel and materiel from the effects of an explosion.

- Ensure that ammunition containing white

phosphorous (WP) is stored upright (WP liquefies at high temperature and ballistics will be affected by horizontal storage).

Hazard: Unexploded ordnance (UXO).

- Brief soldiers on dangers of UXO.

- Establish procedures for marking and handling UXO.

- Ensure that only properly trained EOD personnel handle UXO.

- Do not allow soldiers to collect dud rounds, bomblets, or suspected UXO for souvenirs.

- Have NCOs perform shakedown inspections while in cantonment and before leaving field.

- Caution troops to be alert while crossing areas where prior fighting or training may have taken place.

- Remind soldiers: If you don't know what it is, don't mess with it!

Bivouac

Hazard: Runovers.

- Establish dismount points beyond which vehicles may not move without ground guides.

Hazard: Failure to use or improper use of ground guides.

- Require that ALL vehicles use ground guides, especially during periods of reduced visibility.

- Require that tracked vehicles use at least two ground guides when moving within or through an assembly area at any time (one front and one rear).

- Require that drivers and ground guides position themselves where they can see each other.

Hazard: Sleeping in the field.

- Establish designated sleeping area (best in and around trees that vehicles cannot drive through), and mark the area as tactical situation permits (chem-lites, engineer tape).

- Post perimeter security guards to prevent vehicle passage.

- Ensure that vehicles are not parked where they can roll toward sleeping personnel. Require the use of chock blocks and ensure that parking brakes are locked.

Hazard: Tent fires.

- Designate a fire guard for each tent and brief each fire guard on fire hazards.
- Ensure that all personnel (not just designated fire guards) fueling or operating tent stoves are properly trained, tested, and licensed.
- Ensure that the correct fuel is used for the type stove being used.
- Ensure that stovepipes extend above the top of tents (spark arrestor is required).
- Ensure that stoves are not operated at full capacity.
- Ensure that fire extinguishers are accessible and that personnel know how to use them.
- Inspect electrical circuits for possible overload condition.
- Prohibit use of stoves that are leaking fuel, and require immediate cleanup of any spills.
- Establish and enforce smoking areas.

Hazard: Winds and flash floods.

- Ensure that sufficient anchorage, proper for soil conditions, is provided to prevent wind damage.
- Beware of flash flooding potential; use higher ground.

Combat engineer

Hazard: Demolitions.

- Enforce use of proper procedures, tools, and protective equipment (crimper, flak jacket, helmet, and nonsparking tools).
- Remind personnel to check for static electrical charges and proper grounding, and recommend that they use anti-static laundry additives and sprays.
- Ensure that demolitions are properly stored. Provide shade and ventilation, separate and sand-bag sensitive initiation components, and protect emplaced demolitions (especially blasting caps) from direct heat.
- Ensure use of survivable safe distance or cover when detonating explosives.
- Remind personnel to keep explosives away from food and eyes and to clean their hands after handling explosives.

Hazard: Land mines.

- Ensure that only the AN/PSS 11/12 mine detector is used.
- Maintain soldier-awareness of mines, and provide training to improve recognition skills.
- Remind personnel that climatic conditions (floods, windstorms, sand, and mud) can cause mines to drift and to malfunction.
- Ensure that pressure and tension release anti-handling devices have firm bases/anchors.
- Remind personnel to check for static electrical charges and proper grounding.
- Ensure that stored mines are properly ventilated and protected from climatic hazards.
- Ensure that personnel maintain proper survivable distance or cover when detonating land mines.

Hazard: Wire obstacles.

- Ensure that personnel use proper equipment (post drives and eye protection) and wear proper clothing (barbed-wire gloves, sleeves rolled down) when constructing wire obstacles.

Combat soldiering

Hazard: Unsafe landing zone.

- Pick areas having as little sand and dust as possible.
- Pick areas that are clear of power lines, trees, brush, and other obstacles.
- Mark unmovable obstacles.

Hazard: Parachuting.

- Brief all jumpers on drop-zone conditions.
- Limit ALICE or FPLIF weight to jumper's capability; excess weight will increase the possibility of improper exit and towed jumper.
- Ensure that jumpers who wear corrective lenses wear them while jumping.
- Go over reserve parachute activation procedures and ensure that jumpers know which method to use.
- Review procedures for jumping with weapons exposed if this technique is essential to success of the mission.
- Ensure that ONLY red cabin lights are used 30

minutes before and during night jumps. (White lights will destroy night vision.)

- Rehearse actions on the drop zone.
- Review and practice parachute landing falls and emergency procedures.
- Ensure static line control. Stow excess properly and pass (do not throw) to the safety.
- Conduct aircraft crash drills.
- Use door bundles for extra equipment and ammunition.
- Review the cross-loading plan.

Hazard: Rappelling/fast rope.

- Ensure that the rappel/rope master is using night-vision goggles during night operations.
- Use trained rappel/rope master.
- Conduct thorough aircrew briefing.
- Inspect all equipment.
- Keep ALICE or FPLIF under 50 pounds.
- Require use of helmets and gloves.
- Prohibit cutting of ropes except in an emergency—and then only after visual confirmation that rope is clear.
- Maintain positive communications between the ground and the aircraft at all times.
- Use only approved deployment bag for ropes; never use ALICE or FPLIF.
- Require that the rope master be the last to exit the aircraft.

Hazard: Water operations.

- In planning water operations, consider time (day vs. night); location; current speed; depth and temperature of water; entry and exit routes; bottom topography; and training, experience, and physical condition of troops.
- Ensure that personnel are trained in accordance with published standards.
- Know who the nonswimmers are in the unit.
- Ensure that proper flotation devices are available for all troops and that lifesaving, communication, and first-aid equipment for the operation is present and functional.
- Require thorough inspections of all equipment for serviceability.

Communications

Hazard: Lightning.

- Prohibit the use of radios, telephones, and switchboards during electrical storms if possible.
- Instruct personnel to disconnect electrical equipment from power sources and antennas if situation permits.
- If equipment must be used during electrical storms, keep use as brief as possible.

Hazard: Fixed antennas.

- Remind soldiers to stay twice the distance from power lines as the length of the antenna when erecting RC-292 or OE-254 antennas.
- Stress that soldiers have been killed by falling antenna head sections.
- Require that personnel wear eye protection, helmets, and gloves when erecting antennas.
- Prohibit use of substitutes for antenna mast sections (camouflage poles have been a fatal alternative).
- Ensure that assembled antenna head sections that must be left on the ground are protected against people walking on them.
- Ensure that all tip protectors are properly in place.

Hazard: Movable antennas.

- Ensure that all soldiers know the location of all power lines.
- Require tip protectors and tie-down of antennas in areas of power lines (antenna tip should be no lower than 7 feet to prevent eye injuries).
- Stress the danger of throwing commo wire over power lines.

Construction

Hazard: Personal injuries.

- Remind operators that construction equipment may be unstable off road in sandy, muddy, or rocky terrain.
- Ensure that operators and supervisors check outriggers for stability.
- Ensure that safety belts are worn at all times when operating equipment.
- Ensure that rollover protection systems are installed.

- Require use of sun umbrellas on slow-speed equipment such as rollers and compactors.
- Rehearse operator/crew rollover drills.
- Ensure that all prime movers and trailer brake systems are fully operational on equipment haulers and other M915 series vehicles.
- Rehearse braking and downhill driving procedures with all operators.
- Appoint a site safety supervisor for large earth-work or building-construction sites.
- Ensure that helmets or hard-hats are worn on construction sites.
- Control vehicle and dismounted access to sites.
- Ensure that excavation walls are reinforced to prevent cave-in.
- Ensure that personnel on site know what to do in event of flash floods.
- Ensure that all electrical equipment is grounded, and ensure that personnel always ground and bond when transferring fuel.
- Ensure that proper safety equipment (goggles, gloves, welding masks, aprons, dust respirators) is available and properly used.
- Caution personnel not to shortcut safety procedures to avoid heat or cold discomfort.
- Ensure personnel know what to do during wind storms to prevent injury and equipment damage.
- Require use of proper recovery techniques for recovery of stuck equipment.
- Ensure that electrical wiring, hydraulics, and optics are protected from mud, sand, ice, and other abrasives.
- Require that personnel wear gloves when working with metal tools and materials exposed to heat from the sun or extreme cold.
- Enforce spill control (personnel must remove contaminated soil from operational areas immediately because of fire and vapor hazards).

Fuel handling

Hazard: Failure to use bonding and grounding equipment.

- Require regular inspection and testing of bonding and grounding equipment.

- Require that personnel properly bond and ground all equipment before engaging in any petroleum operation.

- Require personnel to ground themselves by touching a large metal object before handling fuel hoses and nozzles.

Hazard: Lack of proper fire extinguishers.

- Ensure that correct types of fire extinguishers are available and ready. (Extinguishers fastened in storage brackets are not considered ready.)
- Ensure that extinguishers are in proper operating condition and that all personnel know how to use them.

Hazard: Flame and spark-producing equipment.

- Prohibit open flames, stoves, electrical tools, catalytic converters, and similar hazardous equipment in petroleum storage, transfer, and operating areas.
- Keep all sources of vapor ignition away from fuel storage, transfer, and operating areas.
- Remind crews to stop fuel flow and close hatches in case of fire in tank compartment.
- Caution personnel not to drag hoses across the rear deck of combat vehicles or near exhaust systems. Armor plates and exhaust pipes become hot during operation and could damage hoses or start a fire.
- Require flame and spark arrestors on equipment used near petroleum storage or handling areas.

Hazard: Fuel system supply points.

- Remind personnel not to fill collapsible bags to capacity (allow for expansion).
- Require that pump engines be kept clean.
- Remind personnel to keep hose-line valves slightly open to allow for fuel expansion into tankage.
- Remind personnel to keep pumps properly lubricated and to use dust caps and plugs.

Hazard: Improper fuel handling.

- Establish a waste POL point.
- Strictly enforce no-smoking rules.
- Post no-smoking signs around the POL storage areas.

- Prohibit presence of matches and lighters in vehicle-maintenance areas.

Hazard: Inadequate inspections.

- Require frequent inspection of petroleum storage, handling, and working areas.
- Ensure that potentially hazardous conditions are corrected immediately.
- Require daily fuel-sample checks.

Hazard: Notched-handled nozzles.

- Prohibit use of nozzles with notched, stay-open handles. If such handles must be used, require that they be modified so that they must be held open by hand to operate.

Hazard: Static electricity.

- Remind personnel to avoid wearing wool and synthetic clothing or combinations while engaged in petroleum operations. (Electrostatic charges build up.)
- Require crews to bond themselves to equipment by placing both bare hands on it for at least 10 seconds before beginning any fuel operation such as fuel circulation or sampling, regardless of what materials are in their clothing. (Use extra caution in cold weather.)
- Remind crews that when removing fuel-soaked clothing, they should first wet the clothing. If no water is available or it is too cold to wet clothing first, they should ground themselves by holding a piece of grounded equipment with both hands for a moment before moving the clothing.
- Coordinate with QM laundry to wash clothing with an antistatic additive to reduce static electricity.

Hazard: Spills and leaks.

- Ensure that crews wear fuel-resistant or rubber gloves and protective clothing to keep fuel off their skin. Require personnel to wash immediately with soap and water if they get any fuel on their skin.
- Ensure that personnel use drainage tubes or containers to catch leaking or spilling product.
- Ensure that personnel dispose of collected products properly.
- Require immediate cleanup of spills and leaks.

Hazard: Fuel contamination.

- Keep equipment properly lubricated.
- Keep caps and covers on systems.
- Keep pump engines clean.
- Purge tanks, lines, and filter separators at the beginning and end of the day.
- Recirculate fuels to remove water.
- Keep pressure-relief valves clean (compressed air).
- Inspect for corrosion.

Hazard: Tank-vehicle operations.

- Ensure that crews maintain required distances between vehicles while engaged in fuel-handling operations or when vehicles are parked.
- Use ground guides when backing vehicles or when moving in parking or assembly areas.
- Chock wheels of parked vehicles to prevent movement in either direction.
- Use tire chains on fuel tankers when more traction is needed on ice or snow. Require crews to remove chains when on dry pavement.
- Remind crews not to fill vehicles to capacity (allow for expansion).
- Caution crews to keep tank hatches open during refueling to allow vapors to escape; close hatches immediately after refueling.
- Use bottom loading when possible.

Hazard: Breathing fuel vapors.

- Make sure that work areas have sufficient ventilation.
- Remind personnel to stay upwind of open storage hatches during fuel-handling operations.

Ground guiding

Hazard: Runovers.

- Train drivers in correct use of ground guides, and train all personnel in correct ground-guiding procedures.
- Require ground guides, as the tactical situation permits, when traveling cross country in limited visibility.
- Require drivers to demand ground guides when backing and when moving in parking or assembly areas.

- Caution ground guides to watch for tripping hazards.

Grounding

Hazard: Electrical mishaps.

- Give extra care to preventing static electricity in hot, dry climates.
- Ensure that personnel know grounding procedures for the soil in the area of operations.
- Instruct personnel to drive grounding rods to a depth of 6 feet.
- Remind personnel to keep moist soil around grounding rods to increase conductivity and to keep grounding rods, straps, and connections free of paint and oil.

Materiel handling

Hazard: Lifting/carrying.

- Enforce the use of correct techniques.
- Require personnel to get help with loads that cannot be managed with ease.
- Remind personnel to bend from the hips and knees, not just the waist; to carry heavy objects close to the body; to avoid sudden movements and move slowly and deliberately; and to avoid trying to carry unbalanced loads.

Hazard: Slips, trips, and falls.

- Ensure that work areas are clear of obstructions and hazards.
- Prohibit personnel from jumping or stepping from cargo vehicles while carrying loads; require the use of a ramp or the buddy system.
- Remind personnel to use extreme care when carrying loads over rough surfaces or in loose soil, mud, or sand.

Mess operations

Hazard: Cuts and burns.

- Ensure that knives are kept sharp and properly stored.
- Require personnel to use the proper tool for the job.
- Caution personnel not to use knives or other sharp instruments to pry open tray packs (use

modified can opener and P38).

- Remind personnel to tilt heated tray packs and cans to right or left when opening to prevent burns from squirting hot juices.

Hazard: Fires and explosions.

- Ensure that kitchen fuel area is at least 15 meters from working area and is marked as a hazard area.
- Ensure that operable fire extinguishers are accessible (with designated operators) in mess-tent area and at stove-lighting and fuel-storage areas.
- Ensure that personnel fueling or operating stoves, immersion heaters, and burners are properly trained, tested, and licensed.
- Remind operators that increased heat will add pressure to fuel tanks and fuel cans and that particular attention should be given to M2 burners.
- Keep mess-tent exits marked and clear of obstructions.

Hazard: Poor sanitation.

- Ensure that all food waste is properly disposed of. If buried, ensure that it is done daily and at least 30 meters from food-preparation areas.
- Ensure that food-preparation area is at least 100 meters from latrines and 50 meters from incinerators.
- Ensure that food is protected from contamination.
- Monitor food handlers and other soldiers to ensure that sanitation standards are maintained.

NBC operations

Hazard: Chemical burns.

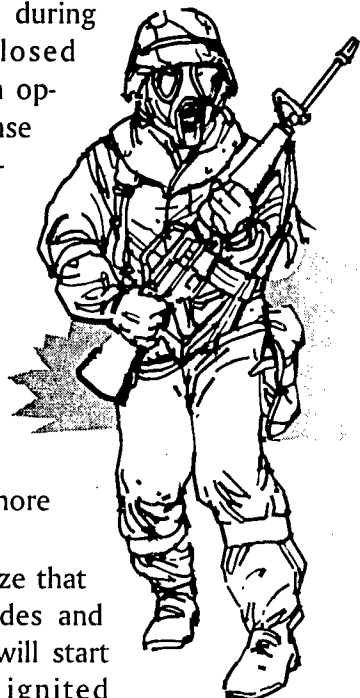
- Emphasize that containers of DS2, STB, and the M13 decon apparatus must be stored out of direct sun to avoid overpressurization of containers and leaking.
 - Remind users to wear rubber gloves when handling containers of decontaminants.
- ### Hazard: Fire.
- Ensure that DS2 and STB are stored separately.

- Caution personnel not to spray DS2 on hot metal surfaces.

Hazard: HC smoke.

- Ensure that all personnel have protective mask available before conducting operations with HC smoke.

● Ensure that soldiers know to don mask when using smoke during MOUT in closed spaces, when operating in dense smoke (visibility less than 50 meters), and when operating in smoke haze (visibility more than 50 meters) for more than 4 hours.



- Emphasize that smoke grenades and smoke pots will start fires when ignited around flammable materials.

- Warn soldiers that burning grenades and smoke pots will displace oxygen in enclosed spaces, creating the possibility of asphyxiation.

Hazard: Improper handling and use of M43 protective mask.

- Remind personnel not to expose blower or battery pack to temperatures above 160 degrees.
- Caution personnel not to allow battery pack or blower to remain in contact with hot metal surfaces.
- Remind personnel that prong-type M17 mask inserts can cause injuries.

Hazard: MOPP operations.

- Remind soldiers that PMCS is critical.
- Warn soldiers that amyl acetate (banana oil) vapor is toxic and flammable; therefore, checking the seal of the protective mask should be done in a well-ventilated area away from heat and flames.
- Increase WBGT by 10 degrees for operations in MOPP. Increase water consumption corre-

spondingly.

- Have soldiers practice drinking water while wearing mask.
- Remind soldiers that command drinking policy is even more important when in MOPP.
- Plan additional time to conduct operations in MOPP. Rotate personnel more often.
- Allow personnel to loosen protective clothing as situation permits.
- Use buddy system to check heat injuries; ensure that leaders are included.
- Delegate tasks to subordinates to reduce stress and fatigue. (Experience shows that leaders are most likely to suffer adverse effects of operating in MOPP.)

Night-vision devices

Hazard: Driving with night-vision devices.

- Do not allow soldiers to wear tinted eye protection at night.
- Warn drivers against overconfidence and to avoid normal tendency to overdrive capabilities of NVD.
- Remind users to continuously use scanning techniques.
- Remind users that effectiveness of NVD is greatly reduced in dust, haze, fog, smoke, rain, falling snow, and during mirage effect.
- Remind users to keep light sources outside the field of view of goggles.
- Emphasize requirement for seatbelts.

Hazard: Mishandling of night-vision devices.

- Ensure personnel are properly trained in maintenance and use of NVDs.
- Remind users to avoid pointing goggles into the wind if possible.
- Ensure that users remove all dust, sand, dirt, and mud from goggles after use.
- Remind users to keep carrying case closed unless removing or replacing items.
- Remind users to protect optics from light sources, intense heat, direct sunlight, dust, dirt, mud, and sand.

Hazard: Inadequate instruction.

- Ensure that soldiers get adequate rest and eat well balanced meals.
- Advise soldiers to avoid use of tobacco, alcohol, and self-medications (they impair night vision).
- Remind users to avoid bright light, including sunlight.

Weapons**Hazard: Fratricide.**

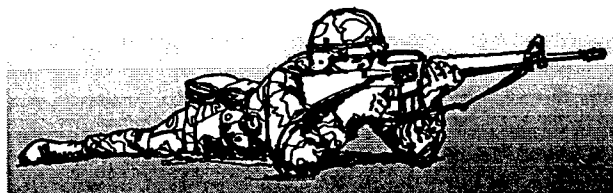
- Always ensure positive target identification.
- Ensure that task standards are followed (weapons handling, powder-charge preparation, fire and maneuver, etc.).
- Ensure warnings and reports are timely and accurate.
- Ensure that soldiers are well trained in land navigation; reconnoiter when possible.
- Anticipate the effects of stress and fatigue on soldiers.
- Anticipate the effects of battle on soldiers (limited visibility, unsynchronized actions, chaos, confusion, etc.).
- Keep plans simple and synchronized.
- Ensure soldiers know and are able to positively identify the enemy (uniforms, weapons, special markings, etc.).
- Train to standard on night-vision devices and land-navigation equipment.
- Control the pace of the operation.
- Develop sleep-work plans for continuous operations.
- Enforce assembly-area procedures.
- Use training devices when possible.
- Insist on by-the-book procedures when loading, firing, and unloading weapons.

Hazard: Mishandling.

- Do not tolerate horseplay.
- Ensure that weapons are kept on safe.
- Remind soldiers to consider weapons loaded at all times and to check chambers often.
- Instruct soldiers to load only on command.
- Ensure that soldiers do not move with their fingers on the trigger when a round is chambered.

- Remind soldiers to know their target and their allies.

- Control ammunition.
- Stress the danger of "cookoffs."
- Rehearse immediate action drills for misfire/weapons malfunction.



- Remind soldiers to clear for backblast when firing anti-armor weapons.
- Ensure that soldiers receive correct ammunition for the weapon system.
- Ensure that soldiers know correct procedures for dealing with duds.

Hazard: Lasers.

- Caution soldiers to handle lasers as they would a loaded weapon.
- Use only trained personnel to operate or handle lasers.
- Caution personnel to fire lasers only at designated targets and to never fire at reflective surfaces such as glass, mirrors, and windows.
- Ensure that laser safety filters are installed on binoculars and other optical devices when observing laser operations.
- Ensure that eye protection is available and worn.
- Ensure that laser safety procedures are established and implemented for each device being used.
- Conduct safety briefings on all Class II and higher lasers, specifying the needed eye protection and viewing limitations.

Hazard: Improper maintenance.

- Establish weapons lubrication policy.
- Require that weapons, ammunition, and magazines be kept clean.
- Require that muzzles be covered in sandy areas to prevent clogging.
- Require that headspace and timing be performed in accordance with TMs. Caution soldiers not to rely on memory—to always verify.

SECTION 2C

Aviation Operations

This subsection contains control measures for hazards involved in aviation operations. Hazards appear in boldface type; control measures follow in bullet format.

Area operation survey

Hazard: Failure to identify and mark obstacles.

- Survey areas of operation, and establish hazard maps and restricted flight areas as first order of business.
- Brief hazards and obstacles for every mission.
- Brief all crewmembers on their responsibility for scanning to detect hazards and obstacles and to inform pilot on controls.
- Develop an Aviators' Procedure Guide for the area of operation.
- Establish EHIRP for area of operation.
- Include EHIRP in mission briefings (unit SOP).
- Spell out crew duties and crew coordination requirements.

All aircraft

Hazard: Depth perception at night.

- Remind aviators that dropping a chemlite on the ground before landing aids in depth perception.
- Remind pilots that radar altimeters provide the only effective reference to properly gauge altitude over expanses of low-contrast terrain.
- Remind crew to monitor shadows cast by near objects such as landing gear or skid shadows during hover.
- Survey flying area for areas of low contrast and definition, particularly where terrain rises and falls.
- Remind crews to keep windscreens and door windows clean.

Hazard: Flying in MOPP gear.

- Remind aircrews to keep doors, windows, and vents open to increase ventilation in aircraft

not equipped with environmental control units.

- During hot weather, plan missions to fly at higher altitudes for cooler air if tactical situation permits.

Hazard: High intensity radio transmission area (HIRTA)

- Ensure that the potential effects of an electromagnetic environment are considered during mission planning.
- Remind aircrews to report suspected instances of electromagnetic interference.
- Review classified HIRTA guidance information.

Hazard: Inadequate maintenance.

- Require frequent inspection of seals and tires for blisters and other signs of deterioration.
- Require frequent inspection of vibration isolators for cracks.
- Require regular inspection and cleaning of flaps, control hinges, pulleys, bearings, worm gears, cowl slides, and landing gear to arrest corrosive action.
- Require regular inspection of dead air space in fuselage for accumulation of debris that could change aircraft weight and balance.
- Require regular cleaning of instrument filters and prompt replacement of worn-out filters.
- Require installation of protective covers and dust excluder plugs on all engine openings, vents, air intakes, exhaust outlets, breathers, propeller hubs, and feathering domes, cowl, and other vital openings.
- Remind personnel to make all possible ground checks before starting engine and to inspect controls for freedom of movement to ensure no binding.
- Remind personnel to run up engines on hard surface such as a landing mat or a dirt- or dust-free

area to prevent sandblasting.

- Prohibit use of dirty tools for aircraft maintenance.
- Require more frequent flushing of engines in dusty environments.

Hazard: Inadequate survival equipment.

- Require that proper survival kit is in each aircraft.
- Require that ALSE be inventoried and inspected before each mission.
- Ensure that survival radios are tested at extended distances regularly.

Hazard: Wire strikes.

- PC—Conduct thorough hazard and obstacle briefing before each mission.
- Aircrews—
 - Conduct thorough, detailed mission planning as a crew.
 - Remember that wire strikes are more likely when crew becomes disoriented.
 - Mark all known wires on hazard maps.
 - Ensure maximum crew coordination in searching out and calling out wires.
 - Go slow when you go low.
- Aviation safety officers—Promote wire-strike prevention in safety briefings.

