GROUND RISKS

1. Primary Accident Types and Hazards.

a. Privately Owned Vehicle (POV) Accidents. The most common reasons for POV accidents are as follows:

(1) Speed. Driving too fast for road conditions or losing control of the vehicle while passing or exiting the roadway.

(2) Fatigue. Falling asleep while driving or losing control due to drowsiness.

(3) Alcohol. Drinking and driving.

b. Military Vehicles. The most common reasons for military-vehicle accidents are as follows:

(1) Speed. Driving too fast for road conditions or losing control of the vehicle while passing or exiting the roadway.

(2) Fatigue. Falling asleep while driving or losing control due to drowsiness. Failing to follow a sleep plan or not modifying the sleep plan when the schedule changes.

(3) Failure to Recognize Hazards. Failing to recognize and adjust driving for curves, sinkholes, soft shoulders and steep hills.

(4) Convoy Accidents. Speeding to "catch up," taking risks to maintain convoy integrity, poor communication and making U-turns.

(5) Backing Accidents. Failing to use or obey ground guides.

(6) Mission Planning. Failing to properly plan for the mission, including crew selection, reconnaissance, preparation and hazard identification.

c. Personnel Injuries. The most common reasons for personnel injuries are as follows:

(1) Sports Injuries. Lack of physical conditioning and acclimation, poor facilities and lack of supervisory control.

(2) Slips, Trips and Falls. Failing to follow the "three points of contact" rule for maintaining balance. Falling from heights after drinking.

(3) Recreation Accidents. Lack of physical conditioning and acclimation, lack of training and alcohol use.

(4) Finger Injuries. Catching rings on objects and crushing fingers during operations.

(5) Hot-Weather Injuries.

(6) Electric Shock. Contact with overhead electrical lines at rail-loading locations and rail stops. Contact with electrical lines during recovery operations. Antenna contact with overhead electrical lines on roads and rail crossings.

d. Fire and Explosives. The most common causes of injuries from fire and explosives are as follows:

(1) Heaters and Stoves. Using the wrong fuel, failing to cool the heater or stove before refueling and using unauthorized heaters.

(2) Accidental Discharges. Lack of training on proper weapon handling procedures and muzzle awareness.

(3) Explosives. Improper handling of ammunition.

2. Primary Causes. The primary causes of accidents are as follows:

a. Individual Failure (Human Error). Omitting, overseeing or disregarding established standards and procedures (for example, failing to observe speed limits and failing to follow proper equipment-operation procedures).

b. Leader Failure (Human Error). Failing to enforce standards, lack of supervision or poor application of the risk-management process in identifying hazards and implementing controls (for example, inadequate mission planning, failing to correct nonstandard behavior, poor crew selection).

c. Training Failure (Human Error). Inadequate training when preparing for mission execution (for example, failing to train and certify crews for rail-loading operations and giving improper instructions for convoy operations).

3. Safety Issues.

a. Vehicle Operation. Strict compliance with the speed limits in vehicle technical manuals (TMs) with modifications for road and traffic conditions. Use of ground guides when backing or operating in close quarters.

b. Hot Weather. Preparing personnel and equipment for operation in hot weather. Hot-weather injury prevention training. Acclimation of personnel for changes in weather conditions.

c. Deployment Operations. Training and certification of personnel for convoy and rail-loading operations. Properly marking vehicles.

d. Redeployment Operations. Training and certification of personnel for convoy and rail loading operations. Properly marking vehicles. Refreshing Soldiers on POV operations and the hazards of alcohol consumption.

e. Standing Operating Procedures (SOPs), TM-XXXX-10 Operating Manuals, Checklists. Task, condition, standard, and procedural compliance and enforcement by first-line leaders.

4. Operational Hazards.

a. Environment (Heat, Sand, Sun, and Wind). Operating in harsh environments increases the risk of injuries and accidents. This is made worse by lack of preparation, poor planning and poor decision-making. Preparation and realistic training are the keys to mission success in harsh environments.

(1) Precipitation. Precipitation can hinder vehicle traction and make it harder to control the vehicle, which makes movement hazardous. Speed control is the primary control factor.

(2) Wind. Wind can hinder vehicle stability and make it harder to control the vehicle, which makes movement hazardous. Speed control is the primary control factor.

(3) Visibility. Dust, fog and rain all restrict visibility. This affects the vehicle operator's ability to maintain situational awareness and visual reference. Speed control and communication are the primary control factors.

