

Troop-Leading Procedures		Risk Management				
Troop-leading steps	Task / Subtask	Identify hazards	Assess hazards	Dvlp ctrls/make decision	Implement controls	Supervise & evaluate
1	<b>Receive mission</b>	X				
	- Perform initial METT-T analysis	X				
2	<b>Issue the warning order</b>	X				
3	<b>Make a tentative plan</b>	X	X			
3A	Make estimate of the situation	X	X			
3B	Detailed mission analysis	X	X			
3C	Develop situation & courses of action for	X	X			
3C1	- Enemy situation (enemy COAs)	X	X			
3C2	- Terrain & weather (OCOKA)	X	X			
3C3	- Friendly situation(troops & time avail)	X	X			
3C4	- Courses of action (friendly)	X	X			
3D	Analyze courses of action - wargame	X	X			
3E	Compare courses of action			X		
3F	Make decision			X		
3G	Expand selected COA into tentative plan			X		
4	<b>Initiate movement</b>				X	
5	<b>Reconnoiter</b>				X	
6	<b>Complete the plan</b>				X	
7	<b>Issue the order</b>				X	
8	<b>Supervise &amp; refine the plan</b>					X

# FORCE XXI

## OPERATIONAL FRAMEWORK

### Small Unit Risk Management Booklet

“Historically, more casualties occur in combat due to accidents than from enemy action.”

FM 25-101, September 1990

“Safety is a component of protection.”

FM 100-5, June 1993

**Protect the force: an objective of FORCE XXI.**

FORCE XXI - America's Army for the Future, January 1995

“Risk Management is the Army's principal risk-reduction process to protect the force. Our goal is to make risk management a routine part of planning and executing operational missions.”

Chief of Staff, Army, July 1995



## Framework for Identifying Hazards 3

# METT - T

### Mission:

Specified, implied and subtasks.

### Enemy:

Size and capability (SALUTE).

### Terrain/weather:

Environmental conditions.

### Troops and Equipment:

Troops - Training, type, number, and physical condition.

Equipment - Amount, type, design, and condition.

### Time available:

Plan, rehearse, and execute.

## Worksheet Instructions

**12**

- Block 1-4. Self-explanatory.
5. ID hazards - ID hazards by reviewing METT-T facts for this mission/task. Sources of METT-T facts & historical hazards include: mission/task instructions, recon, experience of leaders & troops, unit safety SOP, unit accident history & this booklet. Objective is to ID hazards most likely to result in injury or property damage. That is, hazards not adequately controlled (see page 13). Enter hazards in Block 5.
  6. Assess Hazards - Determine risk of each hazard not adequately controlled by applying the individual hazard risk assessment matrix on page 14. In Block 6 enter the risk level for each hazard (i.e., L - Low, M - Moderate, H - High, or E - Extremely high).
  7. Develop controls - Develop one or more controls for each hazard to reduce its risk. Controls should address the reason(s) the hazard needs to be risk managed (see page 13). Enter controls in Block 7.
  8. Determine residual risk - For each hazard, determine the level of risk remaining assuming controls are implemented (use the individual hazard risk assessment matrix on page 14). Enter the residual risk for each hazard in Block 8.
  9. Determine mission/task risk - Use procedures in unit SOP. If SOP does not specify procedures to determine overall mission/task risk, use the hazard with the highest residual risk. Circle risk level in Block 9 at bottom of worksheet.
  10. Make risk decision - Decide to accept or not accept the level of residual risk for this mission/task. Use unit SOP to determine who is authorized to accept the level of risk. If the SOP does not include this guidance, elevate risk decision only if cannot meet next higher commander's risk guidance. Enter in Block 10 (bottom of worksheet) the appropriate risk decision authority for the risk level circled in Block 9.
  11. Implement controls - Decide how each control will be put into effect / communicated to the personnel who will make it happen (e.g., written/verbal instructions, tactical/safety/garrison SOPs, rehearsals). Enter in Block 11.
  12. Supervise - Show how each control will be monitored to ensure proper implementation (e.g., continuous supervision, spot checks). Enter in Block 12.
  13. Evaluate - After mission/task is complete, determine effectiveness of each control in reducing the risk of the targeted hazard. In Block 13 enter "yes" if effective, "no" if not effective. For those not effective, determine why and what to do the next time this hazard is identified. For example, change the control, develop a different control, or change how the control will be implemented/supervised.