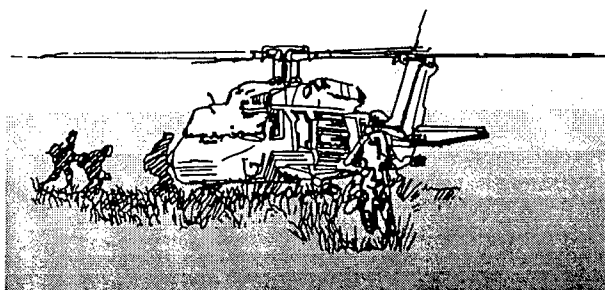
Helicopters

Hazard: Improper APU starting procedures.

- Caution personnel operating under normal conditions to start APU only when performing preflight cockpit equipment checks or during parking and shutdown sequence, as specified in the operator's manual.
- Remind personnel not to start APU in flight or during ground taxi, except in an emergency, because APU is not flight certified.

Hazard: Foreign object damage (FOD).

- Ensure that bivouac areas are clear of aircraft approach paths, landing pads, and departure paths to prevent loose items from being affected by rotor wash and injuring personnel or damaging



aircraft.

- Require that FOD checks be performed following maintenance to reduce the possibility of loose items being ingested by aircraft engines.
- Ensure that approach, hover, and departure are high enough not to affect loose debris.
- Before use, recon unimproved landing and pickup zones for FOD whenever possible.

Hazard: Forward arming and refueling points (FARP).

- Ensure that fuel and ammunition handlers are familiar with and adhere to FM 10-68 and FM 1-104 procedures.
- Remind personnel to use extreme care when handling engine fuel at extremely high temperatures to prevent possible sparks and explosion and to always open fuel drums with bronze or other nonsparking tools.
- Require frequent inspections for and immediate correction of improper grounding points, deteriorated or leaking hoses, leaking nozzles, incorrect POL products, lack of personal equipment for refueling personnel, no water at refueling sites, unserviceable fire extinguishers, and no controlled access into/out of refuel points.
- Ensure that fuel drums are kept covered and protected from extreme temperatures.
- Ensure that fuel does not become contaminated by dirty nozzles or other unclean equipment.
- Consider positive control of air and ground traffic around refueling sites to reduce potential of collisions.
- Ensure that camouflage materials (netting/foilage) is kept as far from rotor blades as possible to prevent FOD.
- Prohibit operation of high-frequency radios within 100 feet of aircraft being refueled.
- Enforce the requirement for at least two

qualified personnel to arm aircraft.

- Require daily inspection of grounding/bonding systems.
- Remind personnel to ensure that weapons are on safe before arming.
- Require that guns be oriented away from unit assets during rearming.
- Require frequent cleaning and lubrication of turret weapon systems to prevent jamming due to dirt, dust, sand, or mud.
- Caution personnel of the possibility of fire from static electricity. Remind them that connecting the nozzle bonding wire before opening the fuel cap will prevent a static arc from occurring in the presence of fuel vapor and significantly reduce the fire hazard.

Hazard: Inadvertent instrument meteorological conditions (IMC).

- Make inadvertent IMC proficiency a demonstrated requirement for all pilots. (Hands-on instrument flight in the aircraft at night forces good cockpit organization and eliminates cues that may detract from reliance on instruments. Realistic training will provide practice and instill confidence in instruments so that, when necessary, pilots will immediately transition to instruments instead of attempting to maintain visual reference with the ground.)
- Train pilots to periodically look under goggles to check for deteriorating weather conditions. (An inherent hazard with night vision devices is that pilots can "see through clouds" and may not immediately realize that they have entered IMC.)
- Before each mission, establish and brief requirements for go/no-go and continued operations in deteriorating weather and procedures for mission abort.

Hazard: Inadvertent drift during hover.

- Remind aircrews that scanning and crew coordination are critical to prevent inadvertent drift when hovering in low illumination.

Hazard: Lasers.

- Require use of laser-safety eyewear.
- Remind personnel to treat hand-held laser

devices as if they were loaded weapons.

- Caution personnel not to aim laser rangefinders or target designators at nontarget personnel, vehicles, or passing aircraft.
- Remind personnel not to place their hands in front of any laser device.
- Caution personnel to ensure that proper filter is in place when using binoculars or image magnification devices in area of lasers.
- Prohibit performance of maintenance on laser systems until power is off and residual charge in any power supply capacitors has been bled off.
- Caution personnel that output must be blocked or enclosed when maintenance must be performed on "on line" laser systems.

Hazard: NVG operations.

- Operate according to the crawl-walk-run philosophy, especially in an unfamiliar environment.
- Conduct detailed planning and mission briefings regardless of pilot experience.
- Establish all crewmember duties.
- Identify crew coordination requirements, especially during critical phases of mission.
- Remind crews that continuous scanning is a must and that the pilot on the controls must stay outside.
- Require that all crewmembers assist in obstacle clearance.
- Remind aircrews that airspeed must be adjusted downward during low illumination and visibility conditions and in areas of little or no contrast (go low, go slow).

Hazard: Pressure/density altitude; weight and balance; wind.

- Ensure that aircrews compute density altitude before weight and balance.
- Require that crews study density-altitude tables in operators manual.
- Remind aircrews to always assume density altitude to be a little higher than calculated.
- Remind aircrews that helicopter performance can be affected as soon as 1 hour after sunrise because of rising temperatures.
- Caution aircrews to consider the effect wind direction has on aircraft control during takeoff and landing.

Hazard: Improper scanning techniques.

- Remind crews to function as a total crew, exercising the guidance in appropriate ATM.
- Caution aircrewmembers not to stop scanning to focus their attention inside or outside the aircraft. Scan stop of more than 3 seconds is risky. If pilot on controls must stop scanning, he or she should transfer controls; if pilot not on controls decides to stop scanning, he or she must announce the decision.

Hazard: Whiteout, brownout, and blowing dust, sand, or snow.

- Require that PC brief duties and responsibilities for brownout/whiteout.
- Ensure that crews are familiar with procedures in aircraft operators manual and in chapter 2, FM 1-202: Environmental Flight. Review the following:
 - Taxiing: Get helicopter airborne and

through ETL as quickly as possible to minimize sand and dust intake by engines and danger of brownout.

- Flight and descent: Avoid flying through sand and dust storms. Excessive dust and grit will cause damage to internal engine parts, excessive bearing wear, and erosion of rotor blades.

- Landing: Running landing with minimum touchdown roll when terrain permits. Approach to touchdown should be made using greater than normal approach angle. Approach angle should be compatible with available power. Be prepared to go around if ground contact is lost. The pilot on the controls will inform the crew if visual contact with the intended landing area is lost or will be lost.

- Doors and windows: Keep closed during takeoff and landing to help prevent sand and dust from entering cockpit and cargo area.

- Ensure that takeoff and landing times are staggered for multiship operations.

SECTION 2D

Deployment/Redeployment Operations

This subsection contains control measures for hazards involved in deployment operations. Hazards appear in boldface type; control measures follow in bullet format.

Port operations

Hazard: Secondary loads.

- Ensure that secondary loads are secured to prevent motion-induced damage.
- Do not allow secondary loads to be piled, scattered, or haphazardly placed on vehicles.
- Develop and test load plans before movement to port.
- Ensure that LOGMARS/AUEL data reflect actual "as shipped" weight, not "as published" weights.
- Ensure weight of secondary load does not exceed reported weight of vehicle.
- Ensure that secondary loads of hazardous materials are reflected in LOGMARS data.
- Segregate hazardous cargo.

Hazard: Inadequate fire protection.

- Coordinate with local fire departments for coverage.
- Optimize use of available extinguishers.
- Ensure that firefighters are aware of the types of hazardous materials being loaded so they can be prepared with the proper extinguishing equipment and materials.

Hazard: Materiel-handling equipment.

- Identify and use trained and certified personnel.
- Conduct training of additional operators for long-term operations.

Hazard: Soldiers unfamiliar with shipboard and dock environments and Navy/Marine instructions, signals, and alarms.

- Have qualified Navy/MTMC personnel provide briefings.
- Conduct familiarization tours if time permits.

- Mark go/no-go zones.
- Keep unsupervised personnel away from operations.

Hazard: Lack of proper protective equipment.

- Replace kevlar with ANSI hard-hats if possible.
- Do not use kevlar for electrical work.
- Use steel-toe boots whenever possible.

Hazard: Embarked vehicles.

- Inspect embarked vehicles to ensure that lights and master switches are off.
- Require operators to turn lights and master switches off after embarking vehicles.

Hazard: Poor traction and lack of guardrails on internal shipboard ramps.

- Ensure troops wear serviceable boots.
- Minimize one-man loads; use the buddy system.
- Do not allow soldiers to run.
- Warn soldiers to stay clear of edges of ramps and to stay off moving ramps.

Hazard: Slingloads.

- Attach slings only to proper lift points.
- Inspect loads for proper rigging before each lift.
- Ensure that personnel remain clear of suspended loads.
- Do not allow personnel to cross under suspended loads.

Hazard: Carbon monoxide in vehicle holds.

- Ensure proper ventilation; coordinate with ship's crew.
- Minimize use of engines.
- Keep time spent in holds to minimum necessary.

Hazard: Moving heavy and large equipment through tight doors and hatches.

- Use lights as directed.
- Use ground guides.
- Use only experienced drivers.
- Immediately report any contact with water-tight doors.

Movement to port

Hazard: Lack of command and control.

- Appoint a movement liaison team consisting of a team leader, an NCOIC, and an admin NCO to—

- Ensure safe and timely processing of unit assets from field assembly areas through marshaling areas to the port in accordance with the port-call message.

- Plan and ensure proper driver rest.
- Identify hazards and control measures for port operations.

- Provide single point of contact for all safety and operational questions concerning equipment preparation standards for sea movement.

- Maintain liaison with port operating elements regarding equipment preparation, U.S. Customs, Department of Agriculture standards, and the port-call message.

- Resolve movement-to-port problems before departure to port.

- Provide a seaport element to make final vehicle-shipment decisions.

- Keep commander and participating units informed.

- Organize maintenance assets to assist port support activity in repairing vehicles in marshaling and port areas to ensure serviceability and readiness for sea movement.

- Ensure that the movement liaison team has the following equipment:

- Hand-held radios.
- Secure fax.
- Dedicated FM frequency.
- Dedicated phone lines at base and port.
- Dedicated utility helicopter reserved for

maintenance and parts flights or command and control.

- Locate the movement liaison team at the assembly area during vehicle preparation and at the port during the movement-to-port phase.

- Ensure that the movement liaison team has a plan that covers—

- Receiving convoys.
- Refueling/defueling vehicles to Coast Guard limits and arrangements for excess fuel storage.
- Performing unit and direct support maintenance before staging.

- Providing final technical inspection to ensure that all vehicles are ready for sea movement.

- Pre-staging vehicles by unit or type.

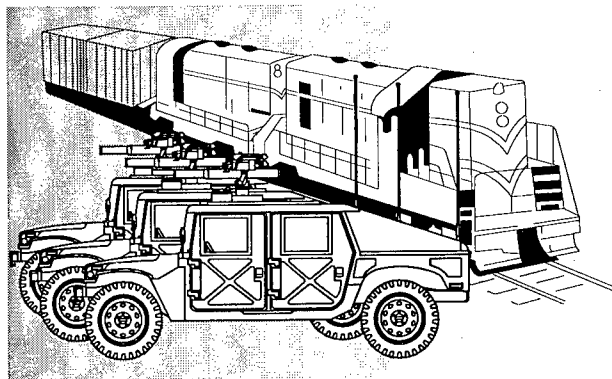
- Messing and sleeping areas.

- Latrine facilities.

- Administrative support.

- Positive personnel control.

- Spot-checking vehicle preparation and LOGMARS labels.



Rail operations

Hazard: Loading vehicles and heavy equipment on rail cars.

- Require and enforce the use of ground guides.
- Require that ground guides maintain one rail-car length from the vehicle they're guiding and that they mount previously loaded vehicles to prevent being crushed between vehicles.

- Remind personnel never to walk backwards while ground guiding.

- Require that equipment be centered on flat-cars to avoid rail clearance difficulties caused by uneven overhang (a 1-inch variation is usually allowed).

Hazard: Wire rope.

- Require that personnel loading rail cars wear leather or leather-palm gloves (gloves may be included in tool kit or issued by unit supply section).

Hazard: Improper load plans.

- Ensure that vehicles and equipment nested in the backs of other vehicles are included in the load plan. Plan for blocking and bracing materials, and test the plan before loading and movement.

- Check each vehicle for loose rounds or pyrotechnics and munitions tucked into storage compartments.

- Always block, brace, and tie down nested vehicles and equipment. Ship ramps sometimes exceed 45 degrees and loose loads may tumble out.

- Make sure nested vehicles have all lifting shackles in place and inspect to ensure that welds on shackle brackets are sound and that shackles, pins, and cotter keys are the right size.

- Carry extra shackles for unit vehicles. (Shackles often disappear, and the vehicle may not be shipped without them.)

- Identify lifting shackles by painting the word "LIFT" next to them. Paint "TIEDOWN ONLY" next to tiedown shackles.

- Ensure that AUEL reflects proper status of sensitive unit equipment or hazardous cargo.

- Prohibit storage of loose items in vehicle cabs. Shifting during movement can damage both the item and the inside of the vehicle.

- Load plans must assume vehicles will be deck loaded and not loaded in dry hold; therefore, vehicles must be prepared to withstand constant stream of sea water.

- Adjust vehicle fuel loads so that vehicles arrive at port with tanks no more than three-quarters full.

- Make sure that all hoses are drained when fuel tankers are purged and that fuel is drained from generator sets before packing.

- Ensure that vehicles containing compressed gas cylinders (other than fire extinguishers) are placarded on both sides.

- Ensure that oxygen and acetylene cylinders are removed from wreckers and maintenance vehicles. (Build bottle racks in a trailer, and secure

all unit acetylene bottles in the racks.)

- Ensure that all vehicles are inspected for fuel, oil, and other leaks before loading.

- Ensure that any vehicle with a brake problem has a big steering-wheel placard stating: "CAUTION! NO BRAKES. DO NOT DRIVE. MOVE ONLY WITH TOW BAR."

Hazard: Overgrossed vehicles.

- Make sure AUEL reflects the prime mover and its nested vehicle.

- Make sure AUEL reflects actual built-up height, length, and weight.

Hazard: Improper ground guiding.

- Train all personnel in how to ground guide.

- Require that ground guides be used in congested areas; two ground guides should be used when backing or when vision is restricted.

- Require that drivers and ground guides always be able to see each other.

- Require that ground guides use flashlights or chem-lites when loading vehicles at night.

Hazard: Extreme high voltage at rail yards.

- Do not allow personnel to climb on top of any vehicle loaded on rail cars when wires are present.

- Require that all antennas be removed and stored inside tracked vehicles before loading.

- Require that antennas be removed or tied down on wheeled vehicles before loading.

- Require use of ball tip protectors on all antennas.

Hazard: Improper tools and improper use of tools.

- Require that gloves be worn and proper tool for job be used.

- Train personnel in proper use of tools.

- Require inspection of tools, blocking, lashing, spanners, and towbars for serviceability before use.

Hazard: Uncontrolled movement of gun turret or tube.

- Require that all gun turrets be in locked position.

- Require that all gun tubes be in travel lock.

Hazard: Shifting loads.

- Prohibit sleeping on, in, or around rail cars.

Abandoning ship**Hazard: Lack of established survival procedures.**

Train soldiers in the following procedures to take in case abandoning ship becomes necessary:

- Remember that, even in the worst cases, it takes 15 to 20 minutes for a sinking ship to fully submerge. So take a few moments to prepare yourself to abandon ship.
- Wear as much warm clothing as possible. Cover head, neck, hands, and feet.
- Don immersion suit (if available) over warm clothing.
- If prone to seasickness, take preventive medicine in a dose recommended by the manufacturer. Vomiting removes body fluids and makes you more prone to hypothermia.
- If possible, avoid jumping into the water. Climb aboard a raft or boat at the embarkation deck. Use pilot ladders or lower yourself into the water by a rope or fire hose.
- If jumping into the water cannot be avoided, keep elbows at your sides and cover your nose and mouth with one hand while holding your wrist or elbow firmly with your other hand. If possible, do not jump from higher than 16 feet into the water.
- Once in cold water, take precautions such as buttoning clothing, turning on signal lights, and finding the whistle on your life jacket before you lose use of your hands.
- Look for lifeboats, liferafts, survivors, or floating objects. Swim only to reach those that are nearby. Swimming increases the rate of body-heat loss by pumping out warm water between your

body and your clothing.

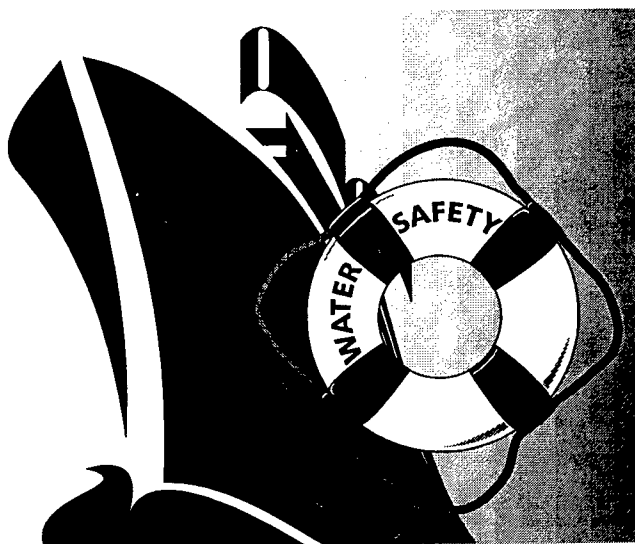
- Remain as still as possible, regardless of pain intensity. Pain will not kill you, but heat loss will. Violent shivering and pain are natural body reflexes, but they are not dangerous.

- Body position in the water is very important in conserving body heat. Float as still as possible with legs together, elbows close to sides, and arms folded across the front of your life jacket. Keep your head and neck out of the water, and huddle closely with other survivors.

- Board a raft or floating object as soon as possible. Body heat is lost more quickly in water than in air. Avoid wind chill by huddling closely with other survivors.

- Certain "drownproofing" techniques such as relaxing in the water and allowing your head to submerge between breaths should not be used in cold water. If in cold water and not wearing a life jacket, tread water only as much as necessary to keep your head out of the water.

- Keep a positive attitude about your survival and rescue. The will to live does make a difference.



SECTION 2E

Environmental Hazards and Controls

This subsection contains control measures for environmental hazards. Hazards appear in boldface type; control measures follow in bullet format.

Terrain

Hazard: Unimproved roads and off-road travel.

- Enforce the requirement for seatbelt use.
- Require that soldiers wear helmets.
- Ensure that all cargo is secure.

Hazard: Slips, trips, and falls.

- Remind personnel to pay close attention to rough terrain so they can maintain firm footing.
- Remind personnel to watch for mud, ice, water, and sand that could make surfaces slippery.

Hazard: Bodies of water.

- Prohibit swimming and other water activities in unsupervised areas.
- Remind personnel of the potential health hazards associated with natural bodies of water in some parts of the world.

Weather

Hazard: Cold weather.

- Check each soldier for proper dress (gloves and loose, layered clothing).
- Ensure that soldiers practice proper hygiene.

WINDCHILL CHART FOR FAHRENHEIT TEMPERATURES

Estimated wind speed (mph)	Actual thermometer readings (°F)						
	50	40	30	20	10	0	-10
CALM	50	40	30	20	10	0	-10
5	48	37	27	16	6	-5	-15
10	40	28	16	4	-9	-24	-33
15	36	22	9	-5	-18	-32	-45
20	32	18	4	-10	-25	-39	-53
25	30	16	0	-15	-29	-44	-59
30	28	13	-2	-18	-33	-48	-63
35	27	11	-4	-21	-35	-51	-67
40	26	10	-6	-24	-37	-53	-69
Wind speeds above 40 mph have little additional effect.	Little danger for the properly clothed person; maximum danger of false sense of security.				Increasing danger of freezing exposed flesh.		

Trench foot and immersion foot may occur at any point on this chart.

Cold-Weather Injuries

Frostbite

Cause	Symptoms	First Aid
☐ Freezing of tissue, normally due to exposure below 32°F.	☐ Numbness in affected area. ☐ Tingling, blistered, swollen, or tender areas. ☐ Pale, yellowish, waxy-looking skin (grayish in dark-skinned soldiers). ☐ Frozen tissue that feels wooden to the touch.	☐ Warm affected area with direct body heat. ☐ Consult medical personnel as soon as possible. ☐ Do not thaw frozen areas if treatment will be delayed. ☐ Do not massage or rub affected areas. ☐ Do not wet the area or rub it with snow or ice. ☐ Do not expose affected area to open fire, stove, or any other intense heat source.

Chilblain

Cause	Symptoms	First Aid
☐ Repeated exposure of bare skin for prolonged periods to temperatures from 20° to 60° F (for those not acclimated to cold weather).	☐ Swollen red skin (or darkening of the skin in dark-skinned soldiers). ☐ Tender, hot skin, usually accompanied by itching.	☐ Warm affected area with direct body heat. ☐ Do not massage or rub affected areas. ☐ Do not wet the area or rub it with snow or ice. ☐ Do not expose affected area to open fire, stove, or any other intense heat source.

Immersion foot (trench foot)

Cause	Symptoms	First Aid
☐ Prolonged exposure of feet to wet conditions at temperatures between 32° and 50° F. Inactivity and damp socks and boots (or tightly laced boots that impair circulation) speed onset and severity.	☐ Cold, numb feet may progress to hot with shooting pains. ☐ Swelling, redness, and bleeding.	☐ Rewarm feet by exposing them to warm air. ☐ Evacuate victim to a medical facility. ☐ Do not massage, rub, moisten, or expose affected area to extreme heat.

Dehydration

Cause	Symptoms	First Aid
☐ Depletion of body fluids.	☐ Dizziness ☐ Weakness ☐ Blurred vision	☐ Replace lost water. Water should be sipped, not gulped. ☐ Get medical treatment.

Hypothermia

Cause	Symptoms	First Aid
☐ Prolonged cold exposure and body-heat loss. May occur at temperatures well above freezing, especially when a person is immersed in water.	☐ Lack of shivering. ☐ Drowsiness, mental slowness, lack of coordination. Can progress to unconsciousness, irregular heartbeat, and death.	☐ Strip off wet clothing and wrap victim in blankets or a sleeping bag. ☐ Get victim to a heated location and medical treatment as soon as possible.

- Never allow a soldier to unnecessarily wear wet clothing.
- Require soldiers to change socks regularly.
- Identify and closely monitor personnel who have previously suffered a cold-weather injury (they are more susceptible to further injury).
- Remind soldiers that alcohol consumption increases the risk of cold injuries.

Hazard: Hot weather.

- Remind soldiers that the body is cooled by sweat, and sunburn inhibits sweating. Therefore, they should take every precaution to prevent sunburn, including maximum use of shade, sunscreen, and clothing that covers as much exposed skin as possible.
- Prohibit the use of salt tablets. Although the body loses salt as it loses water, normal consumption of food replaces salt.
- Enforce hydration and monitor water use. Caution soldiers that they may lose more than 1 quart of water per hour through sweating.
- Remind soldiers that thirst is not a reliable indicator of the need for water; therefore, they must drink water regularly even if they are not thirsty.
- Caution soldiers that dark urine is an indicator of dehydration and that more water is needed.

- When possible, schedule heavy work for the cooler hours of the day (early morning, evening).
- Remember that MOPP and/or body armor adds 10 degrees to the measured WBGT.
- Monitor soldiers who are overweight, dieting, or past victims of heat injury; these conditions make them more susceptible to heat injury.

Hazard: Extreme temperatures.

- Generally, at least 4 days are required for a soldier to become acclimated to an extreme environment, whether hot or cold. During this period—
 - Train only on a limited basis.
 - Avoid prolonged exposure.
- Increase exposure as gradually as the mission allows after the initial 4 days.

Hazard: Thunderstorms/lightning.

- Remind soldiers that if they feel their hair stand on end, lightning is about to strike them. They should immediately drop to their knees and bend forward with their hands resting on their knees (this position provides as little body contact with the ground as possible).
- Remind soldiers that a person struck by lightning can usually be revived by quick application of CPR.

Guideline for Water Requirements

Activity	Typical Duties	Quarts Per Day	
		WBGT*	
		Less than 80°	More than 80°
Light	Desk work, guard work, radio operating	6	9
Moderate	Route march on level ground, tank operations	9	12
Heavy	Forced march, route march with heavy load/ MOPP, digging-in	12	15

*** MOPP or body armor adds 10° to the measured Wet Bulb Globe Temperature.**

Hot-Weather Injuries

Heat cramps

Cause	Symptoms	First Aid
☐ Loss of salt through excessive sweating	☐ Stomach, leg, or arm cramps. ☐ Pale, wet skin. ☐ Dizziness. ☐ Extreme thirst.	☐ Take victim to cool shady place. ☐ Have victim drink at least one full canteen of cool water. ☐ If no improvement, transport victim to medical facility.