(4) Heat. Personnel must be properly equipped for operation in hot environments. Work activities and water intake must be regulated to prevent heat injuries. First-line leaders and coworkers must be vigilant to prevent heat injuries. Clothing must be available and layering used to provide maximum protection. Enforcement by first-line leaders and coworkers through periodic checks are mandatory to prevent hot-weather injuries. Overhead cover or shade should be provided to reduce exposure to the sun. Proper hydration is essential.

b. Deployment and Redeployment Operations.

(1) Rail Operations. Railhead loading and unloading operations, supercargo and guard details require special attention. Respect for power lines, heavy-equipment movement and trains is essential.

(2) Convoy Operations. Drivers must be properly equipped and trained for convoy operation. Communication and control is essential. A deliberate and enforced rest and sleep plan must be developed. Drivers must be properly equipped and trained for night-vision operations.

(3) Port Operations. Soldiers must be properly trained and licensed to operate equipment. Congestion, large-vehicle movement and overhead hazards all require enhanced situational awareness and first-line leader control.

c. Weapon Discharges. Unintended weapon discharges are a frequent and very dangerous reality. Leaders must ensure that Soldiers are properly trained and that muzzle awareness is stressed at all times.

d. Fire. The use of stoves, heaters and lanterns significantly increases the risk of fire. Using these devices in tents and close quarters multiplies that risk. Proper training and licensing for equipment operation is essential. Fire-prevention planning and preparation are critical. Vehicle fires are a result of poor maintenance. Crews must practice evacuation procedures.

e. Reintegration. When preparing Soldiers for their return from deployment, reemphasize proper POV operation, the dangers of excess alcohol consumption and driving under the influence, the importance of acclimation and the resumption of organized physical training.

5. Challenges and Prevention Focus.

a. General.

(1) Applied safety and occupational health measures and risk-management practices are combat multipliers. Commanders and first-line leaders will incorporate the five-step risk-management process in all operations and tasks. General standards for convoy operations, rail operations, port operations, ammunition and explosives safety, occupational safety and health, and hazardous material (HAZMAT) will be followed.

(2) Commanders will use their unit safety officers and noncommissioned officers (NCOs) to help unit leaders ensure that safety and risk management practices are followed in all operations and tasks. This includes the use of assigned civilian safety and occupational health professionals.

(3) Unit safety officers and NCOs will attend the Safety Officer/NCO Course within 90 days after their appointment and will deploy with their organizations to provide organic safety support. Civilian safety and occupational health professionals will deploy with their designated organizations to provide safety support.

(4) Units will establish emergency-recovery procedures that consider factors such as the terrain, the treat, mission-briefing requirements, communication procedures and recovery.

(5) Units will conduct operational and safety surveys to identify hazards specific to their areas of operation. Operations will establish a hazard map and update it continuously.

(6) Units will establish a pre-accident plan that provides guidance, information and procedures to follow in case of an accident. Pre-accident plans will be specific to the region and include information on emergency-support services, POC telephone numbers, telephone lists, notification requirement, witness identification, accident-response coordination, records and logs, medical requirements and support and site security.

b. Safe Vehicle Operation.

(1) Safe vehicle operations must be an integral part of mission execution. Safe vehicle operation involves ensuring that drivers are properly qualified and licensed, the use of noncommissioned officers in charge and the identification of hazards associated with road conditions and environments that may be dangerous. Vehicles will be placarded properly to ensure greater visibility.

(2) Speed limits will be established to ensure safe vehicle and convoy operations.

c. Personal Protective Equipment. Serviceable and properly fitted personal protective equipment (PPE) must be provided and used by all personnel, as required. PPE includes eye, hand, feet, head and hearing protection. Helmets and other body armor are also considered PPE.

d. Separation-Distance Requirements. To meet separation-distance requirements and protect personnel from hazardous operations, life-support areas that house personnel will be constructed as far as possible from fuel- and munitions-storage areas and other areas where hazardous operations are conducted.

e. Electrical Safety.

(1) Electrical work performed on tactical vans, ramps and buildings that house staff will be to standard. Soldiers working as electricians will be properly trained and certified to perform this type of work. Work on electrical boxes will be done with the power shut off and locked out. If work must be done on an electrical box when it is "hot," a risk assessment must be conducted and approval to do the work must be obtained from an officer in the grade of colonel.