# Risk Management Process

1

Risk Management is the process of identifying and controlling hazards to protect the force. It is applicable to any mission and environment. The five (5) steps are:

- IDENTIFY HAZARDS** - Identify hazards to the force. Consider all aspects of current and future situations, environment, and known historical problem areas.
- ASSESS HAZARDS** - Assess hazards to determine risks. Assess the impact of each hazard in terms of potential loss and cost based on probability and severity.
- DEVELOP CONTROLS & MAKE RISK DECISION** - Develop control measures that eliminate the hazard or reduce its risk. As control measures are developed, risks are re-evaluated until all risks are reduced to a level where benefits outweigh potential cost.
- IMPLEMENT CONTROLS** - Put controls in place that eliminate the hazards or reduce their risks.
- SUPERVISE AND EVALUATE** - Enforce standards and controls. Evaluate the effectiveness of controls and adjust / update as necessary.

# Risk Assessment Matrix for Individual Hazard

14

SEVERITY	PROBABILITY				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Risk Level: E-Extremely High, H-High, M-Moderate, L-Low

**PROBABILITY** - The likelihood that an event will occur.

**FREQUENT** - Occurs often, continuously experienced.

**LIKELY** - Occurs several times.

**OCCASIONAL** - Occurs sporadically.

**SELDOM** - Unlikely, but could occur at some time.

**UNLIKELY** - Can assume it will not occur.

**SEVERITY** - The expected consequence of an event in terms of degree of injury, property damage, or other mission-impairing factors.

**CATASTROPHIC** - Death or permanent total disability, system loss, major property damage, not able to accomplish mission.

**CRITICAL** - Permanent partial disability, temporary total disability in excess of 3 months, major system damage, significant property damage, significantly degrades mission capability.

**MARGINAL** - Minor injury, lost workday accident, minor system damage, minor property damage, some degradation of mission capability.

**NEGLIGIBLE** - First aid or minor medical treatment, minor system impairment, little/no impact on accomplishment of mission.

# Need to Risk Manage a METT-T Hazard

13

Hazards not adequately controlled are likely to cause loss of combat power. Answer the following questions about each hazard to determine if it is adequately controlled. If not, hazard needs to be risk managed.

		Adequate?	
		Yes	No
Support	<ul style="list-style-type: none"> <li>Is type / amount / capability / condition of support adequate to control hazard?                             <ul style="list-style-type: none"> <li>- Personnel</li> <li>- Supplies</li> <li>- Equipment / Materiel</li> <li>- Services / Facilities</li> </ul> </li> </ul>		
Standards	<ul style="list-style-type: none"> <li>Is guidance / procedure adequately clear / practical / specific to control hazard?</li> </ul>		
Training	<ul style="list-style-type: none"> <li>Is training adequately thorough and recent to control hazard?</li> </ul>		
Leader	<ul style="list-style-type: none"> <li>Are leaders ready, willing, and able to enforce standards required to control hazard?</li> </ul>		
Individual	<ul style="list-style-type: none"> <li>Is soldier performance and conduct sufficiently self-disciplined to control hazard?</li> </ul>		