Heat exhaustion

Cause	Symptoms	First Aid
☐ Loss of water and salt through profuse sweating.	☐ Stomach, leg, or arm cramps. ☐ Pale, moist, cold, clammy skin. ☐ Dizziness. ☐ Extreme thirst. ☐ Headache. ☐ Weakness. ☐ Fainting. ☐ Drunk/drowsy appearance.	☐ Lay victim flat in cool, shady spot. ☐ Elevate feet and loosen clothing. ☐ Pour water on victim and fan to cool. ☐ If conscious, give cool water. ☐ Get medical help.

Heatstroke

Cause	Symptoms	First Aid
☐ Prolonged exposure to high temperatures. ☐ Failure of the body's cooling mechanism. NOTE: More likely to strike person who is not acclimated to heat or who has suffered previous heat injury.	☐ May stop sweating. ☐ Red and hot skin. ☐ Dizziness. ☐ Weakness. ☐ Confusion. ☐ Headache. ☐ Seizures. ☐ Nausea. ☐ Rapid, weak pulse and respiration. ☐ Collapse. ☐ Unconsciousness. ☐ High body temperature.	☐ Heatstroke is a medical emergency. ☐ Cool victim with icepacks to neck, groin, or underarms, or spray or soak victim with cool water and fan body. ☐ Do not try to give water to unconscious victim. ☐ Rush victim to hospital.

Dehydration

Cause	Symptoms	First Aid
☐ Depletion of body fluids.	☐ Nausea. ☐ Dizziness. ☐ Weakness. ☐ Blurred vision.	☐ Replace lost water. Water should be sipped, not gulped. ☐ Get medical treatment.

- Remind personnel not to stand near an isolated tree, a group of trees, or on high ground in the area of a thunderstorm.

- Caution personnel to get out of and away from water and inside a building or other sturdy structure if possible.

Hazard: Tornadoes.

- Caution soldiers to stay away from windows, doors, and outside walls; remind them to go to the interior of the lowest part of the building.

- Remind soldiers that, if they're caught outdoors, they should lie flat on the ground and protect their head with their hands and arms.

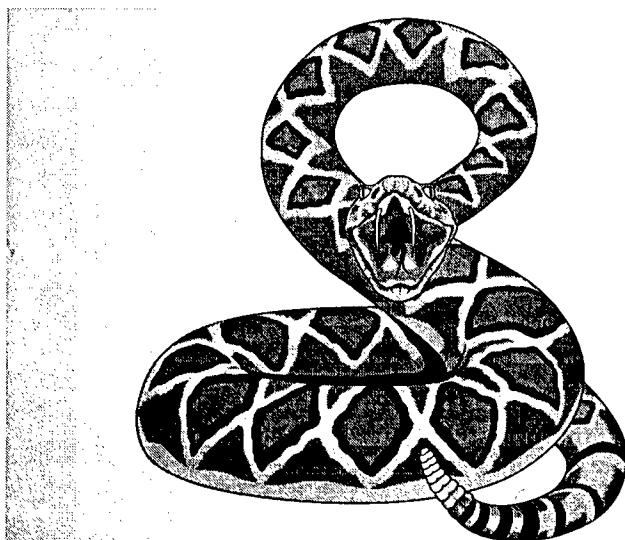
Animals and insects

Hazard: Poisonous snakes.

- Refer to regional guides for specific information concerning dangerous snakes in the operational area.

- Warn soldiers that most snake bites result from handling snakes.

- Train soldiers on the following general first aid for snake bite:



- Do not cut bite site.
- Move victim away from snake.
- Remove anything tight or restrictive from affected extremity, including rings, bracelets, and watches.
- Reassure and keep victim quiet.
- Place ice over bite area.
- Apply constricting bands (loose enough to insert finger between band and skin) 1 to 2 finger-widths from bite. (For arm or leg bite, place one band above and another below bite site; for hand or foot bite, place one band above wrist or ankle.)
- Immobilize affected part in a position below heart level.
- Evacuate victim immediately.
- Identify snake if possible. If not and snake can be killed without endangering anyone else, kill it without damaging the head and send it to hospital with victim.

Hazard: Ticks, spiders, scorpions, insects.

- Identify soldiers who are allergic to insect bites or stings and ensure that they have an emergency first-aid kit on hand and complete.

- Remind soldiers to use insect repellent and to keep trousers tucked into boots.

- Caution soldiers to check bedding before use and to avoid sleeping or leaving clothes near damp places.

- Train soldiers in first aid for—

- Tick bites: Grasp tick with tweezers as close to the point of attachment as possible, being careful not to squeeze its abdomen, and exert steady, gentle pressure. Take care not to break off and leave mouth parts in the skin. Apply antiseptic to the bite site.

- Scorpion stings: Do not perform incision or suction of venom. Immerse sting area in ice or cool water or use an ice pack on it. Evacuate victim immediately for medical treatment.

SECTION 2F

FATIGUE

It's a given that fatigue will be present to some extent in any force-projection operation. Fatigue causes errors in judgment, slowing of reflexes, and general dulling of the senses. Soldiers suffering from fatigue are at high risk of making mistakes that could cause serious accidents. To protect the force and conserve combat power, leaders must ensure that fatigue is controlled to the maximum extent possible in every mission. Leaders should also remember that the single most effective deterrent to fatigue is sleep.

Facts about sleep deprivation

- No level of leadership ability or amount of training can overcome sleep loss.
- Ability to perform mental tasks requiring calculations, creativity, and ability to plan ahead declines by 25 percent for every 24-hour period of semi-continuous work without sleep.
- Sleep loss degrades leaders' ability to respond quickly and effectively to changing battlefield conditions.
- Tasks that have been well learned and repeatedly practiced are more resistant to the effects of sleep loss; therefore, it's important to select the best trained to perform critical tasks.
- Sleep loss reduces ability to learn and remember new information.
- Sleep loss over time (more than 2 days) has a cumulative effect.

Sleep plans

- 7 to 8 hours' sleep each night will maintain optimum mental task performance indefinitely.
- 3 to 4 hours' sleep each night will maintain task performance for 5 to 6 days.
- Less than 4 hours' sleep each night over a 3-to 6-day period will impair military effectiveness.
- Best sleep periods, given limited choice, are

0300 to 0600 and 1600 to 1900 hours.

- Provide for a minimum of 4 to 5 hours' uninterrupted sleep; after 6 to 7 days, accumulated sleep loss will equate to performance of 48 hours without sleep.
- After 24 to 36 hours without sleep, decisions and calculations should be cross-checked by a second person.
- Allow for naps as often as possible. Four 1-hour naps in a 24-hour period are as beneficial as 4 hours' sleep; however, accumulated sleep loss is more severe with fragmented sleep.
- Sleep plans should include provisions to recover from sleep loss.
- 12 hours of sleep/rest (at least 8 to 10 hours' sleep) are required after 26 to 48 hours without sleep.
- 24 hours of sleep/rest (at least 15 hours' sleep) are required after 36 to 48 hours without sleep under conditions of high workload (12 to 16 hours per day). This is particularly important for commanders and staff with high mental task workloads.
- 2 to 3 days' sleep/rest are required after 72 to 96 hours without sleep. The sleep/rest period means 8 to 10 hours' sleep per day and light duty.

SECTION 3

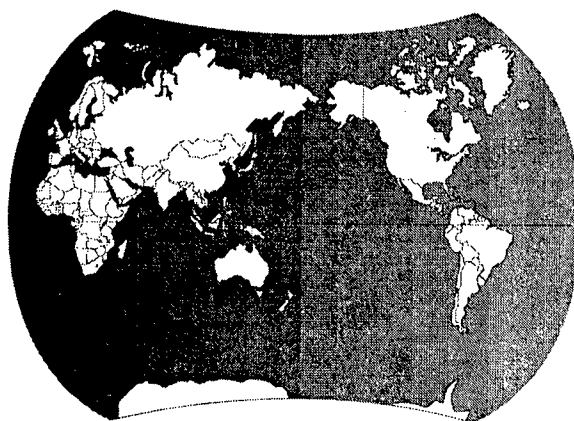
Special Geographical Considerations

This section addresses special conditions that may produce hazards unique to force-projection operations in various geographical locations. The material presented here is designed to supplement the information in section 2, not replace it.

Caribbean

Hazard: Dangerous animals and insects.

- Enforce liberal use of insect repellent.
- Enforce taking of prescribed anti-malaria medication.
- Caution soldiers to use nets or screens at every opportunity.
- Reinforce precautions at night and just before dawn, when mosquitoes are most prevalent.
- If a wasp or bee nest is disturbed, move troops out of the area immediately; react as if receiving indirect fire.
- Caution soldiers that centipedes and scorpions can inflict painful, but seldom fatal, stings. Remind soldiers to shake out clothing before dressing and blankets and bedding before sleeping.
- Remind soldiers that leeches are common in swampy areas, streams, and moist jungle country. Leech bites can become infected and cause tropical ulcers or "jungle sores." Caution soldiers to—
 - Brush off leeches quickly before they bite.
 - Not pull leeches off after they are attached; they will release themselves if touched with insect repellent, moist tobacco, burning end of cigarette, or a few drops of alcohol.
 - Keep trousers tucked into boots.



- Remind soldiers to watch for and avoid snakes, Caymans (reptiles), and jaguars.

Hazard: Dehydration from tropical temperatures and air travel during deployment.

- Enforce hydration before and during movement.
- Ensure that arriving troops are given the opportunity to rehydrate and rest before being assigned duties.

Hazard: Extreme environment.

- Review heat-injury control measures in section 2E.
- Caution soldiers to be prepared for severe and sudden thunderstorms, flash floods, and extreme mud.
- Remind soldiers that high winds and hurricanes are common in this region.
- Warn soldiers that roads are poorly surfaced and poorly maintained and that off-road mobility will be poor to impossible.

Hazard: Waterborne diseases.

- Warn soldiers that water from natural sources

should be considered contaminated and that they should use drinking water only from approved sources. Require that they purify their drinking water if they have any doubt about its source or purity.

- Caution soldiers to avoid fungus diseases and warm-water injuries by keeping themselves clean and dry.

- Allow soldiers to bathe often and air- or sun-dry their bodies as often as possible.

- Remind soldiers to wear clean, dry, loose-fitting clothing whenever possible and not to wear underwear during wet weather (it dries slower than tropical uniforms and promotes chafing).

- Do not allow soldiers to sleep in wet, dirty clothing. Require them to carry one set of clothes just for sleeping.

- Require soldiers to remove boots and dust feet, socks, and boots with foot powder at every opportunity.

- Require frequent changes to dry socks.

- Require that soldiers keep hair cut short.

Southwest Asia

Hazard: Animals and insects.

- Familiarize soldiers with the most dangerous poisonous snakes in the region: the cobra and the desert horned viper. Warn soldiers that snakes burrow under the sand and seek shade during the day and heat at night. Evacuate any snake-bite victim immediately, and do not treat with cuts or suction. In addition, remind soldiers to—

- Check under bushes, rocks, trees, and shrubs before sitting or resting.

- Check vehicles for snakes during before-operations checks. Caution soldiers to look in and around suspension components and engine compartments; snakes may seek the warm areas on recently parked vehicles to avoid the cool night temperatures.

- Caution soldiers that scorpions, centipedes, assassin bugs, black widow spiders, mosquitoes, fleas, and sand flies can cause illness and infection. Warn them to always—

- Shake out clothing before dressing.

- Shake out and check boots carefully. Advise soldiers to always store their boots off the ground

or inside a waterproof bag or other container.

- Use liberal amounts of insect repellent. Deet (NSN 6840-01-284-3982) is recommended for skin and Permethrin (NSN 6840-01-278-1336) for clothing.

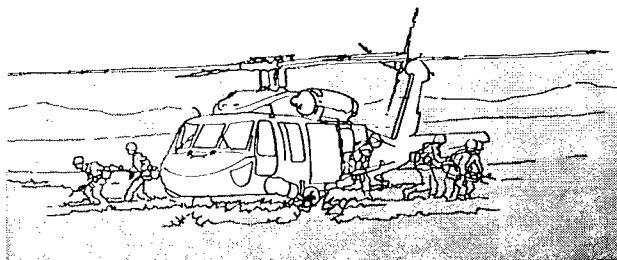
- Caution soldiers that camels are not the only desert mammals; they will also encounter packs of dogs and rats. Dogs, which carry rabies and fleas, often gather near mess facilities and run in packs of 8 to 10. Rats carry various parasites and gastrointestinal diseases and congregate in unsanitary locations.

Hazard: Lack of depth perception in desert environment.

- Stress that lack of contrast in terrain features reduces depth perception.

- Require that drivers use ground guides.

- Remind aircrews to go slow when they go low.



Hazard: Aviation operations in desert environment.

- Operate according to the crawl-walk-run philosophy in unfamiliar environments.

- Conduct detailed planning and mission briefings.

- Establish all crewmember duties.

- Identify crew coordination requirements, especially during critical phases of mission.

- Remind crews that continuous scanning is a must and that the pilot on the controls must stay outside.

- Require that all crewmembers assist in obstacle clearance.

- Remind aircrews that airspeeds must be adjusted downward during low illumination and visi-

bility conditions and in areas of little or no contrast (go low, go slow).

Hazard: Desert terrain.

Warn drivers that—

- Sand dunes drop off abruptly on the leeward side.
- Roads, bridges, and overpasses might not be posted with weight or height restrictions.
- Sandy deserts have poor off-road mobility and stability.
- Heat shimmer degrades visibility.
- Rocky, mountain deserts have poorly surfaced, boulder strewn, narrow, winding roads with steep shoulders and washouts.
- Lava beds and salt marshes degrade vehicle mobility and stability.
- High-density urban market areas will restrict vehicle movements.
- Roads are heavily used by pedestrians and beasts of burden.
- Local populace exhibits little compliance with established driving procedures and no defensive driving awareness.
- Salt air and fog restrict visibility in coastal areas.
- Thunderstorms with flash floods and extreme mud are common in mountains and coastal areas.

Hazard: Exposure to sunlight reduces night vision.

- Enforce wear of ballistic laser protection system (BLPS). The sunglasses will reduce the adverse effects of sunlight on night vision and also protect against eye injury.
- If BLPSs are not available, allow soldiers to wear sunglasses during the day to protect against night-vision degradation.

Hazard: Dehydration and fatigue from extended air travel during deployment.

- Ensure that arriving troops are given the opportunity to rehydrate and rest before being assigned duties.
- Enforce hydration during flight.

Hazard: Diarrhea and insect-borne diseases.

● Ensure careful storage, handling, purification, and preparation of water and food. Well-cooked foods that are hot when eaten are generally safe, as are peeled fruits and vegetables.

● Procure all food, water, ice, and beverages from U.S. military approved sources and inspect them routinely. Local dairy products and raw leafy vegetables are generally unsafe.

● Consider food in native markets hazardous. Avoid local food unless approved by medical personnel.

● Warn soldiers to assume that raw ice and native water are contaminated and to use ice only from approved sources. Caution them to disinfect drinking water using approved field-expedient techniques if they have any doubt about the quality of the water supply.

● Establish hand-washing stations at latrines and mess facilities, and require that soldiers keep hands and fingernails clean to prevent transmission of disease. Warn them that using untreated water for washing or bathing could cause infection.

● Dispose of human waste and garbage as specified in FM 21-10. In general, burning is the best solution for waste.

● Keep refuse areas away from living areas.

Sahara Africa

Hazard: Aviation operations in desert environment.

- Operate according to the crawl-walk-run philosophy.
- Conduct detailed planning and mission briefings.
- Establish all crewmember duties.
- Identify crew coordination requirements, especially during critical phases of mission.
- Remind crews that continuous scanning is a must and that the pilot on the controls must stay outside.
- Require that all crewmembers assist in obstacle clearance.
- Remind aircrews that airspeeds must be adjusted downward during low illumination and visibility conditions and in areas of little or no contrast.

Hazard: Dehydration and fatigue from extended air travel during deployment.

- Ensure that arriving troops are given the opportunity to rehydrate and rest before being assigned duties.

- Enforce hydration before, during, and after flight.

Hazard: Lack of depth perception in desert environment.

- Stress that lack of contrast in terrain features reduces depth perception.

- Require that drivers use ground guides.
- Remind aircrews to go slow when they go low.

Hazard: Desert terrain.

Warn drivers that—

- They must clear to all sides before turning.
- Sand dunes drop off abruptly on the leeward side.
- Roads, bridges, and overpasses might not be posted with weight or height restrictions.
- They must rehearse rollover drills and wear safety belts at all times.

Hazard: Exposure to sunlight reduces night vision.

- Enforce wear of ballistic laser protection system (BLPS). The sunglasses will reduce the adverse effects of sunlight on night vision and also protect against eye injury.

- If BLPSs are not available, allow soldiers to wear sunglasses during the day to protect against night-vision degradation.

Sub-Sahara Africa

Hazard: Unfamiliar driving conditions.

- Remind drivers and crews to be alert for pedestrians and beasts of burden on all roads.

- Caution drivers to be prepared for the unexpected; local drivers rarely comply with established procedures or exercise defensive driving awareness.

- Ensure that drivers are prepared for poorly surfaced and poorly maintained roads as well as

poor off-road mobility/stability. Caution drivers to always—

- Plan routes to avoid likely obstacles.
- Probe water crossings slowly.
- Mark hazards for following traffic.
- Assume all stream depths are unknown.
- Plan alternate return routes.
- Maintain slow speed on hills and curves.
- Warn drivers that road debris requires frequent tire changes and that they should stick to cleared lanes and always bring adequate spares.

Hazard: Convoy dropouts lack escorts in a hostile environment.

- Emphasize PMCS to reduce dropouts.
- Ensure that delayed drivers have good maps and information about the area of operations.
- Arrange escorts with local police if possible.

Hazard: Bridges are marked incorrectly or not at all.

- Perform route recon whenever possible.
- Contact local authorities for information.
- Caution drivers not to assume that marked weight classifications are valid.
- Warn drivers to check bridges for visible damage or signs of undermining and to reroute around suspect bridges.
- Remind drivers to watch for improvised repairs and warning signs.
- Get bridge assessment from Army engineers when possible.

Hazard: Highest concentration of serious diseases in the world.

- Warn soldiers that local water is highly contaminated with life-threatening cholera and other germs that cause stomach cramps and severe diarrhea. Remind them to always wash their hands before eating and not to drink or use untreated water or ice.

- Warn soldiers not to eat local food; it may contain parasites that can cause serious illness.

- Require soldiers to take malaria pills as prescribed.

- Enforce liberal use of insect repellent: Deet on exposed skin, and Permethrin on clothing, bedding, and bed netting. Require that soldiers sleep under a bed net.

- Warn soldiers of the high incidence of HIV (AIDS), hepatitis, and other serious diseases. Remind them that HIV is spread through sex, infected needles, and body fluids and that hepatitis and other diseases can be spread by contact with human waste, blood, and other body fluids. Caution them to abstain from sex and to always wear gloves when handling blood, other body fluids, or feces.

- Remind soldiers that animals may transmit rabies and other life-threatening diseases to humans. Require that soldiers avoid contact with all animals and to seek immediate medical attention if they are bitten or scratched.

- Prohibit swimming or bathing in ponds, streams, rivers, or lakes to avoid contact with parasites that can penetrate unprotected skin and cause serious illness. If soldiers must wade through fresh water, ensure that they protect their skin from the water.

Hazard: Limited local fire-protection capability.

- Use task-force supply channels to obtain fire extinguishers for landing zones.
- Check civilian airfields for trained help.

Hazard: Aviation medevac missions are called in marginal weather.

- Move decision making to a level removed from the crisis.
- Make use of nonaviation medevac capabilities.

Hazard: Tall obstacles might not have warning lights.

- Caution aircrews to check current topo maps and imagery for towers, smokestacks, and other obstacles.
- Coordinate with local personnel during flight planning.
- Request fresh photomosaics of the operational area.

Central and Eastern Europe

Hazard: Terrain that varies from extremely mountainous to flat.

- Caution drivers that repairs to paved roads

are not always adequate and also to expect more unimproved roads as they move deeper into the former Eastern Bloc.

- Ensure that drivers are trained on how to handle strong wind conditions, especially on narrow, winding mountain roads.

- Give drivers hands-on training in driving in mud and rocky terrain; ensure that instruction includes the following:

- Use low gear (or low range) to pull slowly out of mud.

- Increase traction in mud by placing boards, brush, or similar material under the wheels.

- When driving through mud, select a low gear and roll onto the soft area at minimum speed for the selected gear. Carefully maintain steady throttle until reaching solid ground.

- Brake gradually or allow vehicle to roll to a halt. Stop on downhill slope when possible (abrupt stops may cause vehicle to sink into mud and become stuck).

- Cross shallow ditches by shifting into low gear or range and proceed slowly.

- Enter ditches obliquely so that one wheel leaves the ditch as the other wheel on the same axle enters it.

- Do not attempt to straddle large boulders; they will damage axles and other low parts of the vehicle.

- Drive slowly in rocky terrain, and carry an extra spare tire.

- Remove stones between tires to prevent breaking sidewalls.

- Caution drivers that built-up areas may have very narrow passages and right turns.

Hazard: Animals and reptiles.

- Because rabies exists throughout Europe, warn personnel to avoid wild and domestic animals, including cats and dogs. (Foxes are the primary carriers of rabies in Europe).

- Caution personnel that wild boars, which are found throughout the forests of central and eastern Europe, will charge when provoked or when protecting their young; their tusks can cause serious wounds.

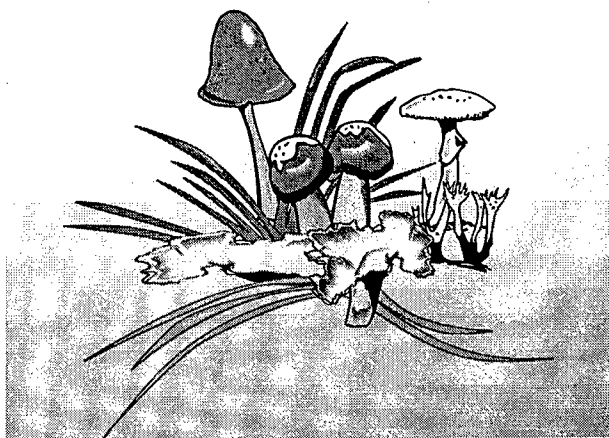
- Warn personnel about the common European viper. It's brown, about 2 feet long, and has a

round snout and a dark zigzag line from head to tail. It's born in September and is poisonous from birth; its bite can be fatal. It lives in bushes and raises its head only about 5 inches from the ground. It is not aggressive, but it will bite when frightened.

Hazard: Poisonous plants.

- Warn personnel to avoid mushrooms and toadstools; some are poisonous.

- Warn personnel that ten to twenty *Atropa Belladonna* (deadly nightshade) berries can be fatal. The leaves of the plant are dark green on top and gray-green underneath. The berries are smaller than a dime and turn blue-black when they ripen



in September and October. Victims should induce vomiting and get immediate medical attention.

SECTION 4

Risk-Management-Integration Tools

This section contains actual tactics, techniques, and procedures. Commanders and other leaders can tailor and use these

risk-management-integration tools to meet their individual training and operational requirements.

SECTION 4A

“Protection” Element of Combat Power Integrated Into Operations Order

This section illustrates how and where hazards and controls identified through integration of risk management into the tactical decision-making process can be incorporated into an OPORD.

The key to successful integration is early identification of potential hazards and development of controls. These control measures are then inserted into the appropriate paragraphs and graphics of the OPORD; there is no paragraph six for safety. Execution of the control measures is supervised in the same manner as all other elements of the order.

Sample OPORD Outline

1. Situation.
 - a. Enemy forces.
 - b. Friendly forces.
 - c. Identified hazards.
 - d. Attachments and detachments.
2. Mission.
3. Execution.
 - a. Concept of operation.

(1) **Commander's intent.** (Include statement of accepted risks and definition of success that addresses fratricide and other accidents.)

(2) **Maneuver.** (Include appropriate control measures for identified hazards.)

(3) **Fires.** (Include appropriate control measures for identified hazards.)

(4) **Mobility, countermobility, and survivability.** (Include appropriate control measures for identified hazards.)

(5) **Electronic warfare.**

b through k (specific tasks for subordinate or supporting units).
(Include one subparagraph for each attached, supporting, or OPCON element such as air defense, engineers, and military police. Address hazards and control measures specific to the company/team.)

1. Coordinating instructions. (Address hazards and control measures common to all. Include the authority level for acceptance of very-high and high risk.)

4. Service support.

a. General. (Include hazards and control measures specific to service-support operations or elements.)

b. Material and services.

c. Medical evacuation and hospitalization.

d. Personnel.

e. Civil-military cooperation.

f. Miscellaneous.

5. Command and signal.

a. Command.

b. Signal.

Acknowledge:

(Commander)

Authentication:

Annexes: (Include in the appropriate annex identified hazards and control measures. Force protection (safety) is NOT a separate annex; it is an integral part of the order. However, an annex that defines the duties and responsibilities of safety personnel may be attached.)

Distribution:

SECTION 4B

"Protection" Element of Combat Power Integrated Into Mission Training Plan

This section illustrates how and where hazards and controls identified through integration of risk management into the tactical decision-making process can be incorporated into a mission training plan.