(2) "Lockout and tagout" procedures, confined-space entry procedures and electrical distribution systems that differ form standard practices must be evaluated in all stages of operations to ensure hazards are minimized.

f. Fire Prevention.

(1) Fire wardens and fire-protection personnel must conduct appropriate fire-safety training and briefings that explain the actions to be taken in case of a fire. In addition, routine monitoring must be conducted during deployments to detect and correct adverse trends to prevent fires. All personnel must be trained on how to report a fire and use a fire extinguisher.

(2) The construction of life-support areas must include firelanes separating every three rows of tents and must meet life safety code requirements. One 10-pound carbon dioxide (CO2) and one pressurized water fire extinguisher are the minimum standard for a general purpose (GP) medium tent. In addition, a 10-pound CO2 fire extinguisher will be placed every 75 feet in fixed facilities. Personnel capacities will be determined and posted for all facilities. Carbon monoxide (CO) detectors and smoke detectors will be considered for use in life-support areas.

g. Heaters.

(1) Unvented heaters are not authorized. This prohibition applies in guardshacks; tents; life-support areas; morale, welfare and recreation facilities; military-owned demountable containers (MILVANs); and other locations that require heaters.

(2) Vented heaters include forced-air heaters that have fuel, ignition and heat sources located outside of tents and structures.

(3) Commercial off-the-shelf (COTS) and electric heaters may be authorized if they are approved by a reputable national standards organization (for example, Underwriters Laboratories (UL), American National Standards Institute (ANSI), International Organization for Standardization (ISO)) label indicating that the heater is approved for use. If electric heaters are used outdoors or in a damp environment, a ground fault interrupter must be installed between the heater and the power source.

(4) TM 10-4500-200-13 provides operating instructions and preventive-maintenance checklists for using M1941 type I and II and M1950 solid- or liquid-fuel space heaters. Heater model H-45 type I and type II operation and maintenance instructions are in TM 9-4520-257-12&P. Personnel will consult TM 9-4520-257012&P or TM 10-4500-200-13 when installing space heaters.

h. Carbon Monoxide.

(1) CO is a clear, odorless gas that forms during incomplete combustion. In the body, it takes oxygen out of the blood. Unvented heaters and leaking vented heaters can release dangerous quantities of CO. If the heater is in an enclosed space, a concentration can build up. Examples of enclosed spaces include closed vehicles, closed garages and closed tents. First aid for CO poisoning is to get the victim away for the CO and out into fresh air where the CO concentration in the body can lower itself.

(2) Asphyxiation is a condition caused by a lack of oxygen in the air being breathed. A vented heater in perfect running order can cause this condition if a tent (such as the squad tent) or room is tightly closed. Fire requires oxygen to burn, and can burn using less oxygen than a human needs to survive. Therefore, a tent or room with a vented heater also must be ventilated to avoid this condition ("make up air"). Victims of CO poisoning must be moved to an area in which fresh air is present.

i. HAZMAT Transport. Operators of vehicles transporting dangerous goods must be trained and certified.

j. Sleep Plans. Develop a directed sleep plan to ensure fatigue does not hinder mission accomplishment. Fatigue is a factor in the cause of many accidents. After 48 to 72 hours without sleep, a person becomes ineffective. Factors that can affect fatigue include diet, hygiene, physical condition, stress and lack of water consumption.

k. Weather-Related Injuries. Weather-related injuries (including heat cramps, heat exhaustion, heat stroke and dehydration) are considered preventable and reportable mishaps.

Soldiers will be trained on hot-weather injury prevention before the potential for hot-weather injuries occurs. Leaders will ensure that adequate measures are taken to prevent weather related injuries. Rest, diet, fluid intake and proper clothing help prevent weather related injuries. Operating while wearing mission-oriented protective posture (MOPP) gear increases the hazards of weather related injuries. When conducting operations in MOPP gear, increase the wet bulb globe temperature (WBGT) by 10 degrees F and increase water consumption. Delegate and distribute tasks to reduce fatigue.

l. Sports Safety. Procedures must be established to identify hazards related to sports and recreation facilities and activities. Monitor these hazards and show personnel how to protect themselves against potential injury (for example, by using PPE).

m. Deployment Operations. Deployment operations pose a significant risk. Proactive risk-management and compliance with established standards listed in the references for convoy operations, rail-loading and transport, and port operations are critical to mission success. Specific areas of concern are operations in close proximity to overhead electrical lines at railheads, the transport of fuels, and fueling operations.