The key to successful integration is early identification of potential hazards and development of controls. These control measures are then inserted into the appropriate paragraphs of the plan; there is no separate paragraph for safety.

Sample Mission-Training-Plan Task

TASK: Command and Control the Battalion (7-1-1901) (FM 7-20)

ITERATION 1 2 3 4 5 (circle)

TRAINING STATUS T P U (circle)

CONDITION: The brigade issues an OPORD or FRAGO.

TASK STANDARD:

a. The battalion plan accomplishes the directed mission and specified tasks IAW the brigade commander's concept and intent. The plan is received and understood by the leadership of the battalion, who makes the plan successful. It is coordinated with higher, adjacent, and supporting elements.

b. The plan is as fully prepared as time allows to initiate the mission at the directed time.

c. The battalion controls and synchronizes subordinate and supporting elements so that it accomplishes the mission and preserves the force. ***Risk is identified and controlled by integrating risk management into the tactical decision-making process.***

d. The battalion keeps higher, adjacent, subordinate, and supported headquarters informed of essential information key to controlling the battle or making required decisions.

GO NO-GO

+1. Battalion leaders issue the warning order.

a. A complete warning order is issued within 15 minutes of receipt of the brigade order.

b. Warning order is received by all platoons within 45 minutes of issuance of battalion warning order.

*2. Battalion commander analyzes mission and gives initial guidance.

a. Guidance includes restated mission, which includes brigade commander's intent for battalion, and identifies all specified and implied tasks.

b. Guidance includes instructions on information requirements and initially required preparation actions (movement, resupply) to start.

c. Guidance includes levels within chain of command authorized to make decisions to accept extremely-high, high, moderate, and low levels of risk.

d. Guidance is given within 30 minutes of receipt of order.

+3. Battalion accomplishes reconnaissance and other actions to gather needed information.

a. Recon actions begin as early as possible to gain information on enemy and terrain.

b. Commander conducts personal recon when possible. If not, commander conducts detailed map recon.

c. Subordinate leaders perform personal recon when possible. See subordinate company and platoon T&EOs (ARTEPs 7-10-MTP and 7-8-MTP, respectively).

d. Staff coordinates with subordinate, higher, and adjacent headquarters to gather information for planning.

e. Staff analyzes mission to identify hazards.

SUBTASKS AND STANDARDS

GO NO-GO

f. Staff provides operations, intelligence, and CSS estimates to include all critical METT-T factors and **identified hazards.**

+4. Battalion commander develops and war-games courses of action and selects one.

a. Tactically feasible courses of action (include CS and maneuver) are made and war-gamed with available staff (commander, S3 (Safety), and FSO are best for quick planning sequences; XO, S2, engineer, S4, S3, and ADA officer are best in more deliberate situations).

b. **Each course of action contains assessment of hazards, risk level, and control measures identified to lower or control risk.**

c. Best course of action is selected.

d. Course of action is war-gamed and refined by the commander and staff. The staff must understand the concept to produce a sound OPORD and to rehearse.

e. **Risks or control measures requiring elevation for acceptance decision are identified and elevated.**

*5. Staff develops OPLAN/OPORD from commander's guidance.

a. OPLAN/OPORD accomplishes mission IAW higher commander's intent.

b. **Hazard/risk-control measures are included in appropriate paragraphs and graphics.**

*6. FRAGOs are issued to subordinates as soon as decisions (**including acceptance of risk**) are made.

*7. Battalion commander issues the OPORD/FRAGO.

a. OPORD/FRAGO is issued IAW one-third, two-thirds rule, and makes full use of daylight time.

SUBTASKS AND STANDARDS

GO NO-GO

b. OPORD/FRAGO accomplishes all directed missions and tasks, complies with brigade commander's intent, **controls risks**, and is doctrinally sound. (It is based on evaluator judgment and on comparison of brigade and battalion OPORDs.)

c. All subordinate and supporting elements receive OPORD/FRAGO.

d. OPORD/FRAGO contains task organization, mission, concept, **authority for acceptance of risk**, and intent for maneuver, supporting fires, obstacles, missions/tasks for each subordinate, fire support/CSS instructions, and coordinating instructions needed to synchronize efforts of maneuver forces and CS.

e. If time is available, battalion commander issues a fully developed OPORD (an initial FRAGO issued to allow subordinates to begin preparation may be followed by a full OPORD).

f. Order is given at a location that reduces travel time, allows observation of zone/sector, and promotes OPSEC. (Depending on METT-T factors, observation of zone/sector may not be possible.)

g. Battalion commander should perform confirmation brief and war-gaming, **including identifying hazards and control measures**, after the order to improve subordinates' understanding and reaction.

h. Subordinate leaders and staff should perform lateral coordination before leaving the orders site.

+8. Commander and staff coordinate and refine plan.

a. Time is well used to continue gathering information and to improve plan (contingency plans, **hazard identification and controls**, fire plans).

b. New information is disseminated and coordinated with higher, adjacent, and supporting headquarters (changes or refinements to plan, information on enemy in sector or zone, and information that impacts on planning

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SUBTASKS AND STANDARDS

GO NO-GO

and execution (***risk acceptance decisions and hazard controls***) of subordinate elements.

+*9. Battalion executes changes in task organization.

a. Main CP coordinates link-up location, time, and responsible element.

b. Attachments and new elements are received at the coordinated location and time; updated on current situation, OPORDs, and SOPs; and resupplied.

c. Detachments reach link-up point at time and place directed.

+*10. Battalion performs, and commander and staff perform, supervise, and monitor preparations.

a. Command group/XO performs back-briefs with subordinate commanders, leaders, and key staff.

b. Main CP maintains status of preparations.

c. Elements make full use of time to prepare for operation. (Subjective judgment of evaluator is based on analysis of preparation charts and available time.)

+*11. Battalion sees the battlefield.

a. Command group is positioned to see and move.

b. Companies and other subordinates accurately report critical information on actions and changes in combat status within 5 minutes. (See subordinate MTPs.)

c. Main CP collects, analyzes, and passes critical information.

d. Subordinates execute intelligence collection plan. (See subordinate-element MTPs.)

e. ***Subordinates integrate risk-management process into plan development and task execution.***

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SUBTASKS AND STANDARDS

GO NO-GO

+*12. Battalion leaders command and control the execution.

a. Subordinate elements report within 3 minutes enemy and friendly actions, change in status, and any other factor that would require change.

b. Battalion leaders win battle by directing maneuver of units, controlling direct and indirect fires, **properly integrating risk management into planning and execution**, and directing other CS actions to cope with new METT-T/risk factors. Indictors are:

(1) Elements not following OPLAN/OPORD are corrected.

(2) Responses to new METT-T/**hazards** are directed soon after new situation occurs.

(3) No friendly casualties inflicted by friendly direct or indirect fires **or other accidents**.

(4) Number/percentage of direct and indirect fire weapons engaging enemy.

(5) Number of enemy and friendly casualties.

c. Command and control and CSS assets are controlled to support maneuver effort. Indicators are:

(1) Effective CSS and command and control.

(2) Command and control or CSS elements not destroyed by enemy direct fires.

(3) **Command and control or CSS elements not lost due to accidents**.

d. FRAGOs **include risk management** and are clear, concise, and quickly executed by subordinates.

e. Changes that affect the battle are disseminated within 5 minutes.

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SUBTASKS AND STANDARDS

GO NO-GO

+13. Subordinate commanders, leaders, and staff laterally coordinate actions during battle.

-All battle actions requiring coordination between elements are coordinated.

+14. Battalion coordinates with adjacent and supporting headquarters.

-All battle actions requiring coordination with other headquarters are laterally and promptly coordinated.

+*15. Battalion reports.

a. Battalion CPs submit all critical and required reports to brigade. They report events to adjacent and supporting elements that impact on them in time for those units to react.

b. *Risk-acceptance decisions are elevated to appropriate level of command for decision.*

*Leader task

+Critical task

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SECTION 4C

The Next-Accident Assessment for Commanders and Leaders (Ground Operations)

Will one of your personnel cause the next accident?

This section contains a reliable instrument that can help commanders and other leaders identify risk-generating factors that can be accurate predictors of accident probability.

Human error is responsible for 80 percent of all Army accidents, both ground and aviation. These accident-causing mistakes happen for a number of reasons. Sometimes the individual who makes the mistake is at fault, and sometimes it is the individual's unit or higher command that is at fault.

The Next-Accident Assessment is based on the top five reasons for human-error accidents in both ground and aviation operations over the last 10 years. These involve self-discipline, leadership, training, standards, and support. The assessment evaluates the risk of a particular individual or unit

causing the next accident.

The assessment is not a cure-all. It is, however, a great tool to help leaders reduce the risks that cause accidents.

Commanders and other leaders can use the assessment not only to do a general evaluation of each soldier they rate, but also to evaluate each rated soldier based on the mission at hand.

Once you have completed the risk assessment, take action to correct or control the risk factors you identified. Your first priorities should be any person having a high or extremely-high accident risk and any risk factor identified for one-third or more of the personnel you rate.

Keep the assessment form and actions initiated for your records (e.g., in Leader Book), and update them at least quarterly.

Instructions

Copy the form on page 53. List the names of each person you now rate (you are their first-line supervisor). Do not include personnel for whom you are intermediate or senior rater. Answer and assign points as indicated for each person you rate. For questions 2 through 5—

- If your organization is combat, combat support, combat service support, or any other unit that conducts cyclical training, answer with respect to the individual and collective tasks you anticipate your unit will perform during the next training cycle.

- For all other organizations, answer with respect to the individual and collective tasks your unit routinely performs.

- Squad/team leaders should omit question 2.
- Platoon leaders/sergeants should answer for all leaders and other sergeants.
- Company commander should answer for all platoon leaders and platoon sergeants.
- Battalion commander should answer for company commanders and battalion staff.
- First-level civilian supervisors should omit question 2 and answer all other questions for personnel under their direct supervision.
- Second-level civilian supervisors should answer all questions for supervisors and staff personnel under their direct supervision.

Question 1. Self-discipline. Individual knows the standard for performing the job tasks and has been trained to perform those tasks to standard but frequently chooses not to because of his or her attitude. This is a lack of self-discipline. The six indicators listed in paragraphs *a* through *f* are a profile of the undisciplined individual.

Accident Risk Assessment of Personnel Rated by Commanders/Leaders

Risk Factors		Points	Name			
1. Self-discipline (dependability): Soldier knows and is trained to standard, but doesn't follow standard.						
a. Counseled for poor performance (3 times in last 12 months, or more than 4 times in last 24 months).		8				
b. Had at-fault accidents or citations (2-4 in last 12 months or 5 or more in last 24 months).		8				
c. Abused alcohol/drugs (in last 12 months) or referred to community mental health (in last 24 months).		8				
d. Had judicial/nonjudicial punishment (in last 24 months).		8				
e. GT score of 90 or less (enlisted only).		8				
f. Male under age 25.		8				
2. Leadership (enforcement of standard): Leaders not ready, willing, or able to supervise and enforce performance to standard.						
a. Insufficient knowledge/experience (each subordinate leader who fits this example).		6				
b. Tolerates below-standard performance (each subordinate leader who fits this example).		12				
3. Training (job skills and knowledge): Soldiers lack training to perform tasks to standard.						
a. MOS SDT (SQT) score less than 70.		9				
b. Not proficient in assigned tasks outside MOS (has not received OJT, school, unit, or task training).		9				
4. Standards: Soldiers performing task for which task-condition-standard or procedures—						
a. Do not exist (example: two vehicles collide head-on on test track because there is no standard on track direction).		4				
b. Are not clear or practical (example: TM shows soldier changing 195-pound tire by himself).		4				
5. Support: Soldiers not receiving support needed to perform task to standard.						
a. Personnel (not full crew, wrong MOS, not trained to standard).		2				
b. Equipment (TA-50, weapons, transportation, safety).		2				
c. Supplies (ammo, fuel, food, water, parts, clothing, publications).		2				
d. Services/facilities (maintenance, medical, personal services, storage).		2				
Points	0-20	21-30	31-40	41+	Points	
Risk	Low	Medium	High	Extremely high	Risk	

a. Has been formally or informally counseled for poor performance or conduct on or off duty. Enter 8 points for each person you rate who has been counseled 3 times for any combination of the following reasons in the last 12 months or more than 4 times in the last 24 months.

- Electing not to follow instructions, procedures, or laws.
- Unnecessary risk taking.
- Inappropriate personal conduct or irresponsibility (example: bad checks).
- Not finishing assigned work (dependability).
- Lateness.
- Not being a team player.
- Making inappropriate decisions for his or her age, grade, rank, or experience level that increased the risk of an accident.

b. Had at-fault reportable accidents (vehicle or nonvehicle, on or off duty) or traffic citations (on or off duty). (Note: "At-fault" is knowingly and willfully doing something wrong that caused the accident or citation (e.g., speeding, DUI, inattention, not following procedures). A "reportable" accident or citation is one resulting in a police report, accident report, or insurance claim.) Enter 8 points for each person you rate who has had 2 to 4 at-fault accidents or citations in the last 12 months or 5 or more in the last 24 months.

c. Abused alcohol or drugs. Enter 8 points for each person you rate who fits any of the following examples:

- Missed all or part of a workday because of alcohol or illegal drug use 2 times in any month during the last 12 months.
- Been on duty while under the influence of alcohol or illegal drugs any day during the past 12 months.
- Referred to Community Mental Health or other agency for alcohol/drug abuse evaluation during past 24 months.

d. Received judicial or nonjudicial punishment. Enter 8 points for each person you rate who received punishment for any of the following in the last 24 months:

- Desertion.
- AWOL.
- Crimes against property.
- Crimes of violence.

e. GT score of 90 or less (enlisted personnel only). Enter 8 points for each person you rate who has a GT score that is 90 or less.

f. Sex and age. Enter 8 points for each person you rate who is a male under the age of 25.

Question 2. Leadership. Leader or supervisor is not ready, willing, or able to supervise subordinates' work and enforce performance to standard.

a. Leader or supervisor has insufficient technical knowledge, experience, or leadership ability to properly supervise. Enter 6 points for each subordinate leader/supervisor you rate who fits this example.

b. Leader or supervisor tolerates below-standard performance, rarely makes on-the-spot corrections, does not emphasize by-the-book operations, or is reluctant to take disciplinary action. Enter 12 points for each subordinate leader/supervisor you rate who fits this example.

Question 3. Training. Individual has not received the training needed to perform current job tasks to standard. This means insufficient, incorrect, or no task training that should have been provided by schools, unit, or OJT experience.

a. Last MOS SDT(SQT) score was less than 70. Enter 9 points for each person you rate who fits this example.

b. Not proficient in tasks outside job series or MOS (other duties assigned) but required in current job. Enter 9 points for each person you rate who fits this example.

Question 4. Standards. Individual frequently performs job tasks for which task-conditions-standards or procedures do not exist, are not clear, or are not practical. Enter 4 points for each person you rate who fits any of these situations. Following are some examples:

a. While undergoing vehicle performance tests, two M1 tanks, traveling in opposite directions on test track, collided head-on. No procedures had been established to control movement on the test track.

b. Driver attempted to make a U-turn in an M817 dump truck, but the turn radius of the vehicle was too wide to complete the turn. The drivers manual didn't contain clear and concise guidance on the proper procedure for making U-turns in large vehicles.

c. Soldier, removing a 195-pound rear wheel assembly from an M35A2 2½-ton cargo truck, injured his back. He did not get help to perform this task because the procedure in TM 9-2320-209-10-4 is not practical; i.e., it indicates that one person can safely lift the wheel assembly unaided.

Question 5. Support. Individual, through no fault of his or her own, does not receive support needed to perform job tasks to standard. Shortcomings include type, capability, and amount or condition of support needed.

a. **Personnel (not full crew, wrong MOS).** Enter 2 points for each person you rate who fits this example.

b. **Equipment (availability/adequacy of TA-50, weapons, transportation, safety).** Enter 2 points for each person you rate who fits this example.

c. **Supplies (availability/adequacy of ammo, fuel, food, water, parts, clothing, publications).** Enter 2 points for each person you rate who fits this example.

d. **Services/facilities (maintenance, medical, personal services, storage).** Enter 2 points for each person you rate who fits this example.

Scoring

Total each person's points and determine his or her accident risk based on the following:

Points	0 - 20	21 - 30	31 - 40	41+
Risk	LOW	MEDIUM	HIGH	EXTREMELY HIGH

Enter each person's risk level (L, M, H, or EH) at bottom of the assessment form.

How to use it: A real-life example

The mission: As the platoon sergeant of a transportation battalion, you've been tasked to deploy a squad to support transporting soldiers and equipment 250 miles to port for deployment.

The commander/leader assessment: As you evaluate each of your four squad leaders, you determine that one of the squad leaders is at a greater risk of having an accident than the others. He—

- Has been counseled for poor performance (8 points).
- Has had his civilian drivers license revoked for speeding (8 points).
- Is a 24-year-old male (8 points).
- Has one of his trucks deadlined for maintenance (2 points).
- Has three newly assigned soldiers out of AIT (2 points).

Risk-control actions: If you can't *eliminate* the risk by assigning a lower-risk squad leader to the mission, there are control measures you can take to *reduce* or *control* the risk:

- You can provide detailed guidance for the task.
- You can replace the deadlined truck.
- You can replace the three new soldiers with experienced drivers.

SECTION 4D

The Next-Accident Assessment for Individuals (Ground Operations)

Note to leaders: This assessment is designed to provide individual soldiers with immediate feedback on the risk factors they possess. The results are for their own use only. However, it's a good tool you can use to get soldiers to take responsibility for their own safety.

Will you cause the next accident?

This section can help you as an individual figure out, on your own, what your chances are of being the next accident statistic. To rate yourself, answer each question honestly and total the points to learn where you can reduce your personal risk level.

Human error is responsible for 80 percent of all Army accidents, both ground and aviation. These accident-causing mistakes happen for a number of reasons. Sometimes the individual who makes the mistake is at fault, and sometimes it is the individual's unit or higher command that is at fault.

The Next-Accident Assessment is based on the top five reasons for human-error accidents in both ground and aviation operations over the last 10 years. These involve self-discipline, leadership, training, standards, and support.

This assessment is for your awareness only. You do not have to share the results with anyone. Once you have completed the risk assessment, you can then take action to correct or control the risk factors you identified. You can also identify actions you need for your chain of command to take to reduce your accident risk; this is the only information you need to share with your chain of command.

Instructions

Answer the questions about yourself and assign points as directed.

Points

Question 1. Self-discipline. You know the standard for performing your job tasks. You have been trained to perform those tasks to standard, but you frequently choose not to because of your attitude. This is a lack of self-discipline. The following are indicators of an undisciplined individual. Give yourself points for indiscipline if you—

a. Have been formally or informally counseled for poor performance or conduct on or off duty. Give yourself 8 points if you have been counseled 3 times for any combination of the following reasons in the last 12 months or more than 4 times in the last 24 months.

- Electing not to follow instructions, procedures, or laws.
- Unnecessary risk taking.
- Inappropriate personal conduct or irresponsibility (example: bad checks).
- Not finishing assigned work (dependability).
- Lateness.
- Not being a team player.
- Making inappropriate decisions for your age, grade or rank, or experience level that increased the risk of an accident.

b. Had at-fault reportable accidents (vehicle or nonvehicle, on or off duty) or traffic citations (on or off duty). (Note: "At-fault" is knowingly and willfully doing something wrong that caused

Points the accident or citation. A "reportable" accident or citation is one resulting in a police report, accident report, or insurance claim.) Give yourself 8 points if you have had 2 to 4 accidents or citations in the last 12 months or 5 or more in the last 24 months.

_____ **c. Abused alcohol or drugs.** Give yourself 8 points if you fit any of the following examples:

- Missed all or part of a workday because of alcohol or illegal drug use 2 times in any month during the last 12 months.
- Been on duty while under the influence of alcohol or illegal drugs any day during the past 12 months.
- Referred to Community Mental Health or other agency for alcohol/drug-abuse evaluation during the past 24 months.

_____ **d. Received judicial or nonjudicial punishment.** Give yourself 8 points if you received punishment for any of the following in the last 24 months:

- Desertion.
- AWOL.
- Crimes against property.
- Crimes of violence.

_____ **e. GT score of 90 or less (enlisted personnel only).** Give yourself 8 points if your score is 90 or less

_____ **f. Sex and age.** Give yourself 8 points if you are a male under the age of 25.

Question 2. Leadership. Your immediate supervisor is not ready, willing, or able to supervise subordinates' work and enforce performance to standard.

_____ Give yourself 18 points if your supervisor fits either of the following examples.

- Your supervisor does not have sufficient technical knowledge, experience, or management ability to properly supervise.
- Your supervisor tolerates below-standard performance, rarely makes on-the-spot corrections, does not emphasize by-the-book operations, or is reluctant to take disciplinary action.

Question 3. Training. You have not received the training you need to perform your current job tasks to standard. This means insufficient, incorrect, or no task training that should have been provided by schools, unit, or OJT experience.

_____ Give yourself 18 points if either of the following examples applies to you.

- Last MOS SDT(SQT) score was less than 70.
- Not proficient in tasks outside your job series or MOS (other duties assigned) but required in current job.

Question 4. Standards. In your current job, you frequently perform tasks for which task-conditions-standards or procedures do not exist, are not clear, or are not practical.

_____ Give yourself 8 points if either of the following applies to you.

- Tasks in your MOS (common and MOS tasks) either have no tasks-conditions-standards or procedures, or have tasks-conditions-standards or procedures that are not clear or are not practical.
- Tasks outside your MOS or job series (other duties) assigned to you either have no tasks-conditions-standards or procedures, or have tasks-conditions-standards or procedures that are not clear or are not practical.

Points **Question 5. Support.** You frequently do not receive the support you need to perform your job tasks to standard. Shortcomings include type, capability, and amount or condition of support needed.

Give yourself 8 points if inadequate support was responsible for below-standard task performance 2 times in any month during the past 12 months. Examples:

- Personnel (not full crew, wrong MOS, not trained to standard, etc.).
- Equipment (TA-50, weapons, transportation, safety, etc.).
- Supplies (ammo, fuel, food, water, parts, clothing, publications, etc.).
- Services/facilities (maintenance, medical, personal services, storage, etc.).

Scoring

Add up your points for all questions. Find where your score fits on the scale below to determine your risk of causing the next accident.

_____ Total Points

Points	0 - 20	21 - 30	31 - 40	41 - 50
Risk	LOW	MEDIUM	HIGH	EXTREMELY HIGH

How to use it

You now know your risk of making a mistake that will cause the next accident and what the reasons will be. You can reduce your risk by taking action to correct or control those reasons/faults that apply to you. You can control or fix some of them yourself; for others, you may need chain-of-command help. In the space below, identify at least one action you will take to reduce your accident risk. Also identify at least one action you need the chain-of-command to take to reduce your accident risk (this is the only information you need to share with the chain of command).

Action(s) I will take to reduce my accident risk:

Chain-of-command action(s) needed to reduce my accident risk:

SECTION 4E

The Next-Accident Assessment for Leaders of Aviators

Will one of your aviators cause the next accident?

This section contains a reliable instrument that can help aviation leaders identify risk-generating factors that can be accurate predictors of accident probability.

Human error is responsible for 80 percent of all Army aviation accidents. These accident-causing mistakes happen for a number of reasons. Sometimes the reason comes from and can be corrected by the aviator who makes the mistake. Sometimes the reason comes from and should be corrected by the aviator's unit or higher command.

The Next-Accident Assessment is based on the top five reasons for human-error accidents in aviation operations over the last 10 years. These involve self-discipline, leadership, training, standards, and support. The assessment evaluates the risk of

a particular individual or unit causing the next accident.

The assessment is not a cure-all. It is, however, a great tool to help leaders reduce the risks that cause accidents.

Commanders and other leaders can use the assessment not only to do a general evaluation of each aviator they rate, but also to consider when selecting aviators for the mission at hand.

Once you have completed the risk assessment, take action to correct or control the risk factors you identified. Your first priorities should be any aviator having a high or extremely high accident risk and any risk factor identified for one-third or more of the aviators you rate.

Keep the assessment form and actions initiated for your records and update them at least quarterly.

Instructions

List the names of each aviator you now rate (you are their first-line supervisor). Do not include aviators for whom you are intermediate or senior rater.

Answer and assign points as indicated for each aviator you rate.

Question 1. Self-discipline. Aviator knows the standard for performing the job tasks and has been trained to perform those tasks to standard but frequently chooses not to because of his or her attitude. This is a lack of self-discipline. The indicators listed in paragraphs *a* through *e* are a profile of the undisciplined aviator.

a. Has been formally or informally counseled for knowingly and willfully violating established standards. Enter 8 points for each aviator you rate who has committed 3 of the following violations (any combination) in the last 12 months or more than 4 in the last 24 months.

- Failed to properly perform required flight planning tasks (e.g., briefings, risk assessment, preflight checks, map recon).
- Intentionally flew too close to objects (e.g., terrain, buildings, wires).
- Exceeded crew endurance standards due to personal activities (e.g., late night prior to early flight, up too early for a late night flight).
- Failed to properly perform procedures for a specific flight profile (e.g., snow landings, slope operations, instrument approach).
- Frequently late for work, mission show-times, or takeoff times.

- Failed to use crew coordination procedures specified in the ATM for his or her aircraft.
- Made inappropriate decisions for his or her rank, duty position, or experience level that increased the risk of an aircraft accident.

b. Had at-fault reportable accidents (aircraft, motor vehicle, or injury accidents, on or off duty). (Research shows that the best single predictor of future accidents is past accident history.) (Note: "At-fault" is knowingly and willfully doing something wrong that caused the accident. A "reportable" accident is one requiring a police report, accident report, or insurance claim.) Enter 16 points for each aviator you rate who has had 1 at-fault accident in the last 12 months or 2 or more at-fault accidents in the last 24 months.

c. Aeromedical factors while on flight status. Enter 8 points for each aviator you rate who fits one or more of the following examples:

(1) During the past *12 months*, performed flight duties, including pre-mission planning, within—

- Prohibited time guidelines set by flight surgeon for nonprescription drugs (e.g., cold medicines).
- 12 hours after last drink of alcohol and until no residual effects remain.
- 12 hours after receiving an immunization.
- 24 hours after taking prescribed medication.
- 24 hours after scuba diving.
- 72 hours after donating blood.

(2) During the past *24 months*, has—

- Been on duty while under the influence of alcohol or illegal drugs.
- Missed all or part of a workday because of alcohol or illegal drug use.
- Been referred to Community Mental Health or other agency for alcohol- or drug-abuse evaluation.

d. Received administrative action or judicial or nonjudicial punishment while on flight status for poor performance of duty or conduct (on or off duty). Enter 8 points for each aviator you rate who received any of the following punishments in the last 24 months:

- Formal counseling by commander.
- PIC orders revoked by commander.
- Administrative action by flight evaluation board (FEB).
- Letter of reprimand.
- Adverse officer efficiency report (OER).
- Article 15.
- Court martial.

e. Sex and age. Enter 8 points for each aviator you rate who is a male under the age of 25. (NOTE: Males under the age of 25 have a high statistical risk for at-fault accidents. Although age and sex cannot be changed, leader awareness permits controls for high-risk aviators; e.g., increased guidance and supervision.)

Question 2. Leadership. Leader needs improvement in supervising aviators' work and enforcing performance to standard. Enter 18 points for each aviator you rate if you have done any 2 of the following in the last 12 months or any 3 in the last 24 months.

- a. Failed to establish or enforce crew-endurance policy.**
- b. Authorized or participated in prohibited actions such as directing or allowing aviators to fly in unacceptable weather.**
- c. Assigned personnel to perform tasks or missions outside the capability of the equipment or personnel.**

d. Allowed personnel to perform (without correction) actions prohibited by written, oral, or commonly accepted guidelines.

e. Knowingly accepted *unnecessary* risks to accomplish the mission.

f. Accepted risks without thorough analysis or accepted risks above your level of authority.

Question 3. Training. Aviator has not received sufficient training and/or recent flight time needed to proficiently perform to standard all tasks on your commander's task list.

a. Failed or did poorly on a flight, written, or oral evaluation in the last 12 months. Enter 18 points for each aviator you rate who fits this example.

b. Maintained *currency* but not *proficiency* during the past 12 months for tasks on the commander's task list (e.g., because of primary or additional duties or availability of flight hours within unit). Enter 18 points for each aviator you rate who fits this example.

Question 4. Standards. Enter 8 points for each aviator you rate who frequently performs job tasks for which task-conditions-standards—

a. Do not exist (for example, a required task or mission is not in the ATM, the unit-developed task list, or SOP).

b. Are not clear/practical (for example, procedures in the unit-developed task list or SOP cannot be safely accomplished or are difficult to understand).

Question 5. Support. Aviator, through no fault of his or her own, does not receive support needed to perform job tasks to standard. Shortcomings include type, capability, and amount or condition of support needed. Enter 8 points for each aviator you rate who had below-standard performance at any time in the past 6 months due to shortcomings in any of the following areas:

a. Personnel (not full crew, crew not adequately rested, wrong MOS, not fully trained to standard).

b. Equipment (availability/adequacy of aircraft, ALSE, NVDs, weapons, protective equipment, tool sets, special tools, ground support equipment, mission compatibility).

c. Supplies (availability/adequacy of ammo, fuel, food, water, parts, publications, special clothing).

d. Services/facilities (availability/adequacy of maintenance, rest/sleep areas, hangar/ramp space, medical, storage, personal services, training space, simulators, ranges).

e. Training time and flying-hour program (availability/adequacy of flight hours for ATM tasks, both individual and crew; crew coordination training).

Scoring

Total each aviator's points and determine his or her accident risk based on the following:

Points	0 - 20	21 - 30	31 - 40	41 +
Risk	LOW	MEDIUM	HIGH	EXTREMELY HIGH

Enter each aviator's risk level (L, M, H, or EH) at the bottom of the assessment form.

SECTION 4F

The Next-Accident Assessment for Aviators

Note to leaders: This assessment is designed to provide individual aviators with immediate feedback on the risk factors they possess. The results are for their own use only. However, it's a good tool you can use to get aviators to take responsibility for their own safety.

Will you cause the next accident?

This section can help you as an individual figure out, on your own, what your chances are of being the next accident statistic. To rate yourself, answer each question honestly and total the points to learn where you can reduce your personal risk level.

Human error is responsible for 80 percent of all Army aviation accidents. These accident-causing mistakes happen for a number of reasons. Sometimes the aviator who makes the mistake is at fault, and sometimes it is his or her unit or higher command that is at fault.

The Next-Accident Assessment is based on the top five reasons for human-error accidents in both ground and aviation operations over the last 10 years. Complete the assessment; see what your risk is of causing the next accident and what you can do to reduce that risk.

This assessment is for your awareness only. You do not have to share the results with anyone. Once you have completed the risk assessment, you can then take action to correct or control the risk factors you identified. You may also identify actions you need your chain of command to take to reduce your accident risk. If so, this is the only information you need to share with your chain of command.

Instructions

Answer the questions about yourself and assign points as directed.

Points

Question 1. Self-discipline. You know the standard for performing your job tasks. You have been trained to perform those tasks to standard, but you sometimes choose not to. This is a lack of self-discipline. The following are indicators of an undisciplined aviator. Give yourself points for indiscipline if you have—

a. **Knowingly and willfully violated established standards.** Give yourself 8 points if you have done any 3 of the following in the last 12 months or any 4 in the last 24 months.

- Failed to properly perform required flight-planning tasks (briefings, risk assessment, preflight checks, map recon, etc.).
- Intentionally flew too close to objects (terrain, buildings, wires, etc.).
- Exceeded crew endurance standards due to personal activities (late night prior to early flight, up too early for a late-night flight, etc.).
- Failed to properly perform procedures for a specific flight profile (snow landings, slope operations, instrument approach, etc.).
- Were frequently late for work, mission show-times, or takeoff times.
- Failed to use crew-coordination procedures specified in the ATM for your aircraft.
- Made inappropriate decisions for your rank and experience level that increased the risk of an aircraft accident.

b. **Had at-fault reportable accidents (aircraft, motor vehicle, or injury accidents, either on or**

Points off duty). (Research shows that the best single predictor of future accidents is past accident history.) (Note: "At-fault" is knowingly and willfully doing something wrong that caused the accident. A "reportable" accident is one requiring a police report, accident report, or insurance claim.) Give yourself 16 points if you have had 1 accident in the last 12 months or 2 or more in the last 24 months.

_____ **c. Aeromedical factors while on flight status.** Give yourself 8 points if any of the following examples apply to you:

(1) During the past *12 months*, performed flight duties, including pre-mission planning, within—

- Prohibited time guidelines set by flight surgeon for nonprescription drugs.
- 12 hours after last drink of alcohol and until no residual effects remain.
- 12 hours after receiving an immunization.
- 24 hours after taking prescribed medication.
- 24 hours after scuba diving.
- 72 hours after donating blood.

(2) During the past *24 months*, have—

- Been on duty while under the influence of alcohol or illegal drugs.
- Missed all or part of a workday because of alcohol or illegal drug use.
- Been referred to Community Mental Health or other agency for alcohol- or drug-abuse evaluation.

_____ **d. Received administrative action or judicial or nonjudicial punishment while on flight status for poor performance of duty or conduct (on or off duty).**

Give yourself 8 points if you received punishment for any of the following in the last 24 months:

- Formal counseling by commander.
- PIC orders revoked by commander.
- Administrative action by flight evaluation board (FEB).
- Letter of reprimand.
- Adverse officer efficiency report (OER).
- Article 15.
- Court martial.

_____ **e. Sex and age.** Give yourself 8 points if you are a male under the age of 25. (Males under the age of 25 have a high statistical risk for at-fault accidents. You cannot change your age or sex, but you can be aware of your risk level and take action to reduce your chances of causing an accident.)

Question 2. Leadership. Your supervisor does not have the ability or is not willing to adequately supervise subordinates' work and enforce performance to standard.

_____ Give yourself 18 points if your supervisor fits any of the following examples.

- Fails to establish or enforce crew-endurance policy.
- Authorizes or participates in prohibited actions such as directing or allowing aviators to fly in unacceptable weather.
- Assigns personnel to perform tasks or missions outside the capability of the equipment or personnel.
- Allows personnel to perform (without correction) actions prohibited by written, oral, or commonly accepted guidelines.
- Knowingly accepts *unnecessary* risks to accomplish the mission.
- Accepts risks without thorough analysis or accepts risks above his or her level of authority.

Points **Question 3. Training.** You have not received sufficient training and/or recent flight time you need to proficiently perform to standard all tasks on the commander's task list.

Give yourself 18 points if either of the following examples applies to you.

- Failed or did poorly on a flight, written, or oral evaluation in the last 12 months.
- Maintained currency but not proficiency during the past 12 months for tasks on the commander's task list (e.g., because of primary or additional duties or availability of flight hours within unit).

Question 4. Standards. You frequently are required to perform tasks for which task-conditions-standards or procedures do not exist, are not clear, or are not practical.

Give yourself 8 points if either of the following examples applies to you.

- Tasks/missions are required that are not in the ATM, unit-developed task list, or SOP.
- Procedures in the unit-developed task list or SOP cannot be safely accomplished or are difficult to understand.

Question 5. Support. You frequently do not receive the support you need to perform your tasks/missions to standard. Shortcomings include type, capability, and amount or condition of support needed.

Give yourself 8 points if inadequate support in any of the following areas was responsible for below-standard task performance by you at any time in the last 6 months:

- Personnel (not full crew, crew not adequately rested, wrong MOS, not fully trained to standard).
- Equipment (aircraft availability, ALSE, NVDs, weapons, protective equipment, tool sets, special tools, ground-support equipment, mission compatibility).
- Supplies (ammo, fuel, food, water, parts, publications, special clothing).
- Services/facilities (maintenance, rest-sleep areas, hangar/ramp space, medical, storage, personal services, training space, simulators, ranges).
- Training time and flying-hour program (flight hours for ATM tasks, both individual and crew; crew coordination training).

Scoring

Add up your points for all questions. Find where your score fits on the scale below to determine your risk of causing the next accident.

_____ Total Points

Points	0 - 20	21 - 30	31 - 40	41 +
Risk	LOW	MEDIUM	HIGH	EXTREMELY HIGH

How to use it

You now know your risk of making a mistake that will cause the next accident and what the reasons will be. You can reduce your risk by taking action to correct or control those reasons/faults within your control and requesting chain-of-command help in correcting the others. In the box on page 66, identify at least one action you will take to reduce your accident risk. Also identify at least one action you need your chain of command to take to reduce your accident risk. Give a copy to your chain of command.

Action(s) I will take to reduce my accident risk:

Chain-of-command action(s) needed to reduce my accident risk:

Name _____

SECTION 4G

Joint Readiness Training Center Force-Protection (Safety) Readiness Quiz (Ground)

This section contains a risk-management tool developed for leaders to use in preparing for JRTC rotational training. Comparing test results before and after unit refresher training will give leaders valuable feedback on current unit readiness status. As a pre-test, it will flag weak areas that could adversely affect JRTC performance if not corrected. It is recommended that soldiers correctly answer at least 36 (80%) of the questions. The answer key is below; the student answer sheet, instructions, and the quiz itself begin on the next page.

Answer Key

- | | |
|---|---|
| <p>1. A ☐ C D</p> <p>2. A B ☐ D</p> <p>3. A B C ☐</p> <p>4. ☐ B C D</p> <p>5. A B C D ☐</p> <p>6. A B ☐ D</p> <p>7. ☐ B C D E</p> <p>8. A B ☐ D</p> <p>9. A ☐ C</p> <p>10. A B C ☐</p> <p>11. ☐ B</p> <p>12. A ☐ C D</p> <p>13. A B C D ☐</p> <p>14. ☐ B</p> <p>15. A B C D ☐</p> <p>16. A B ☐ D</p> <p>17. A ☐</p> <p>18. A ☐ C D</p> <p>19. A B C ☐</p> <p>20. A B C D ☐</p> <p>21. A B ☐ D E</p> <p>22. A B C ☐</p> <p>23. A B ☐ D</p> | <p>24. A ☐ C D</p> <p>25. A ☐</p> <p>26. A ☐ C D</p> <p>27. A B C ☐</p> <p>28. A B C ☐</p> <p>29. A ☐</p> <p>30. A ☐ C D</p> <p>31. A ☐ C D</p> <p>32. A B C ☐</p> <p>33. A B ☐</p> <p>34. A B ☐ D</p> <p>35. A B C ☐</p> <p>36. A B C ☐</p> <p>37. A B ☐ D</p> <p>38. A B ☐ D</p> <p>39. A ☐ C D</p> <p>40. ☐ B</p> <p>41. A ☐ C D</p> <p>42. A ☐ C D</p> <p>43. A ☐ C D</p> <p>44. A B C ☐</p> <p>45. A B ☐</p> |
|---|---|

Unit: _____ Rank: _____ MOS: _____

JRTC Force Protection (Safety) Readiness Quiz**Answer Sheet****Instructions**

1. Enter your unit, rank, and MOS above.
2. Answer each question by marking out the correct letter on the answer sheet.
3. Some questions have more than one right answer; for those, select the *one best answer*.

- | | | | | | | | | | | |
|-----|---|---|---|---|---|-----|---|---|---|---|
| 1. | A | B | C | D | | 24. | A | B | C | D |
| 2. | A | B | C | D | | 25. | A | B | | |
| 3. | A | B | C | D | | 26. | A | B | C | D |
| 4. | A | B | C | D | | 27. | A | B | C | D |
| 5. | A | B | C | D | E | 28. | A | B | C | D |
| 6. | A | B | C | D | | 29. | A | B | | |
| 7. | A | B | C | D | E | 30. | A | B | C | D |
| 8. | A | B | C | D | | 31. | A | B | C | D |
| 9. | A | B | C | | | 32. | A | B | C | D |
| 10. | A | B | C | D | | 33. | A | B | C | |
| 11. | A | B | | | | 34. | A | B | C | D |
| 12. | A | B | C | D | | 35. | A | B | C | D |
| 13. | A | B | C | D | E | 36. | A | B | C | D |
| 14. | A | B | | | | 37. | A | B | C | D |
| 15. | A | B | C | D | E | 38. | A | B | C | D |
| 16. | A | B | C | D | | 39. | A | B | C | D |
| 17. | A | B | | | | 40. | A | B | | |
| 18. | A | B | C | D | | 41. | A | B | C | D |
| 19. | A | B | C | D | | 42. | A | B | C | D |
| 20. | A | B | C | D | E | 43. | A | B | C | D |
| 21. | A | B | C | D | E | 44. | A | B | C | D |
| 22. | A | B | C | D | | 45. | A | B | C | |
| 23. | A | B | C | D | | | | | | |

JRTC Readiness Quiz (Ground)

1. Which statement BEST describes the role of safety in combat operations?

A. Safety interferes with combat and does not belong on the battlefield.

B. Safety is an element of force protection that preserves combat power from accidental loss.

C. Only unit safety officers and senior NCOs are responsible for safety on the battlefield.

D. Leaders can conduct operations safely by relying only on experience and intuition.

2. Human error is responsible for what percent of all accidents?

A. 10 percent

B. 50 percent

C. 80 percent

D. 62 percent

3. Concerning reporting of accidents, which statement is TRUE?

A. Only serious injuries need to be reported to your chain of command.

B. A minor case of heat exhaustion does not need to be reported.

C. Only the safety officer or NCO should be concerned about reporting accidents.

D. All accidents, even minor ones, will be reported to the chain of command.

4. The information necessary to request medevac assistance from range control includes which of the following?

A. Location, radio frequency/call sign, how pickup zone will be marked, number of casualties, and type of injuries.

B. Location, number of casualties, type of injuries, medic's name, and terrain features.

C. Location, terrain features, equipment involved, and names of soldiers involved.

D. Location, type of injury, name of soldiers involved, and equipment involved.

5. Which of the following is the BEST answer about the risk-management process?

A. Enforcement of performance to standards is a critical supervisory responsibility.

B. After mission completion, decisions should

be evaluated for inclusion in lessons learned.

C. Individual soldiers should know what risk controls are to be used.

D. A and B

E. A, B, and C

6. The five steps of the risk-management process are—

1. Make risk decisions

2. Supervise

3. Identify hazards

4. Implement controls

5. Assess hazards

What is the proper sequence of these five steps?

A. 3, 5, 2, 4, 1

B. 4, 2, 3, 5, 1

C. 3, 5, 1, 4, 2

D. 1, 3, 5, 2, 4

7. In the risk-management process, hazard ASSESSMENT means:

A. Identification and evaluation of hazards

B. Making a risk decision

C. Implementation of controls

D. A and B

E. A, B, and C

8. When using MILES equipment and blank ammunition, soldiers will not fire directly at each other when within what distance?

A. 5 meters (16 feet)

B. 25 meters (82 feet)

C. 10 meters (33 feet)

D. 50 meters (164 feet)

9. What is the proper clearing procedure for small arms?

A. Pull bolt to rear, clear chamber, let bolt go forward, and remove magazine.

B. Remove magazine, pull bolt to rear, clear chamber, and allow bolt to go forward.

C. Pull bolt to rear, clear chamber, remove magazine, let bolt go forward, and look down barrel.

10. Which is NOT part of correct procedures for dealing with a dud?

A. Do not disturb.

B. Mark the area distinctly.

C. Determine grid coordinates.

D. Build a berm around it to protect other personnel.

11. Slips, trips, and falls while traversing terrain is one of the top injury-producers at JRTC.

- A. True
- B. False

12. Which of the following is NOT a proper lifting technique?

- A. Never twist or jerk your body while lifting.
- B. When carrying heavy objects, hold them away from your body to prevent injury if you lose your grip.
- C. Bend from the hips and knees, not just the waist.
- D. If in doubt about your ability to lift a load, get help.

13. Improper use of four tools causes most injuries during maintenance operations. Which of the following is NOT one of them?

- A. Wrench
- B. Hammer
- C. Pliers
- D. Screwdriver
- E. Knife

14. Using tools improperly (using the wrong tool or using the correct tool but using it improperly) while performing maintenance was a top injury-producer during peacetime and Operations Desert Shield and Desert Storm.

- A. True
- B. False

15. When is it mandatory for goggles to be worn?

- A. When performing maintenance operations under vehicles.
- B. When lifting or carrying ammunition or explosives.
- C. When participating in MOUT operations.
- D. During refueling operations.
- E. A, C, and D

16. Sleeping less than ____ hours each night for 3 to 6 nights has been found to impair military effectiveness (increased risk of making mistakes).

- A. 6
- B. 10
- C. 4

D. 8

17. Soldiers can be trained to overcome the effects of sleep loss.

- A. True
- B. False

18. A soldier is most effective when he gets ____ hours of sleep a night.

- A. 4 to 5
- B. 6 to 8
- C. 9 to 10
- D. 11 to 12

19. Which sleeping area IS permitted?

- A. Under a vehicle
- B. Inside a running vehicle
- C. An unguarded area
- D. Marked and guarded assembly area

20. Which of the following frequently cause accidents during heater operation?

- A. Wrong type of fuel
- B. Untrained and unlicensed fireguards
- C. Poor PMCS
- D. A and C
- E. A, B, and C

21. What is the fuel of choice for radiant heaters at JRTC?

- A. Mogas and diesel mixture
- B. JP4
- C. Diesel
- D. Mogas
- E. Kerosene

22. Soldiers must be trained and licensed to operate which of the following?

- A. Tent heaters
- B. M2 burner
- C. Immersion heaters
- D. A, B, and C

23. During periods of very hot or cold weather, a ____ acclimatization period should be established.

- A. 10-day
- B. 1-day
- C. 4-day
- D. 7-day

24. Which of the following is NOT a good method to use to avoid a cold-weather injury?

- A. Change socks often
- B. Tighten boot laces to keep out cold air
- C. Keep body and clothes clean
- D. Drink plenty of fluids

25. During cold weather, it is advisable to drink plenty of coffee because it will keep you awake and provide needed fluids to maintain hydration.

- A. True
- B. False

26. Which statement is NOT true?

A. Animals such as foxes, raccoons, and skunks have a high risk of carrying rabies.

B. Scorpion and tarantula bites can be life-threatening—even to personnel who are not allergic—if not treated quickly and properly.

C. The saddleback caterpillar, found in brush and on tree branches, is poisonous.

D. One good way to protect against scorpions and spiders is to check footwear before putting it on.

27. The deadliest snake in North America is the _____.

- A. Timber rattler
- B. Eastern diamondback rattler
- C. Copperhead
- D. Coral snake

28. Which of the following poisonous snakes is NOT found in the Fort Polk area?

- A. Pygmy rattlesnake
- B. Coral snake
- C. Copperhead
- D. Sidewinder

29. One recommended treatment for snakebite is to cut the bite site and suck out the poison.

- A. True
- B. False

30. Which statement describes JRTC policy on vehicle operation?

- A. Unlicensed personnel may operate vehicles in the maneuver box.
- B. All operators must be licensed.
- C. The unit commander can authorize unlicensed personnel to drive on unpaved roads.

D. Student drivers may operate vehicles at JRTC if accompanied by a licensed driver.

31. Which statement describes JRTC policy on the use of safety belts in vehicles?

- A. Only the driver is required to use safety belts.
- B. Use of safety belts is mandatory when available.
- C. Safety belts are required only on paved roads.
- D. Vehicle occupants don't need to use safety belts during movement to contact if it interferes with operations.

32. Which of the following is a true statement?

A. The use of ground guides through assembly areas is mandatory.

B. All vehicles will be ground-guided during periods of reduced visibility if personnel are unsure of their ability to maneuver safely.

C. All tracks will have two ground guides when backing.

D. All of the above.

33. When ground guiding, voice signals are better than hand signals.

A. Yes, if the ground guide and driver agree in advance.

B. No, voice and hand signals are equally effective.

C. No, voice signals can easily be misunderstood.

34. Which statement DOES NOT apply to ground-guiding procedures?

A. The driver must stop immediately if he loses sight of the ground guide.

B. Ground guides are required in assembly areas, when backing, and during restricted visibility.

C. A vehicle may be operated in an assembly area without a ground guide if vehicle speed is less than 5 mph.

D. A 5-ton truck requires two ground guides when backing even with both side mirrors serviceable.

35. The ball on an antenna tip—

- A. Is used to improve antenna efficiency.
- B. Is there only to protect the antenna.
- C. Should be removed if it catches on vegetation during vehicle movement.

D. Is required to protect soldiers from being hurt by the antenna tip.

36. Which of the following frequently cause injury during vehicle-camouflaging operations?

- A. Dropping net bag on soldiers below
- B. Failing to maintain 3 points of contact
- C. Snagging clothing or boots on net and losing balance
- D. B and C

37. Smoking is prohibited within _____ feet of any type of refueling operation.

- A. 20
- B. 25
- C. 50
- D. 100

38. What is the CORRECT procedure for dismounting passengers?

A. Passengers may dismount without verbal instructions from the driver only if the vehicle has come to a complete stop.

B. Passengers should wait for the vehicle to come to a complete stop, unhook the safety strap, lower the tailgate, and then dismount.

C. Driver should stop, unhook the safety strap, open the tailgate, and tell troops to use available steps when dismounting.

D. Passengers should wait for the vehicle to come to a complete stop, then dismount as quickly as possible.

39. What is the speed limit for tactical wheeled vehicles driving on dirt or gravel roads during the day and at night with service drive lights on?

- A. 25 mph and 20 mph respectively
- B. 20 mph and 20 mph respectively
- C. 40 mph and 35 mph respectively
- D. 35 mph and 30 mph respectively

40. The MINIMUM safe following distance for

wheeled vehicles is 1 second for each 10 feet of total vehicle length for speeds below 40 mph.

- A. True
- B. False

41. What restrictions apply to transporting blasting caps and explosives in the same vehicle?

- A. Vehicle must be 2½-ton or larger.
- B. Blasting caps and explosives may not be transported in the same vehicle.
- C. Blasting caps and explosives must be separated in cargo bed by a 1-inch-thick sheet of plywood.
- D. A and C

42. What is the MINIMUM distance between a tracked vehicle and dismounted troops in the rear?

- A. 5 meters (16 feet)
- B. 10 meters (33 feet)
- C. 15 meters (49 feet)
- D. 20 meters (66 feet)

43. The most common injury-producing error when conducting tactical parachute operations is—

- A. Improper body position when exiting aircraft.
- B. Improper parachute landing fall.
- C. Improper canopy control.
- D. Improper exit interval.

44. Which is NOT a cause of a towed jumper?

- A. Poor exit
- B. Misrouted static line
- C. Failure to control static line
- D. Excessive winds

45. What are major causes of static-line injuries?

- A. Unrestrained excess loop in the static line.
- B. Improper hand-off of static line to the safety.
- C. A and B

SECTION 4H

Joint Readiness Training Center Force-Protection (Safety) Readiness Quiz (Aviation)

This section contains a risk-management tool developed for aviation leaders to use in preparing for JRTC rotational training. Comparing test results before and after unit refresher training will give leaders valuable feedback on current unit readiness status. As a pre-test, it will flag weak areas that could adversely affect JRTC performance if not corrected. Aviation personnel should be able to correctly answer at least 38 (80%) of the questions. The answer key is below.

Answer Key

- | | |
|--|---|
| <p>1. A B C ■</p> <p>2. A ■ C D</p> <p>3. A B ■ D E</p> <p>4. A B C ■</p> <p>5. ■ B</p> <p>6. A B ■ D</p> <p>7. ■ B C D</p> <p>8. A ■ C D</p> <p>9. ■ B C D E</p> <p>10. ■ B C D E</p> <p>11. A B C ■</p> <p>12. A B C ■ E</p> <p>13. A ■ C D</p> <p>14. A B C D ■</p> <p>15. A B ■ D</p> <p>16. A B ■ D</p> <p>17. ■ B</p> <p>18. A B ■ D E</p> <p>19. A B C ■</p> <p>20. A ■ C D</p> <p>21. A ■</p> <p>22. A B C D ■</p> <p>23. ■ B</p> <p>24. A ■</p> | <p>25. ■ B</p> <p>26. A ■</p> <p>27. A B ■ D E</p> <p>28. A B C ■</p> <p>29. A B ■ D</p> <p>30. ■ B C D</p> <p>31. ■ B</p> <p>32. ■ B C D</p> <p>33. A ■</p> <p>34. A ■ C D</p> <p>35. ■ B</p> <p>36. A ■ C D</p> <p>37. ■ B</p> <p>38. A B C D ■</p> <p>39. A ■</p> <p>40. A B C ■</p> <p>41. A B C D ■</p> <p>42. A B ■ D</p> <p>43. A B C D ■</p> <p>44. A B C D ■</p> <p>45. A B C ■</p> <p>46. A B C D ■</p> <p>47. A ■</p> |
|--|---|

Name: _____

JRTC Force-Protection (Safety) Readiness Quiz (Aviation)**Answer Sheet****Instructions**

Enter your name above. Answer each question by marking out the correct letter on the answer sheet. Some questions have more than one right answer; for those, select the *one best answer*.

- | | |
|---------------|---------------|
| 1. A B C D | 25. A B |
| 2. A B C D | 26. A B |
| 3. A B C D E | 27. A B C D E |
| 4. A B C D | 28. A B C D |
| 5. A B | 29. A B C D |
| 6. A B C D | 30. A B C D |
| 7. A B C D | 31. A B |
| 8. A B C D | 32. A B C D |
| 9. A B C D E | 33. A B |
| 10. A B C D E | 34. A B C D |
| 11. A B C D | 35. A B |
| 12. A B C D E | 36. A B C D |
| 13. A B C D | 37. A B |
| 14. A B C D E | 38. A B C D E |
| 15. A B C D | 39. A B |
| 16. A B C D | 40. A B C D |
| 17. A B | 41. A B C D E |
| 18. A B C D E | 42. A B C D |
| 19. A B C D | 43. A B C D E |
| 20. A B C D | 44. A B C D E |
| 21. A B | 45. A B C D |
| 22. A B C D E | 46. A B C D E |
| 23. A B | 47. A B |
| 24. A B | |

JRTC Readiness Quiz (Aviation)

1. According to historical records, about what percentage of wartime aviation losses are a result of accidents?

- A. 10 percent
- B. 25 percent
- C. 50 percent
- D. >60 percent

2. Which statement best describes the role of safety in combat operations?

- A. Safety interferes with combat and does not belong on the battlefield.
- B. Safety is a facet of force protection, which protects combat power from unnecessary losses.
- C. Safety on the battlefield is the primary responsibility of the unit safety officer.
- D. Leaders can conduct operations safely if they rely on experience and intuition.

3. Which of the following readiness deficiencies is responsible for the greatest percentage of human-error aviation accidents?

- A. Training (not trained to standard)
- B. Leadership (standards not enforced)
- C. Individual (inadequate self-discipline)
- D. Standards (inadequate standards/procedures)
- E. Support (substandard support)

4. About what percentage of helicopter accidents are caused by human error?

- A. 10%
- B. 30%
- C. 50%
- D. 80%

5. Helicopter main- and tail-rotor tree strikes occur on almost every JRTC rotation.

- A. True
- B. False

6. What is the number-one problem related to IMC?

- A. Vertigo
- B. Task saturation
- C. Waiting too long to commit to instruments
- D. None of the above

7. If inadvertent IMC is encountered at JRTC, the pilot on the controls should initiate inadvertent IMC procedures per the Aircrew Training Manual, climb to _____, set transponder mode 3 to code 7700, and contact _____ and comply with their instructions.

- A. 2500 feet msl, ATC (Warrior Control, Polk Radar, or Houston Center)
- B. 5500 feet msl, Joint Airspace Control Center (JACC)
- C. 9500 feet msl, ATC (Warrior Control, Polk Radar, or Houston Center)
- D. 10,500 feet msl, Joint Airspace Control Center (JACC)

8. According to TC 1-204, what is the most effective reference to verify altitude over flat terrain with few visual cues?

- A. Visually scan horizon
- B. Cross-check radar altimeter (when equipped)
- C. Use shadow of aircraft
- D. Monitor outside air temperature

9. Pyrotechnics may be thrown or fired from aircraft at JRTC—

- A. Never.
- B. When approved by the aircraft PIC.
- C. When approved by the aviation task force commander.
- D. When approved by the maneuver brigade commander.
- E. When approved by the JRTC safety officer.

10. Units may conduct air-to-air combat maneuvers at JRTC—

- A. Never
- B. When approved by the aircraft PIC.
- C. When approved by the aviation task force commander.
- D. When approved by the maneuver brigade commander.
- E. When approved by the JRTC safety officer.

11. While flying in MOPP gear, aircrews should—

- A. Keep doors, windows, and vents open to increase ventilation.
- B. If tactical situation permits, fly at higher altitudes where it's cooler.
- C. Increase scan frequency because of field-of-view restrictions of M24/M43.

D. All of the above.

12. If, while performing NVG terrain flight, you encounter unforecast ground fog and lose your ground references, it's best to—

A. Decrease your altitude and try to regain ground reference.

B. Maintain altitude and fly through the fog.

C. Climb to altitude while looking for outside references.

D. Immediately transition to instrument flight and initiate a climb.

E. C or D

13. You are required to re-compute performance planning when a significant increase of _____ occurs. (Answer for your primary aircraft.)

UH-60, AH-64, CH-47

A. 5°C., 1000 feet PA, or 500 pounds gross weight

B. 5°C., 1000 feet PA, or 1000 pounds gross weight

C. 10°C., 1000 feet PA, or 1000 pounds gross weight

D. 10°C., 1000 feet PA, or 500 pounds gross weight

OH-58A/C/D

A. 10°C., 500 feet PA, or 100 pounds gross weight

B. 5°C., 500 feet PA, or 200 pounds gross weight

C. 5°C., 1000 feet PA, or 200 pounds gross weight

D. 10°C., 1000 feet PA, or 100 pounds gross weight

UH-1/AH-1

A. 10°C., 1000 feet PA, or 200 pounds (UH-1)/250 pounds (AH-1) gross weight

B. 5°C., 500 feet PA, or 200 pounds (UH-1)/250 pounds (AH-1) gross weight

C. 5°C., 1000 feet PA, or 200 pounds (UH-1)/250 pounds (AH-1) gross weight

D. 5°C., 500 feet PA, or 300 pounds (UH-1)/350 pounds (AH-1) gross weight

14. According to TC 1-204, appendix E, ATM airspeed recommendations can be affected by—

A. Terrain type and terrain flight profile.

B. Moon illumination and elevation above horizon.

C. Visual obscuration.

D. Aircraft type.

E. All of the above.

TC 1-210 and ATMs define recommended airspeed limitations for terrain flight NVG operations. Based on their guidance, answer questions 15 through 17.

15. When operating with skids or wheels above terrain or vegetation up to 25 feet AHO, max airspeed is—

A. 20 KIAS

B. 30 KIAS

C. 40 KIAS

D. 50 KIAS

16. When operating with skids or wheels between 25 and 80 feet AHO, max airspeed is—

A. 40 KIAS

B. 60 KIAS

C. 70 KIAS

D. 80 KIAS

17. When operating with skids or wheels above 80 feet AHO, max airspeed is whatever airspeed operational requirements dictate and aircraft limitations allow (TC 1-210).

A. True

B. False

18. There are five steps in the risk-management process. Select their proper order.

A. a, b, d, c, e a. Make risk decision

B. e, b, c, d, a b. Supervise

C. d, c, a, e, b c. Assess hazards

D. d, c, a, b, e d. Identify hazards

E. d, c, e, a, b e. Implement controls

19. What is a hazard?

A. Any condition with the potential of causing property loss or damage.

B. Any condition with the potential of causing personal injury or of lessening the ability to accomplish a task or mission.

C. Any condition with the potential of causing personal injury or property damage.

D. Any condition with the potential of causing personal injury, property damage or loss, or lessening the ability to accomplish a task or mission.

20. Risk assessment identifies a unit mission as high risk. You should—

- A. Get the battalion commander's approval.
- B. Develop and implement controls to reduce the risk to a lower level.
- C. Reschedule the mission.
- D. Execute the mission as planned.

21. When you are assigned a low-risk mission, there is no need to consider ways to reduce any identified hazards.

- A. True
- B. False

22. You have been assigned a high-risk mission. Which of the following controls could reduce the risk?

- A. Improve the crew mix.
- B. Postpone the mission until weather is better, if possible.
- C. Perform a day recon.
- D. Conduct a detailed mission rehearsal.
- E. All of the above.

23. It is the responsibility of every crewmember, including the aerial observer, crew chief, and flight engineers, to immediately advise the pilot on the controls of any potentially unsafe condition.

- A. True
- B. False

24. The pilot not on the flight controls is responsible only for what the pilot on controls directs.

- A. True
- B. False

25. Crew coordination is the interaction between crewmembers (communication) and actions (sequence or timing) necessary for a task to be performed efficiently, effectively, and safely.

- A. True
- B. False

26. Battle-rostering crews eliminates the need for positive communication between crewmembers because they are familiar with each other's skills and habits.

- A. True
- B. False

27. Which of the following is NOT a crew-coordination action (as defined in the Aircrew Training Manual)?

- A. Announce actions
- B. Direct assistance
- C. Be assertive
- D. Communicate positively
- E. Assign crew responsibilities

28. Crew coordination actions apply to all modes of flight during which of the following operations?

- A. Day.
- B. Day and night unaided.
- C. Night vision goggle or night vision system.
- D. All of the above.

29. Positive communication is essential to achieving crew coordination. Communication is positive when—

- A. The sender directs, and the receiver acknowledges.
- B. The sender announces, and the receiver acknowledges.
- C. The sender requests, the receiver acknowledges, and the sender confirms based on receiver's action.
- D. Any of the above.

30. Crewmembers must use clear terms that do not have multiple meanings. An example of a clearly stated phrase is—

- A. "I have it."
- B. "Do you see that tree?"
- C. "You are a little fast."
- D. "You have the flight controls."

31. When using night vision devices, it is imperative that crewmembers consider obstacle advisories a primary task. Crewmembers should precede aircraft control and obstacle advisories with a positive command that immediately conveys the required action to the pilot on the flight controls; e.g., "Turn right, tree at 12 o'clock."

- A. True
- B. False

32. Crew coordination includes involvement of

the entire crew in mission planning and—

- A. Rehearsal of critical mission events, contingencies, and participation in the debriefing.
- B. Discussion of mission contingencies.
- C. Discussion of in-cockpit events only.
- D. Everything except the debriefing.

33. Words and phrases used in the cockpit must be standardized and kept to a minimum. To achieve this objective, only the words and phrases listed in each aircraft ATM may be used.

- A. True
- B. False

34. The number-one problem area in night, crew-error helicopter accidents is—

- A. Brownout.
- B. Improper scanning
- C. VHIRP.
- D. Fatigue.

35. The pilot on the flight controls should not fixate or channelize his or her attention on anything inside or outside the aircraft for more than about 3 seconds.

- A. True
- B. False

36. What is the most prevalent type of improper scanning during night operations?

- A. Missed cues at the mid range.
- B. Visual fixation.
- C. No overlap of scanning by crewmembers.
- D. Flicker vertigo.

37. During NVG terrain flight over low-contrast areas, pilots have a tendency to inadvertently descend in an attempt to acquire visual cues.

- A. True
- B. False

38. One of the most common problems when engaging targets during diving fire is target fixation, which can lead to low pullouts and aircraft accidents. Which of the following techniques can help prevent target fixation?

- A. Plan dive recovery in time to avoid abrupt recovery maneuvers.
- B. Understand rate of descent versus airspeed, rate of closure, and power.

C. Closely monitor rate of descent and terrain features.

D. Have the pilot verify appropriate actions of the pilot on controls and provide adequate warning for avoiding obstacles in the flight path.

E. All of the above.

39. False horizons are not a problem when flying NVGs because the goggles can see through visual obscuration.

- A. True
- B. False

40. About what percentage of helicopter night, crew-error accidents are aided (NVGs)?

- A. <10 percent
- B. 25 percent
- C. 50 percent
- D. >70 percent

41. During night (aided/unaided) operations, the pilot on the controls should—

A. Primarily scan outside the aircraft and ensure that the pilot not on the controls provides status information on systems, altitude, and airspeed.

B. Verbally acknowledge obstacles when visual contact is made.

C. Acknowledge and enlarge scanning sector when pilot not on the controls announces stopping outside scan.

D. Not fixate.

E. All of the above.

42. During night or NVG multi-ship operations, with the exception of operations at terminal or tactical landing areas, what is the minimum required aircraft separation?

- A. 1 rotor disk
- B. 2 rotor disks
- C. 3 rotor disks
- D. 4 rotor disks

43. During NVG operations, which of the following procedures apply?

A. Operate with the crawl/walk/run philosophy, especially in an unfamiliar environment.

B. Conduct detailed planning and mission briefings regardless of pilot experience, and establish and specify all crewmember duties.

C. Identify crew coordination requirements,

especially during critical phases of the mission.

D. Continuous scanning is a must, and the pilot on the controls must stay outside. All other crewmembers must assist in obstacle avoidance. Pilot not on the controls cross-checks altitude agl and so forth.

E. All of the above.

44. To minimize the likelihood of wire strike during NVG operations, the crew should—

A. Perform a day recon.

B. Update their hazards map.

C. Brief crew coordination on searching for wires.

D. Use standard terms for directions and distances to identify where wire is in relation to aircraft flight path.

E. All of the above.

45. What minimums are required in order NOT to have to have infrared band-pass filter (pink light) onboard and operational during NVG use?

A. 10% moon illumination and 10° above the horizon.

B. 23% moon illumination and 30° above the horizon.

C. 30% moon illumination and 23° above the horizon.

D. Operational filter is required regardless of moon illumination and angle above the horizon.

46. To minimize brownout effects, aircrews should—

A. Hover aircraft IGE to determine dust conditions.

B. Perform running or maximum-performance takeoffs.

C. Close windows and doors during landings and takeoffs.

D. All of the above.

E. B and C

47. Use of an IR searchlight with a dispersed beam while using NVGs will minimize brownout conditions.

A. True

B. False

SECTION 4I

National Training Center Force-Protection (Safety) Readiness Quiz (Ground)

This section contains a risk-management tool developed for leaders to use in preparing for NTC rotational training. Comparing test results before and after unit refresher training will give leaders valuable feedback on current unit readiness status. As a pre-test, it will flag weak areas that could adversely affect NTC performance if not corrected. It is recommended that soldiers correctly answer at least 38 (80%) of the questions. The answer key is below.

Answer Key

- | | |
|---|--|
| <p>1. A ☐ C D</p> <p>2. A B C ☐</p> <p>3. A ☐ C D</p> <p>4. A ☐ C D</p> <p>5. ☐ B C D</p> <p>6. A B C ☐</p> <p>7. ☐ B C D</p> <p>8. A B ☐ D</p> <p>9. A B C ☐ E</p> <p>10. A B ☐ D</p> <p>11. A ☐</p> <p>12. A ☐ C D</p> <p>13. ☐ B C D</p> <p>14. A B ☐ D</p> <p>15. A ☐ C D</p> <p>16. A B ☐</p> <p>17. ☐ B C</p> <p>18. A B C ☐</p> <p>19. A B C D ☐</p> <p>20. A B C ☐</p> <p>21. A B C ☐</p> <p>22. A ☐ C D</p> <p>23. A B ☐ D</p> <p>24. ☐ B C D</p> | <p>25. A B ☐ D</p> <p>26. A B C ☐</p> <p>27. A B ☐ D E</p> <p>28. A B C ☐</p> <p>29. A B ☐ D E</p> <p>30. ☐ B C D</p> <p>31. A B C ☐ E</p> <p>32. A ☐ C D</p> <p>33. A B ☐ D</p> <p>34. A B C ☐</p> <p>35. A B C ☐</p> <p>36. A ☐</p> <p>37. A B C ☐</p> <p>38. A ☐ C D</p> <p>39. A B C ☐ E</p> <p>40. A B ☐ D E</p> <p>41. A B C ☐</p> <p>42. A B ☐ D</p> <p>43. A ☐ C D</p> <p>44. A B C ☐</p> <p>45. ☐ B C D E</p> <p>46. A B C D ☐</p> <p>47. A B ☐ D E</p> |
|---|--|

Name _____

NTC Force-Protection (Safety) Readiness Quiz (Ground)**Answer Sheet****Instructions**

Answer each question by marking out the correct letter on the answer sheet. Some questions have more than one right answer; for those, select the *one best answer*.

- | | |
|---------------|---------------|
| 1. A B C D | 25. A B C D |
| 2. A B C D | 26. A B C D |
| 3. A B C D | 27. A B C D E |
| 4. A B C D | 28. A B C D |
| 5. A B C D | 29. A B C D E |
| 6. A B C D | 30. A B C D |
| 7. A B C D | 31. A B C D E |
| 8. A B C D | 32. A B C D |
| 9. A B C D E | 33. A B C D |
| 10. A B C D | 34. A B C D |
| 11. A B | 35. A B C D |
| 12. A B C D | 36. A B |
| 13. A B C D | 37. A B C D |
| 14. A B C D | 38. A B C D |
| 15. A B C D | 39. A B C D E |
| 16. A B C | 40. A B C D E |
| 17. A B C | 41. A B C D |
| 18. A B C D | 42. A B C D |
| 19. A B C D E | 43. A B C D |
| 20. A B C D | 44. A B C D |
| 21. A B C D | 45. A B C D E |
| 22. A B C D | 46. A B C D E |
| 23. A B C D | 47. A B C D E |
| 24. A B C D | |

NTC Readiness Quiz (Ground)

1. The greatest number of soldier deaths at NTC are caused by—

- A. Snakebites.
- B. Vehicle accidents.
- C. Weapons accidents.
- D. Heat injuries.

2. About _____ percent of casualties in combat are caused by accidents.

- A. 5 percent
- B. 10 percent
- C. 25 percent
- D. More than 50 percent

3. Which statement best describes the role of safety in combat?

- A. Safety interferes with combat and does not belong on the battlefield.
- B. Safety is an element of force protection that preserves combat power from accidental loss.
- C. Only unit safety officers and senior NCOs are responsible for safety on the battlefield.
- D. Leaders can conduct operations safely if they rely on experience and intuition.

4. Which statement best describes NTC policy on use of safety belts in vehicles?

- A. Only the driver is required to use a safety belt.
- B. All occupants will use available safety belts whenever the vehicle is moving.
- C. Vehicle occupants do not need to wear safety belts during movement to contact when it interferes with operations.
- D. Safety belts are required only on paved roads.

5. What are the correct tactical vehicle speed limits for driving on dirt or gravel roads (1) in daylight and (2) at night with blackout drive lights on?

- A. 20 mph and 15 mph respectively
- B. 35 mph and 30 mph respectively
- C. 30 mph and 25 mph respectively
- D. 40 mph and 35 mph respectively

6. What is the minimum daily water intake to avoid heat injury during moderate activity (e.g.,

route march on level ground)?

Over 80°F Under 80°F

- | | |
|--------------|-----------|
| A. 8 quarts | 4 quarts |
| B. 10 quarts | 6 quarts |
| C. 15 quarts | 11 quarts |
| D. 12 quarts | 9 quarts |

7. Which statement describes NTC policy on minimum qualifications for drivers?

- A. Only properly licensed personnel will operate vehicles at NTC.
- B. Student drivers may drive vehicles at NTC if accompanied by a master driver.
- C. The unit commander can authorize unlicensed personnel to drive on unpaved surfaces only.
- D. Unlicensed personnel may operate a vehicle in the maneuver box if the driver is "killed" in simulated combat.

8. Which statement DOES NOT apply to ground guiding procedures?

- A. If the driver loses sight of the guide, he or she must stop the vehicle immediately.
- B. Ground guides are required in bivouac areas, when backing up, and during restricted visibility.
- C. A vehicle may be operated in an assembly area without a ground guide if vehicle speed is less than 5 mph.
- D. A 5-ton truck requires two ground guides when backing even with both side mirrors serviceable.

9. What is the MINIMUM protective equipment requirement for DRIVERS operating a multi-fuel vehicle?

- A. Safety belts
- B. Eye protection
- C. Hearing protection
- D. A and C
- E. All of the above

10. Smoking is prohibited within _____ feet of flammable materials, compressed gases, ammunition, and fuel-handling operations.

- A. 10 feet
- B. 25 feet
- C. 50 feet
- D. 100 feet

11. Soldiers can be trained to overcome the ill effects of sleep loss.

- A. True
- B. False

12. A soldier is most effective when he gets _____ hours' sleep a night.

- A. 5 to 6
- B. 7 to 8
- C. 8 to 9
- D. 10 to 11

13. Select the INCORRECT statement concerning vehicle preventive maintenance checks and services (PMCS).

A. The PMCS checklist in the TM is a learning tool; a well-trained driver can do PMCS safely without the checklist.

B. A driver should do PMCS before operation; during operation when he has an opportunity, such as rest stops; and after operation.

C. A driver should always rely on a tire-pressure gauge to determine correct tire pressure.

D. Mechanically unsafe vehicles should not be operated until deficiencies are corrected.

14. Hoffman charges and blanks (excluding small-arms blanks) will not be fired within _____ of other soldiers.

- A. 5 meters
- B. 25 meters
- C. 50 meters
- D. 75 meters

15. Which of the following is NOT a good method to use to avoid a cold-weather injury?

- A. Change socks often.
- B. Tighten boot laces to keep cold air out.
- C. Keep body and clothes clean.
- D. Drink fluids frequently.

16. When ground guiding, voice signals are better than hand signals.

A. Yes, if the ground guide and driver agree in advance.

B. No, voice and hand signals are equally effective.

C. No, voice signals can easily be misunderstood.

17. What information is needed to request emer-

gency assistance from range control?

A. Location, type of emergency, how pickup zone will be marked, and terrain features.

B. Location, type of emergency, name of commander, type of mission.

C. Location, fuel status, vehicle type, names of soldiers involved.

18. The ball on an antenna tip—

A. Is used to improve antenna's efficiency.

B. Is there only to protect the antenna.

C. Should be removed if it catches frequently on vegetation during vehicle movement.

D. Is a required item to protect soldiers from being hurt by the antenna tip.

19. Training for personnel operating vehicles under night tactical conditions should include—

A. Dark adaptation and night vision techniques.

B. Ground guiding under night tactical conditions.

C. Sensory illusions at night.

D. Night vision goggle use if mission essential.

E. All of the above.

20. The pyrotechnic signal for an actual emergency is—

A. White start cluster.

B. White smoke grenade.

C. Green star cluster or green smoke.

D. Red smoke or a red star cluster.

21. Which is the INCORRECT procedure for dealing with a dud?

A. Do not disturb.

B. Mark the area distinctly.

C. Determine grid coordinates.

D. Build a berm around it to protect other personnel.

22. Small arms blanks will not be fired within _____ meters of troops.

A. 5 meters

B. 10 meters

C. 15 meters

D. 50 meters

23. During periods of very hot or cold weather, a _____ acclimatization period should be established.

- A. 10-day
- B. 1-day
- C. 4-day
- D. 7-day

24. Minimum water consumption per day when the WBGT is less than 80 degrees is _____ quarts for soldiers engaged in forced march.

- A. 12 quarts
- B. 5 quarts
- C. 7 quarts
- D. 9 quarts

25. The FIRST thing to do when you are lost in the desert is to—

- A. Look for high ground and go toward it.
- B. Turn around and retrace your route.
- C. Stop where you are.
- D. Search for wood and brush to use for a signal fire.

26. Hearing protection is NOT required when operating/handling—

- A. Mortars.
- B. Multi-fuel trucks.
- C. Artillery simulators.
- D. Smoke grenades.

27. What is the authorized liquid fuel for tent heaters?

- A. Mogas and diesel mixture
- B. JP4
- C. Diesel
- D. Kerosene
- E. Mogas

28. Soldiers must be trained to operate which of the following?

- A. Tent heaters
- B. M2 burner
- C. Immersion heaters
- D. All of the above

29. Which of the following IS permitted in the cantonment area?

- A. Star clusters
- B. Smoke grenades
- C. Small arms, when properly cleared
- D. Duds, after defusing
- E. None of the above

30. Which of the following will NOT be the last vehicle in a convoy?

- A. HMMWV
- B. Tracked vehicle
- C. 5-ton truck
- D. Water tanker

31. Which sleeping area IS permitted?

- A. Under a vehicle
- B. Inside a running vehicle
- C. An unguarded area
- D. A marked and guarded assembly area
- E. B and D

32. Which of the following is suitable for transporting personnel?

- A. In the cargo area of the last vehicle in a convoy
- B. In a dump truck with positive locking device
- C. On top of loaded cargo only if there is insufficient room within the body of the vehicle
- D. In a vehicle shelter

33. Which statement is NOT true?

- A. Animals such as rabbits, foxes, raccoons, and skunks have a high risk of carrying rabies.
- B. Among the many nuisance "bugs" at NTC, only scorpions, spiders, and ants present a significant hazard.
- C. Some small animals such as raccoons are easily tamed and may be safely approached and fed.
- D. One good way to protect against scorpions and spiders is to check footwear before putting it on.

34. Which statement is NOT true?

- A. A spark arrestor is to be used when burning solid fuel.
- B. An area of 4 feet around the tent must be cleared of grass and weeds.
- C. The fuel can for the heater will be located outside of and as far away from the tent as practical.
- D. A tent heater may be operated at full capacity if two Class D fire extinguishers are present at all times.

35. Concerning reporting of accidents, which statement is true?

A. Only serious injuries need to be reported to your chain of command.

B. A minor case of heat exhaustion, where the soldier appears to recover after resting, does not need to be reported.

C. Only the safety officer or NCO needs to be concerned about reporting accident.

D. All accidents, even minor ones, should be reported to the chain of command.

36. In cold weather, it is NOT necessary to drink fluids until you feel thirsty.

A. True

B. False

37. When refueling from a fuel tanker, vehicles must be—

A. Chocked

B. Bonded

C. Grounded

D. All of the above

38. A soldier lost in the desert during summer can survive _____ without water.

A. 1 day

B. 2 to 3 days

C. 4 to 5 days

D. 1 week

39. Sleeping areas must be designed and marked with—

A. Engineer tape.

B. Red-painted tent stakes.

C. Chem lites.

D. A or C

E. All of the above

40. What are the restrictions on transporting blanks and live ammo in the same vehicle?

A. Vehicle must have a minimum of two fire extinguishers.

B. Vehicle must be 2½-ton or larger.

C. Blanks and live ammo may not be transported in the same vehicle.

D. Blanks and ammo must be separated in cargo bed by a 1-inch-thick sheet of plywood.

E. A and D above.

41. An Army accident is—

A. Any unplanned event that results in serious

injury requiring a trip to the hospital.

B. Any event that could involve a lawsuit, such as an injury to a civilian or damage to private property.

C. Any event that results in personnel injury costing over \$100.

D. Any unplanned event or series of events that result in injury or illness to personnel (Army or non-Army) and/or property damage (Army or non-Army) as a result of Army operations.

42. What are the correct dismount procedures for personnel being transported in an Army truck?

A. Passengers may dismount without verbal instructions from the driver only if the vehicle has come to a complete stop.

B. Passengers should wait for the vehicle to come to a complete stop, unhook the safety strap, lower the tailgate, and then dismount.

C. Driver should stop, unhook safety strap, open tailgate, and tell troops to use available steps when dismounting.

D. Passengers should wait for vehicle to come to complete stop, then dismount as quickly as possible to avoid carbon monoxide fumes and injury from vehicle movement.

43. Tracked vehicles may cross paved roads—

A. At intersections only.

B. At designated tank crossings only.

C. Anywhere they want (no restrictions).

D. At bridges, intersections, or designated tank crossings.

44. What restrictions are placed on tracked vehicles without an operable intercom?

A. There is no restriction.

B. The track commander must first instruct the crew on hand and arm signals.

C. After the track commander has approved the use of the vehicle with a circle X on the deficiency, there are no restrictions.

D. The vehicle may be operated only with a ground guide directing the vehicle.

45. In the risk-management process, risk ASSESSMENT consists of—

A. Identification and evaluation of hazards.

B. Making a risk decision.

C. Implementation of controls.

D. A and B

E. All of the above

46. Which of the following are true about the risk-management process?

A. Enforcement of performance to standards is a critical supervisory responsibility.

B. After mission completion, decisions should be evaluated for inclusion in lessons learned.

C. Individual soldiers should be aware of risk

controls implemented.

D. A and B

E. All of the above

47. There are five steps in risk management.

Select their proper order.

A. a, b, d, c, e

B. e, b, c, d, a

C. d, c, a, e, b

D. d, c, a, b, e

E. d, c, e, a, b

a. Make risk decision

b. Supervise

c. Assess hazards

d. Identify hazards

e. Implement controls

SECTION 4J

National Training Center Force-Protection (Safety) Readiness Quiz (Aviation)

This section contains a risk-management tool developed for aviation leaders to use in preparing for NTC rotational training. Comparing test results before and after unit refresher training will give leaders valuable feedback on current unit readiness status. As a pre-test, it will flag weak areas that could adversely affect NTC performance if not corrected. Aviation personnel should be able to correctly answer at least 38 (80%) of the questions. The answer key is below.

Answer Key

- | | |
|--|--|
| <p>1. A B ☒ D</p> <p>2. ☒ B C D</p> <p>3. ☒ B</p> <p>4. A B ☒ D</p> <p>5. Acft _____ Cat _____</p> <p>6. A B ☒ D</p> <p>7. A ☒ C D</p> <p>8. ☒ B C D</p> <p>9. ☒ B</p> <p>10. A ☒</p> <p>11. A B C ☒</p> <p>12. A B C D ☒</p> <p>13. A B C ☒</p> <p>14. A ☒ C D</p> <p>15. A ☒ C D</p> <p>16. A B ☒ D</p> <p>17. ☒ B</p> <p>18. A ☒</p> <p>19. A B C D ☒</p> <p>20. A B C D ☒</p> <p>21. ☒ B C D</p> <p>22. A B ☒ D</p> <p>23. A B ☒ D</p> <p>24. ☒ B</p> | <p>25. A ☒ C D</p> <p>26. A B C ☒</p> <p>27. A ☒ C D</p> <p>28. A B ☒ D</p> <p>29. A B C ☒</p> <p>30. A ☒ C D</p> <p>31. ☒ B</p> <p>32. A B C ☒</p> <p>33. A B C D ☒</p> <p>34. A B C D ☒</p> <p>35. A B C ☒</p> <p>36. A ☒</p> <p>37. A ☒</p> <p>38. A B C ☒ E</p> <p>39. A B C ☒</p> <p>40. A B C ☒</p> <p>41. A B C D ☒</p> <p>42. ☒ B</p> <p>43. A ☒</p> <p>44. A ☒</p> <p>45. A ☒</p> <p>46. ☒ B</p> <p>47. A ☒</p> <p>48. A B ☒ D E</p> |
|--|--|

Name _____

National Training Center Force-Protection (Safety) Readiness Quiz (Aviation)

Answer Sheet

Instructions

Answer each question by marking out the correct letter on the answer sheet. Some questions have more than one right answer; for those, select the *one best answer*.

- | | |
|--|--|
| <p>1. A B C D</p> <p>2. A B C D</p> <p>3. A B</p> <p>4. A B C D</p> <p>5. Acft _____ Cat _____</p> <p>6. A B C D</p> <p>7. A B C D</p> <p>8. A B C D</p> <p>9. A B</p> <p>10. A B</p> <p>11. A B C D</p> <p>12. A B C D E</p> <p>13. A B C D</p> <p>14. A B C D</p> <p>15. A B C D</p> <p>16. A B C D</p> <p>17. A B</p> <p>18. A B</p> <p>19. A B C D E</p> <p>20. A B C D E</p> <p>21. A B C D</p> <p>22. A B C D</p> <p>23. A B C D</p> <p>24. A B</p> | <p>25. A B C D</p> <p>26. A B C D</p> <p>27. A B C D</p> <p>28. A B C D</p> <p>29. A B C D</p> <p>30. A B C D</p> <p>31. A B</p> <p>32. A B C D</p> <p>33. A B C D E</p> <p>34. A B C D E</p> <p>35. A B C D</p> <p>36. A B</p> <p>37. A B</p> <p>38. A B C D E</p> <p>39. A B C D</p> <p>40. A B C D</p> <p>41. A B C D E</p> <p>42. A B</p> <p>43. A B</p> <p>44. A B</p> <p>45. A B</p> <p>46. A B</p> <p>47. A B</p> <p>48. A B C D E</p> |
|--|--|

NTC Readiness Quiz (Aviation)

1. IAW NTC supplement 1 to ARs 95-1, 2, and 3, NVG "blackout" operations are permitted in the battle sector at the NTC—

- A. At no time.
- B. Only when the moon is at least 40 percent and 35 degrees.
- C. Only if request is made at least 48 hours before scheduled mission brief time.
- D. At the discretion of the aviation task force commander.

2. NTC rules of engagement require the following survival equipment for each person on board aircraft (except OH-58) operating at NTC.

- A. Two quarts of water, one MRE, and one blanket/poncho liner, or cold/hot weather-survival kit for two persons.
- B. One hot/cold-weather kit.
- C. Two quarts of water, one MRE, and a survival vest.
- D. Survival vest plus other items directed by task-force commander.

3. NTC rules of engagement require that OH-58s have one quart of water and a survival vest per crewmember.

- A. True
- B. False

4. NVG training at NTC will not be conducted when weather is below (ceiling/visibility)—

- A. 500 ft/3 sm
- B. 500 ft/1 sm
- C. 1000 ft/3 sm
- D. 1000 ft/1 sm

5. In the space provided, write in your primary aircraft and its turbulence category as defined by the Air Force Weather Service document AWSP 105-56.

6. Pilots who encounter IMC at NTC should level the wings on the VSI/attitude indicator, maintain heading, adjust climb power, adjust airspeed, climb to _____ and contact Edwards Approach or Los Angeles Center.

- A. 7,500 feet msl
- B. 9,500 feet msl

- C. 8,500 feet msl
- D. 10,500 feet msl

7. The best type of terrain over which to plan NVG flight routes at NTC is—

- A. Large areas of open and flat desert.
- B. Along low hills where rocks and scrub-bushes exist.
- C. High over the mountains.
- D. None of the above.

8. What level of approval is required for multi-ship operations at NTC?

- A. Senior aviation observer-controller
- B. Company commander
- C. Task-force commander
- D. Battalion S3

9. Aviation observer-controllers can issue an administrative "kill" if crew rest guidance in AR 95-3 is not followed.

- A. True
- B. False

10. During an NTC rotation, NVG currency requirements can be waived by the ASO to accomplish mission objectives.

- A. True
- B. False

11. When engaged by the OPFOR, pilot should—

- A. Perform a return-to-target maneuver.
- B. Climb to altitude.
- C. Fly as low and as fast as possible.
- D. Remain calm, maintain situational awareness, and stay in control of the aircraft.

12. While performing NVG terrain flight at NTC, you encounter unforecast ground fog and lose your ground references. It would be best to—

- A. Decrease your altitude and try to regain ground reference.
- B. Maintain altitude and fly through the fog.
- C. Climb to altitude while looking for outside references.
- D. Immediately transition to instrument flight and initiate a climb.
- E. C or D

13. According to historical records, about what percentage of wartime aviation losses result

from accidents?

- A. 10 percent
- B. 25 percent
- C. 50 percent
- D. 60 percent

14. Which of the following statements best describes the role of safety in combat operations?

- A. Safety interferes with combat and does not belong on the battlefield.
- B. Safety is a facet of force protection, which protects combat power from unnecessary losses.
- C. Safety on the battlefield is the primary responsibility of the unit safety officer.
- D. Leaders can conduct operations safely if they rely on experience and intuition.

15. You are required to re-compute performance planning when a significant increase of _____ occurs. (Answer for your primary aircraft.)

UH-60, AH-64, CH-47

- A. 5°C., 1000 feet PA, or 500 pounds gross weight
- B. 5°C., 1000 feet PA, or 1000 pounds gross weight
- C. 10°C., 1000 feet PA, or 1000 pounds gross weight
- D. 10°C., 1000 feet PA, or 500 pounds gross weight

OH-58A/C/D

- A. 10°C., 500 feet PA, or 100 pounds gross weight
- B. 5°C., 500 feet PA, or 200 pounds gross weight
- C. 5°C., 1000 feet PA, or 200 pounds gross weight
- D. 10°C., 1000 feet PA, or 100 pounds gross weight

UH-1/AH-1

- A. 10°C., 1000 feet PA, or 200 pounds (UH-1)/250 pounds (AH-1) gross weight
- B. 5°C., 500 feet PA, or 200 pounds (UH-1)/250 pounds (AH-1) gross weight
- C. 5°C., 1000 feet PA, or 200 pounds (UH-1)/250 pounds (AH-1) gross weight
- D. 5°C., 500 feet PA, or 300 pounds (UH-1)/350 pounds (AH-1) gross weight

16. You are required to re-compute weight and balance (DD Form 365-4)—

- A. Never, if the aircraft logbook contains a set of standard weight and balance forms.
- B. When the weight changes by 10 percent or the moment changes by 5 percent.
- C. Any time the actual loading being verified is not within the extremes of the loading shown on the on-file DD Form 365-4.
- D. If the aircraft actual conditions show a difference of 3/10 percent in weight and 0.3-inch difference in center of gravity from the on-file DD Form 365-4.

17. Crew coordination is the interaction between crewmembers (communication) and actions (sequence or timing) necessary for a task to be performed efficiently, effectively, and safely.

- A. True
- B. False

18. Improper scanning is the number-one accident problem associated with night operations, aided and unaided. What is the most prevalent type of improper scanning?

- A. Missed cues at the mid range.
- B. Visual fixation.
- C. No overlap of scanning by crewmembers.
- D. Flicker vertigo.

19. During night (aided/unaided) operations, the pilot on the controls should—

- A. Primarily scan outside the aircraft and ensure that the pilot not on the controls provides status information on systems, altitude, and airspeed.
- B. Verbally acknowledge obstacles when visual contact is made.
- C. Acknowledge and enlarge scanning sector when pilot not on the controls announces stopping outside scan.
- D. Not fixate.
- E. All of the above.

20. During NVG operations in a desert environment, which of the following procedures apply?

- A. Operate with the crawl/walk/run philosophy, especially in an unfamiliar environment.
- B. Conduct detailed planning and mission briefings regardless of pilot experience, and establish and specify all crewmember duties.

C. Identify crew coordination requirements, especially during critical phases of the mission.

D. Continuous scanning is a must, and the pilot on the controls must stay outside. All other crewmembers must assist in obstacle avoidance. Pilot not on the controls cross-checks altitude agl and so forth.

E. All of the above.

21. What are the optimum moon conditions for NVG operations in the desert?

A. 40- to 80-percent illumination and 40- to 80-degree angle above the horizon.

B. 30-percent illumination and 23 degrees above the horizon.

C. 80-percent illumination and 70 to 90 degrees above the horizon.

D. None of the above.

TC 1-210 and ATMs define recommended airspeed limitations for terrain-flight NVG operations. Based on this guidance, answer questions 22 through 24.

22. When operating with skids or wheels above terrain or vegetation up to 25 feet AHO, max airspeed is—

A. 20 KIAS

B. 30 KIAS

C. 40 KIAS

D. 50 KIAS

23. When operating with skids or wheels between 25 and 80 feet AHO, max airspeed is—

A. 40 KIAS

B. 60 KIAS

C. 70 KIAS

D. 80 KIAS

24. When operating with skids or wheels above 80 feet AHO, max airspeed is whatever airspeed operational requirements dictate and aircraft limitations allow (TC 1-210).

A. True

B. False

25. During NVG operations, an IR searchlight is required when—

A. Moon angle is $<23^\circ$ and $<30^\circ$ above horizon.

B. On every NVG mission.

C. At the PIC's discretion.

D. When shadows are anticipated on the flight route.

26. About what percentage of helicopter accidents are caused by human error?

A. 10%

B. 30%

C. 50%

D. 80%

27. The number-one problem area in night, crew-error helicopter accidents is—

A. Brownout.

B. Improper scanning.

C. VHIRP.

D. Fatigue.

28. The number-one problem related to IMC is—

A. Vertigo.

B. Task saturation.

C. Failure to commit to instruments in a timely manner.

D. None of the above.

29. About what percentage of helicopter night, crew-error accidents are aided (NVG/NVS)?

A. <10 percent

B. 25 percent

C. 50 percent

D. >70 percent

30. According to TC 1-204, what is the most effective reference to verify altitude over flat terrain with few visual cues?

A. Visually scan horizon

B. Cross-check radar altimeter (when equipped)

C. Use shadow of aircraft

D. Monitor outside air temperature

31. The pilot on the flight controls should not fixate or channelize his attention on anything inside or outside the aircraft for more than about 3 seconds.

A. True

B. False

32. While flying in MOPP gear, aircrews should—

A. Keep doors, windows, and vents open to increase ventilation.

B. If tactical situation permits, fly at higher

altitudes where it's cooler.

C. Increase scan frequency because of field-of-view restrictions of M24/M43.

D. All of the above.

33. To minimize the likelihood of wire strike during NVG operations, the crew should—

A. Perform a day recon.

B. Update their hazards map.

C. Brief crew coordination on searching for wires.

D. Use standard terms for directions and distances to identify where wire is in relation to aircraft flight path.

E. All of the above.

34. To minimize brownout effects, aircrews should—

A. Hover aircraft IGE to determine dust conditions.

B. Perform running or maximum-performance takeoffs.

C. Close windows and doors during landings and takeoffs.

D. All of the above.

E. B and C

35. What is the minimum daily water intake to avoid heat injury during moderate activity?

Over 80°F

Under 80°F

A. 8 quarts

4 quarts

B. 10 quarts

6 quarts

C. 15 quarts

11 quarts

D. 12 quarts

9 quarts

36. In cold weather, it is not necessary to drink fluids until you feel thirsty.

A. True

B. False

37. AR 95-3 crew-rest requirements can be relaxed after aircrews become accustomed to the desert environment.

A. True

B. False

38. There are five steps in the risk-management process. Select their proper order.

A. a, b, d, c, e

a. Make risk decision

B. e, b, c, d, a

b. Supervise

C. d, c, a, b, e

c. Assess hazards

D. d, c, a, e, b

d. Identify hazards

E. d, c, e, a, b

e. Implement controls

39. An Army accident is—

A. Any unplanned event that results in serious injury requiring a trip to the hospital.

B. Any event that could involve a lawsuit, such as an injury to a civilian or damage to private property.

C. Any event that results in personnel injury costing over \$100.

D. Any unplanned event or series of events that result in injury or illness to personnel (Army or non-Army) and/or property damage (Army or non-Army) as a result of Army operations.

40. What is a hazard?

A. Any condition with the potential of causing property loss or damage.

B. Any condition with the potential of causing personal injury or of lessening the ability to accomplish a task or mission.

C. Any condition with the potential of causing personal injury or property damage.

D. Any condition with the potential of causing personal injury, property damage or loss, or lessening the ability to accomplish a task or mission.

41. According to TC 1-204, appendix E, ATM airspeed recommendations can be affected by—

A. Terrain type and terrain flight profile.

B. Moon illumination and elevation above horizon.

C. Visual obscuration.

D. Aircraft type.

E. All of the above.

42. It is the responsibility of every crewmember, including the aerial observer, crew chief, and flight engineers, to immediately advise the pilot on the controls of any potentially unsafe condition.

A. True

B. False

43. Use of an IR searchlight with a dispersed beam while using NVGs in a dusty environment will minimize brownout conditions.

A. True

B. False

44. False horizons are not a problem when flying NVGs because the goggles can see through visual obscuration.

- A. True
- B. False

45. The pilot not on the controls is responsible only for what the pilot on controls directs.

- A. True
- B. False

46. During NVG terrain flight over desert or other low-contrast areas, pilots have a tendency to inadvertently descend in an attempt to acquire visual cues.

- A. True
- B. False

47. Battle-rostering crews eliminates the need for positive communication between crewmembers because they are familiar with each other's skills and habits.

- A. True
- B. False

48. Which of the following readiness deficiencies is responsible for the greatest percentage of human-error aviation accidents?

- A. Training (not trained to standard).
- B. Leadership (standards not enforced).
- C. Individual (inadequate self-discipline).
- D. Standards (inadequate standards/procedures).
- E. Support (substandard support).

SECTION 4K

Combat Maneuver Training Center Force-Protection (Safety) Readiness Quiz (Ground)

This section contains a risk-management tool developed for leaders to use in preparing for CMTC rotational training. Comparing test results before and after unit refresher training will give leaders valuable feedback on current unit readiness status. As a pre-test, it will flag weak areas that could adversely affect CMTC performance if not corrected. It is recommended that soldiers correctly answer at least 40 (80%) of the questions. The answer key is below.

Answer Key

- | | |
|---|---|
| 1. A ☒ C D | 26. A ☒ |
| 2. A B C ☒ | 27. A ☒ |
| 3. A B C ☒ | 28. A ☒ C D |
| 4. ☒ B C D | 29. A B C D ☒ |
| 5. A B C D ☒ | 30. ☒ B |
| 6. A B ☒ D | 31. A ☒ |
| 7. ☒ B C D E | 32. A ☒ |
| 8. A B C ☒ | 33. A ☒ C D |
| 9. A B C ☒ | 34. A ☒ C D |
| 10. A B ☒ D | 35. A ☒ C |
| 11. A B C ☒ | 36. A ☒ C D E |
| 12. A ☒ C D | 37. ☒ B |
| 13. ☒ B | 38. A B ☒ D |
| 14. ☒ B | 39. A ☒ C D |
| 15. ☒ B C D | 40. A B C D ☒ |
| 16. A B C ☒ E | 41. A B ☒ |
| 17. A ☒ | 42. A B C ☒ |
| 18. A ☒ | 43. A B ☒ D |
| 19. A B C D ☒ | 44. A ☒ |
| 20. A ☒ C D | 45. A B C ☒ E |
| 21. ☒ B | 46. A B ☒ D |
| 22. A B C ☒ E | 47. A B C D ☒ |
| 23. ☒ B | 48. A ☒ |
| 24. A ☒ | 49. A ☒ C D |
| 25. A ☒ C D | 50. A ☒ C |

Name _____

CMTC Force-Protection (Safety) Readiness Quiz (Ground)**Answer Sheet****Instructions**

Answer each question by marking out the correct letter on the answer sheet. Some questions have more than one right answer; for those, select the *one best answer*.

- | | |
|---------------|---------------|
| 1. A B C D | 26. A B |
| 2. A B C D | 27. A B |
| 3. A B C D | 28. A B C D |
| 4. A B C D | 29. A B C D E |
| 5. A B C D E | 30. A B |
| 6. A B C D | 31. A B |
| 7. A B C D E | 32. A B |
| 8. A B C D | 33. A B C D |
| 9. A B C D | 34. A B C D |
| 10. A B C D | 35. A B C |
| 11. A B C D | 36. A B C D E |
| 12. A B C D | 37. A B |
| 13. A B | 38. A B C D |
| 14. A B | 39. A B C D |
| 15. A B C D | 40. A B C D E |
| 16. A B C D E | 41. A B C |
| 17. A B | 42. A B C D |
| 18. A B | 43. A B C D |
| 19. A B C D E | 44. A B |
| 20. A B C D | 45. A B C D E |
| 21. A B | 46. A B C D |
| 22. A B C D E | 47. A B C D E |
| 23. A B | 48. A B |
| 24. A B | 49. A B C D |
| 25. A B C D | 50. A B C |

CMTC Readiness Quiz (Ground)

1. Which statement BEST describes the role of safety in combat operations?

A. Safety interferes with combat and does not belong on the battlefield.

B. Safety is an element of force protection that preserves combat power from accidental loss.

C. Only unit safety officers and senior NCOs are responsible for safety on the battlefield.

D. Leaders can conduct operations safely by relying only on experience and intuition.

2. Human error is responsible for what percent of all accidents?

A. 10 percent

B. 50 percent

C. 62 percent

D. 80 percent

3. Concerning reporting of accidents, which statement is TRUE?

A. Only serious injuries need to be reported to your chain of command.

B. A minor case of heat exhaustion does not need to be reported.

C. Only the safety officer or NCO should be concerned about reporting accidents.

D. All accidents, even minor ones, will be reported to the chain of command.

4. The information necessary to request medevac assistance includes which of the following?

A. Location, call sign, how pickup zone will be marked, number of casualties, and type of injuries.

B. Location, number of casualties, type of injuries, unit commander and medic's names, and terrain features.

C. Location, terrain features, equipment involved, and names of soldiers involved.

D. Location, type of injury, name of soldiers involved, and equipment involved.

5. Which of the following is the BEST answer about the risk-management process?

A. Enforcement of performance to standards is a critical supervisory responsibility.

B. After mission completion, decisions should be evaluated for inclusion in lessons learned.

C. Individual soldiers should know what risk controls are to be used.

D. A and B.

E. A, B, and C.

6. The five steps of the risk-management process are—

1. Make risk decisions

2. Supervise

3. Identify hazards

4. Implement controls

5. Assess hazards

What is the proper sequence of these five steps?

A. 3, 5, 2, 4, 1

B. 4, 2, 3, 5, 1

C. 3, 5, 1, 4, 2

D. 1, 3, 5, 2, 4

7. In the risk-management process, hazard ASSESSMENT means:

A. Identification and evaluation of hazards

B. Making a risk decision

C. Implementation of controls

D. A and B

E. A, B, and C

8. Which is NOT the correct procedure for dealing with a dud?

A. Do not disturb.

B. Mark the area distinctly.

C. Determine grid coordinates.

D. Build a berm around it to protect other personnel.

9. Hoffman devices will not be fired within _____ of people.

A. 10 meters.

B. 20 meters.

C. 25 meters.

D. 50 meters.

10. Small arms blanks will not be fired within _____ of unprotected personnel.

A. 5 meters.

B. 10 meters.

C. 20 meters.

D. 50 meters.

11. The pyrotechnic signal for an actual emergency is—

- A. White star cluster.
- B. White smoke grenade.
- C. Green star cluster or green smoke.
- D. Red smoke.

12. Which of the following is NOT a proper lifting technique?

- A. Never twist or jerk your body while lifting.
- B. When carrying heavy objects, hold them away from your body to prevent injury if you lose your grip.
- C. Bend from the hips and knees, not just the waist.
- D. If in doubt about your ability to lift a load, get help.

13. A frequent cause of injury at CMTC is slips, trips, and falls while traversing terrain.

- A. True
- B. False

14. Using tools improperly (using the wrong tool or using the correct tool but using it improperly) while performing maintenance was a top injury-producer during peacetime and Operations Desert Shield and Desert Storm.

- A. True
- B. False

15. Sleeping less than ____ hours each night for 3 to 6 nights has been found to impair military effectiveness (increased risk of making mistakes).

- A. 4
- B. 6
- C. 8
- D. 10

16. Which sleeping area IS permitted?

- A. Under a vehicle
- B. Inside a running vehicle
- C. An unguarded area
- D. Marked and guarded assembly area
- E. B and D

17. Soldiers can be trained to overcome the effects of sleep loss.

- A. True
- B. False

18. In extremely cold weather, it is okay to sleep in a vehicle with the engine running in order to

keep warm.

- A. True
- B. False

19. Which of the following frequently cause accidents during heater operation?

- A. Wrong type of fuel
- B. Untrained and unlicensed fireguards
- C. Poor PMCS
- D. A and C
- E. A, B, and C

20. What is the authorized fuel for the M1941 potbelly stove at CMTC?

- A. Gasoline and diesel mixture
- B. JP8 only
- C. Gasoline only
- D. Gasoline and kerosene mixture

21. Soldiers must be trained and licensed to operate space heaters.

- A. True
- B. False

22. Which of the following is/are true concerning tent stoves?

- A. The ties for the stovepipe opening will be tied back to avoid contact with the stovepipe.
- B. Space heaters will be turned off and allowed to cool for at least 30 minutes before refueling or relighting.
- C. Combustible and flammable materials will be kept at least 25 feet away from space heaters.
- D. A and B
- E. A, B, and C

23. Five-gallon fuel supply containers will be located at least 5 feet away from the outside wall of the tent.

- A. True
- B. False

24. In cold weather, it is NOT necessary to drink fluids until you feel thirsty.

- A. True
- B. False

25. During periods of very hot or cold weather, a _____ acclimatization period should be established.

- A. 1-day

- B. 4-day
 - C. 7-day
 - D. 10-day
26. The best way to warm cold feet or hands is by placing them directly over a stove or heater.
- A. True
 - B. False
27. During cold weather, it is advisable to drink plenty of coffee because it will keep you awake and provide needed fluids to maintain hydration.
- A. True
 - B. False
28. Which of the following is NOT a good method to use to avoid a cold-weather injury?
- A. Change socks often.
 - B. Tighten boot laces to keep out cold air.
 - C. Keep body and clothes clean.
 - D. Drink plenty of fluids.
29. Which of the following statements are true concerning MOUT operations?
- A. All participants in MOUT operations will wear eye protection.
 - B. No objects will be fired or thrown at opposing vehicles.
 - C. No training hand grenades will be thrown directly at anyone.
 - D. A and C
 - E. A, B, and C
30. At no time should opposing dismounted forces ever get within touching distance of one another or have physical contact.
- A. True
 - B. False
31. When establishing a bivouac site, vehicles may be parked between the tents to allow for camouflage.
- A. True
 - B. False
32. MRE boxes filled with sand are good sources of overhead cover when constructing fighting positions.
- A. True
 - B. False
33. Which statement describes CMTC policy on

vehicle operation?

- A. Unlicensed personnel may operate vehicles in the maneuver box.
- B. All operators must be licensed.
- C. The unit commander can authorize unlicensed personnel to drive on unpaved roads.
- D. Student drivers may operate vehicles at CMTC if accompanied by a licensed driver.

34. Which statement describes CMTC policy on the use of safety belts in vehicles?

- A. Only the driver is required to use safety belts.
- B. Use of safety belts is mandatory when available.
- C. Safety belts are required only on paved roads.
- D. Vehicle occupants don't need to use safety belts during movement to contact if it interferes with operations.

35. What are the maximum speed limits for cross-country operations and tank trails at the CMTC?

- A. 15 mph and 20 mph respectively.
- B. 20 mph and 25 mph respectively.
- C. 30 mph and 35 mph respectively.

36. For speeds below 40 mph, the MINIMUM safe following distance for wheeled vehicles (under ideal road conditions) is _____ for each 10 feet of total vehicle length.

- A. ½ second
- B. 1 second
- C. 2 seconds
- D. 3 seconds
- E. None of the above

37. All soldiers will wear either a CVC or kevlar helmet when in a moving tactical vehicle.

- A. True
- B. False

38. What is the CORRECT procedure for dismounting passengers?

- A. Passengers may dismount without verbal instructions from the driver only if the vehicle has come to a complete stop.
- B. Passengers should wait for the vehicle to come to a complete stop, unhook the safety strap, lower the tailgate, and then dismount.
- C. Driver should stop, unhook the safety strap,

open the tailgate, and tell troops to use available steps when dismounting.

D. Passengers should wait for the vehicle to come to a complete stop, then dismount as quickly as possible.

39. What is the minimum distance between a tracked vehicle and dismounted troops in the rear?

- A. 5 meters (16 feet)
- B. 10 meters (33 feet)
- C. 15 meters (49 feet)
- D. 20 meters (66 feet)

40. Which of the following is/are true?

A. The use of ground guides through assembly areas is mandatory.

B. All vehicles will be ground-guided during periods of reduced visibility if personnel are unsure of their ability to maneuver safely.

C. All tracks will have two ground guides when backing.

- D. B and C
- E. A, B, and C

41. When ground guiding, voice signals are better than hand signals.

A. Yes, if the ground guide and driver agree in advance.

B. No, voice and hand signals are equally effective.

C. No, voice signals can easily be misunderstood.

42. The ball on an antenna tip—

A. Is used to improve antenna efficiency.

B. Is there only to protect the antenna.

C. Should be removed if it catches on vegetation during vehicle movement.

D. Is required to protect soldiers from being hurt by the antenna tip.

43. Which statement does NOT apply to ground-guiding procedures?

A. The driver must stop the vehicle immediately if he loses sight of the ground guide.

B. Front and rear ground guides are required for wheeled and tracked vehicles backing in a dismounted area.

C. A vehicle may be operated in an assembly area

without a ground guide if vehicle speed is less than 5 mph.

D. Except for emergencies when a ground guide is not available, a 5-ton truck always requires two ground guides when backing even with both side-mirrors serviceable.

44. Security of open hatch covers needs to be checked only before the mission.

- A. True
- B. False

45. Which of the following is/are true concerning tracked vehicles?

A. Maintaining three points of contact when moving atop vehicles is key to preventing falls on or from the vehicle.

B. Climbing on tracked vehicles is restricted to mission-essential activities.

C. Vehicle dismount by jumping is permitted within the maneuver box.

- D. A and B
- E. A, B, and C

46. Smoking is prohibited within _____ feet of vehicles carrying explosives or flammable material.

- A. 20
- B. 25
- C. 50
- D. 100

47. What are the rules on transporting ammunition and explosives in the same vehicle?

A. Ammunition and explosives will not be combined with flammable, oxidizing, corrosive, or combustible materials.

B. Primers may be loaded in the same vehicle as the propelling charges with which they are to be used.

- C. Loads will not be more than one pallet high.
- D. A and C
- E. A, B, and C

48. Wild boars should be frightened away by making a loud noise and throwing rocks at them.

- A. True
- B. False

49. In Germany, the sign "Wildtollwut" means—

A. Wild boars are prevalent in the posted area.

- B. Rabies is prevalent in the posted area.
- C. Wild animals are prevalent in the posted area.
- D. None of the above.

50. If you feel your hair stand on end, lightning is about to strike you. How should you respond?

A. Immediately drop down and assume a prone position (lie flat).

B. Immediately drop to your knees and bend forward with your hands resting on your knees.

C. Run and find cover.

SECTION 4L

Combat Maneuver Training Center Force-Protection (Safety) Readiness Quiz (Aviation)

This section contains a risk-management tool developed for aviation leaders to use in preparing for CMTC rotational training. Comparing test results before and after unit refresher training will give leaders valuable feedback on current unit readiness status. As a pre-test, it will flag weak areas that could adversely affect CMTC performance if not corrected. Aviation personnel should be able to correctly answer at least 37 (80%) of the questions. The answer key is below.

Answer Key

- | | |
|--|---|
| <p>1. A B C ☒</p> <p>2. A ☒ C D</p> <p>3. A B ☒ D E</p> <p>4. A B C ☒</p> <p>5. ☒ B</p> <p>6. A B ☒ D</p> <p>7. A ☒ C D</p> <p>8. A B C ☒</p> <p>9. A ☒</p> <p>10. A B C ☒ E</p> <p>11. A ☒ C D</p> <p>12. A B C D ☒</p> <p>13. A B ☒ D</p> <p>14. A B ☒ D</p> <p>15. ☒ B</p> <p>16. A B ☒ D E</p> <p>17. A B C ☒</p> <p>18. A ☒ C D</p> <p>19. A ☒</p> <p>20. A B C D ☒</p> <p>21. ☒ B</p> <p>22. A ☒</p> <p>23. ☒ B</p> | <p>24. A ☒</p> <p>25. A B ☒ D E</p> <p>26. A B C ☒</p> <p>27. A B ☒ D</p> <p>28. A B C ☒</p> <p>29. ☒ B</p> <p>30. ☒ B C D</p> <p>31. A ☒</p> <p>32. A ☒ C D</p> <p>33. ☒ B</p> <p>34. A ☒ C D</p> <p>35. ☒ B</p> <p>36. ☒ B</p> <p>37. A B C D ☒</p> <p>38. A ☒</p> <p>39. A B C ☒</p> <p>40. A B C D ☒</p> <p>41. A B ☒ D</p> <p>42. A B C D ☒</p> <p>43. A B C D ☒</p> <p>44. A B C ☒</p> <p>45. A B C D ☒</p> <p>46. A ☒</p> |
|--|---|

Name: _____

CMTC Force-Protection (Safety) Readiness Quiz (Aviation)**Answer Sheet****Instructions**

Enter your name above. Answer each question by marking out the correct letter on the answer sheet. Some questions have more than one right answer; for those, select the *one best answer*.

- | | |
|---------------|---------------|
| 1. A B C D | 24. A B |
| 2. A B C D | 25. A B C D E |
| 3. A B C D E | 26. A B C D |
| 4. A B C D | 27. A B C D |
| 5. A B | 28. A B C D |
| 6. A B C D | 29. A B |
| 7. A B C D | 30. A B C D |
| 8. A B C D | 31. A B |
| 9. A B | 32. A B C D |
| 10. A B C D E | 33. A B |
| 11. A B C D | 34. A B C D |
| 12. A B C D E | 35. A B |
| 13. A B B D | 36. A B |
| 14. A B C D | 37. A B C D E |
| 15. A B | 38. A B |
| 16. A B C D E | 39. A B C D |
| 17. A B C D | 40. A B C D E |
| 18. A B C D | 41. A B C D |
| 19. A B | 42. A B C D E |
| 20. A B C D E | 43. A B C D E |
| 21. A B | 44. A B C D |
| 22. A B | 45. A B C D E |
| 23. A B | 46. A B |

CMTC Readiness Quiz (Aviation)

1. According to historical records, about what percentage of wartime aviation losses are a result of accidents?

- A. 10 percent
- B. 25 percent
- C. 50 percent
- D. 60 percent

2. Which statement best describes the role of safety in combat operations?

- A. Safety interferes with combat and does not belong on the battlefield.
- B. Safety is a facet of force protection that protects combat power from unnecessary losses.
- C. Safety on the battlefield is the primary responsibility of the unit safety officer.
- D. Leaders can conduct operations safely if they rely on experience and intuition.

3. Which of the following readiness deficiencies is responsible for the greatest percentage of human-error aviation accidents?

- A. Training (not trained to standard)
- B. Leadership (standards not enforced)
- C. Individual (inadequate self-discipline)
- D. Standards (inadequate standards/procedures)
- E. Support (substandard support)

4. About what percentage of helicopter accidents are caused by human error?

- A. 10%
- B. 30%
- C. 50%
- D. 80%

5. WD-1 (commo wire) is a potential landing zone hazard at CMTC.

- A. True
- B. False

6. What is the number-one problem related to IMC?

- A. Vertigo
- B. Task saturation
- C. Failure to commit to instruments in a timely manner
- D. None of the above

7. According to TC 1-204, what is the most effective reference to verify altitude over flat terrain with few visual cues?

- A. Visually scan horizon
- B. Cross-check radar altimeter (when equipped)
- C. Use shadow of aircraft
- D. Monitor outside air temperature

8. While flying in MOPP gear, aircrews should—

- A. Keep doors, windows, and vents open to increase ventilation.
- B. If tactical situation permits, fly at higher altitudes where it's cooler.
- C. Increase scan frequency because of field-of-view restrictions of M24/M43.
- D. All of the above.

9. Although a large amount of smoke is used during CMTC exercises, it quickly dissipates and does not present a hazard to aircraft.

- A. True
- B. False

10. If, while performing NVG terrain flight, you encounter unforecast ground fog and lose your ground references, it's best to—

- A. Decrease your altitude and try to regain ground reference.
- B. Maintain altitude and fly through the fog.
- C. Climb to altitude while looking for outside references.
- D. Immediately transition to instrument flight and initiate a climb.
- E. C or D

11. You are required to re-compute performance planning when a significant increase of _____ occurs. (Answer for your primary aircraft.)

UH-60, AH-64, CH-47

- A. 5°C., 1000 feet PA, or 500 pounds gross weight
- B. 5°C., 1000 feet PA, or 1000 pounds gross weight
- C. 10°C., 1000 feet PA, or 1000 pounds gross weight
- D. 10°C., 1000 feet PA, or 500 pounds gross weight

OH-58A/C/D

A. 10°C., 500 feet PA, or 100 pounds gross weight

B. 5°C., 500 feet PA, or 200 pounds gross weight

C. 5°C., 1000 feet PA, or 200 pounds gross weight

D. 10°C., 1000 feet PA, or 100 pounds gross weight

UH-1/AH-1

A. 10°C., 1000 feet PA, or 200 pounds (UH-1)/250 pounds (AH-1) gross weight

B. 5°C., 500 feet PA, or 200 pounds (UH-1)/250 pounds (AH-1) gross weight

C. 5°C., 1000 feet PA, or 200 pounds (UH-1)/250 pounds (AH-1) gross weight

D. 5°C., 500 feet PA, or 300 pounds (UH-1)/350 pounds (AH-1) gross weight

12. According to TC 1-204, appendix E, ATM airspeed recommendations can be affected by—

A. Terrain type and terrain flight profile.

B. Moon illumination and elevation above the horizon.

C. Visual obscuration.

D. Aircraft type.

E. All of the above.

TC 1-210 and ATMs define recommended airspeed limitations for terrain flight NVG operations. Based on their guidance, answer questions 13 through 15.

13. When operating with skids or wheels above terrain or vegetation up to 25 feet AHO, max airspeed is—

A. 20 KIAS

B. 30 KIAS

C. 40 KIAS

D. 50 KIAS

14. When operating with skids or wheels between 25 and 80 feet AHO, max airspeed is—

A. 40 KIAS

B. 60 KIAS

C. 70 KIAS

D. 80 KIAS

15. When operating with skids or wheels above 80 feet AHO, max airspeed is whatever airspeed operational requirements dictate and aircraft

limitations allow (TC 1-210).

A. True

B. False

16. There are five steps in the risk-management process. Select their proper order.

A. a, b, d, c, e a. Make risk decision

B. e, b, c, d, a b. Supervise

C. d, c, a, e, b c. Assess hazards

D. d, c, a, b, e d. Identify hazards

E. d, c, e, a, b e. Implement controls

17. What is a hazard?

A. Any condition with the potential of causing property loss or damage.

B. Any condition with the potential of causing personal injury or of lessening the ability to accomplish a task or mission.

C. Any condition with the potential of causing personal injury or property damage.

D. Any condition with the potential of causing personal injury, property damage or loss, or lessening the ability to accomplish a task or mission.

18. Risk assessment identifies a unit mission as high risk. You should—

A. Get the battalion commander's approval.

B. Develop and implement controls to reduce the risk to a lower level.

C. Reschedule the mission.

D. Execute the mission as planned.

19. When you are assigned a low-risk mission, there is no need to consider ways to reduce any identified hazards.

A. True

B. False

20. You have been assigned a high-risk mission. Which of the following controls could reduce the risk?

A. Improve the crew mix.

B. Postpone the mission until weather is better, if possible.

C. Perform a day recon.

D. Conduct a detailed mission rehearsal.

E. All of the above.

21. It is the responsibility of every crewmember, including aerial observer, crew chief, and flight engineers, to immediately advise pilot on controls

of any potentially unsafe condition.

- A. True
- B. False

22. The pilot not on the flight controls is responsible only for what the pilot on controls directs.

- A. True
- B. False

23. Crew coordination is the interaction between crewmembers (communication) and actions (sequence or timing) necessary for a task to be performed efficiently, effectively, and safely.

- A. True
- B. False

24. Battle-rostering crews eliminates the need for positive communication between crewmembers because they are familiar with each other's skills and habits.

- A. True
- B. False

25. Which of the following is NOT a crew-coordination action (as defined in the Aircrew Training Manual)?

- A. Announce actions
- B. Direct assistance
- C. Be assertive
- D. Communicate positively
- E. Assign crew responsibilities

26. Crew coordination actions apply to all modes of flight during which of the following operations?

- A. Day.
- B. Day and night unaided.
- C. Night vision goggle or night vision system.
- D. All of the above.

27. Positive communication is essential to achieving crew coordination. Communication is positive when—

- A. The sender directs, and the receiver acknowledges.
- B. The sender announces, and the receiver acknowledges.
- C. The sender requests, the receiver acknowledges, and the sender confirms based on receiver's action.
- D. Any of the above.

28. Crewmembers must use clear terms that do not have multiple meanings. An example of a clearly stated phrase is—

- A. "I have it."
- B. "Do you see that tree?"
- C. "You are a little fast."
- D. "You have the flight controls."

29. When using night vision devices, it is imperative that crewmembers consider obstacle advisories a primary task. Crewmembers should precede aircraft control and obstacle advisories with a positive command that immediately conveys the required action to the pilot on the flight controls; e.g., "Turn right, tree at 12 o'clock."

- A. True
- B. False

30. Crew coordination includes involvement of the entire crew in mission planning and—

- A. Rehearsal of critical mission events, contingencies, and participation in the debriefing.
- B. Discussion of mission contingencies.
- C. Discussion of in-cockpit events only.
- D. Everything except the debriefing.

31. Words and phrases used in the cockpit must be standardized and kept to a minimum. To achieve this objective, only the words and phrases listed in each aircraft ATM may be used.

- A. True
- B. False

32. The number-one problem area in night, crew-error helicopter accidents is—

- A. Brownout.
- B. Improper scanning
- C. VHIRP.
- D. Fatigue.

33. The pilot on the flight controls should not fixate or channelize his attention on anything inside or outside the aircraft for more than about 3 seconds.

- A. True
- B. False

34. What is the most prevalent type of improper scanning during night operations?

- A. Missed cues at the mid range.
- B. Visual fixation.

- C. No overlap of scanning by crewmembers.
- D. Flicker vertigo.

35. During NVG terrain flight over low-contrast areas, pilots have a tendency to inadvertently descend in an attempt to acquire visual cues.

- A. True
- B. False

36. Most main- and tail-rotor blade strikes at CMTC are caused by rushed evasive maneuvers at low altitudes after MILES-weapons engagement.

- A. True
- B. False

37. One of the most common problems when engaging targets during diving fire is target fixation, which can lead to low pullouts and aircraft accidents. Which of the following techniques can help prevent target fixation?

- A. Plan dive recovery in time to avoid abrupt recovery maneuvers.
- B. Understand rate of descent versus airspeed, rate of closure, and power.
- C. Closely monitor rate of descent and terrain features.
- D. Have the pilot verify appropriate actions of the pilot on controls and provide adequate warning for avoiding obstacles in the flight path.
- E. All of the above.

38. False horizons are not a problem when flying NVGs because the goggles can see through visual obscuration.

- A. True
- B. False

39. About what percentage of helicopter night, crew-error accidents are aided (NVGs)?

- A. <10 percent
- B. 25 percent
- C. 50 percent
- D. >70 percent

40. During night (aided/unaided) operations, the pilot on the controls should—

- A. Primarily scan outside the aircraft and ensure that the pilot not on the controls provides status information on systems, altitude, and airspeed.
- B. Verbally acknowledge obstacles when visual contact is made.

C. Acknowledge and enlarge scanning when pilot not on the controls announces ping outside scan.

- D. Not fixate.
- E. All of the above.

41. During night or NVG multi-ship operations, with the exception of operations at terminal or tactical landing areas, what is the minimum required aircraft separation?

- A. 1 rotor disk
- B. 2 rotor disks
- C. 3 rotor disks
- D. 4 rotor disks

42. During NVG operations, which of the following procedures apply?

- A. Operate with the crawl/walk/run philosophy, especially in an unfamiliar environment.
- B. Conduct detailed planning and mission briefings regardless of pilot experience, and establish and specify all crewmember duties.
- C. Identify crew coordination requirements, especially during critical phases of the mission.
- D. Continuous scanning is a must, and the pilot on the controls must stay outside. All other crewmembers must assist in obstacle avoidance. Pilot not on the controls cross-checks altitude agl and so forth.
- E. All of the above.

43. To minimize the likelihood of wire strike during NVG operations, the crew should—

- A. Perform a day recon.
- B. Update their hazards map.
- C. Brief crew coordination on searching for wires.
- D. Use standard terms for directions and distances to identify where wire is in relation to aircraft flight path.
- E. All of the above.

44. What minimums are required in order NOT to have to have infrared band-pass filter (pink light) onboard and operational during NVG use?

- A. 10% moon illumination and 10° above the horizon.
- B. 23% moon illumination and 30° above the horizon.

C. 30% moon illumination and 23° above the horizon.

D. Operational filter is required regardless of moon illumination and angle above the horizon.

45. To minimize brownout effects, aircrews should—

A. Hover aircraft IGE to determine dust conditions.

B. Perform running or maximum-performance takeoffs.

C. Close windows and doors during landings and takeoffs.

D. All of the above.

E. B and C

46. Use of an IR searchlight with a dispersed beam while using NVGs will minimize brownout conditions.

A. True

B. False