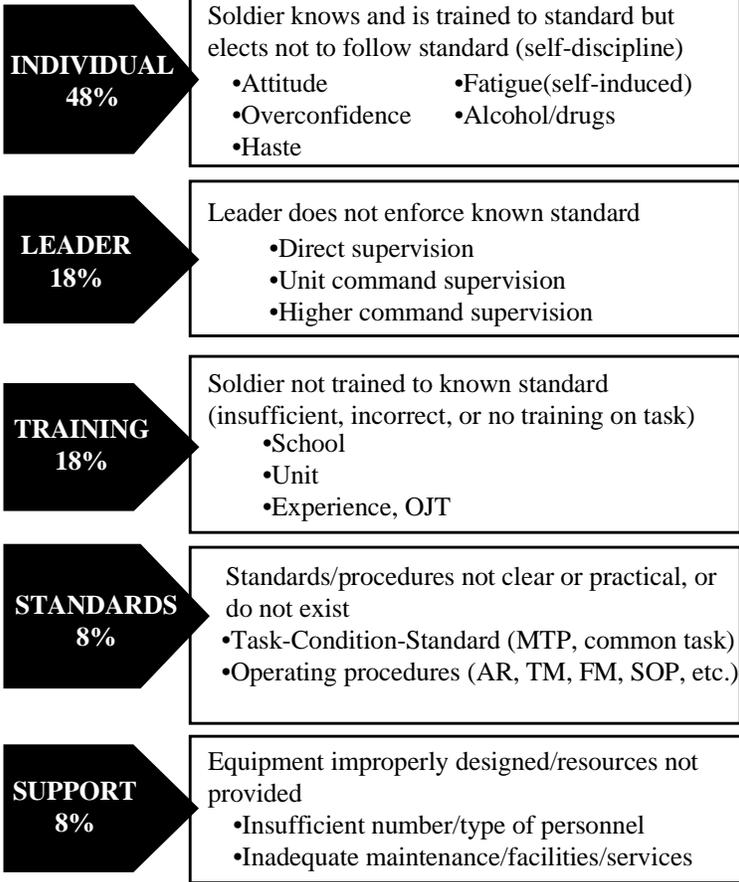
If all "yes", no further action required (subject to commander's risk guidance). If one or more "no", risk manage this hazard

# Risk Management Definition of Terms

2

<b>Hazard</b>	Any real or potential condition that can cause injury, illness, or death of personnel or damage to or loss of equipment, property, or mission degradation.
<b>Risk</b>	Chance of hazard or bad consequences; exposure to chance of injury or loss. Risk level is expressed in terms of hazard probability and severity.
<b>Exposure</b>	The frequency and length of time subjected to a hazard.
<b>Probability</b>	The likelihood that an event will occur.
<b>Severity</b>	The expected consequence of an event in terms of degree of injury, property damage, or other mission-impairing factors (loss of combat power, adverse publicity, etc.) that could occur.
<b>Controls</b>	Actions taken to eliminate hazards or reduce their risks.
<b>Risk Assessment</b>	The identification and assessment of hazards (first 2 steps of risk-management process).
<b>Residual Risk</b>	The level of risk remaining after controls have been identified and selected for hazards that may result in loss of combat power. Controls are identified and selected until residual risk is at an acceptable level or until it cannot be practically reduced further.
<b>Risk Decision</b>	The decision to accept or not accept the risk(s) associated with an action; made by the commander, leader, or individual responsible for performing that action.

## Sources of Cause Factors 5



10

Are you/your soldiers ready to perform duties?	Y	N
<b>TRAINING (continued):</b>		
Avoidance of poisonous plants _____		
Avoidance of wild animals, snakes, insects, etc. _____		
Accident/unsafe-act reporting/correction procedures _____		
Hot/cold-weather injury prevention _____		
Actions during adverse weather (lightning, etc.) _____		
Terrain walk (time permitting) _____		
<b>EXPERIENCE:</b>		
<b>Newly assigned personnel</b>		
– Current .....		
– Proficient .....		
<b>PHYSICAL/DECISION-MAKING ABILITY:</b>		
Well rested and alert _____		
(Example: in last 24 hours, less than 15 hours continuous duty and more than 5 hours sleep)		
<b>EQUIPMENT (PERSONAL PROTECTIVE &amp; OPERATIONAL):</b>		
<b>Personal protective equipment</b>		
– Seatbelts (when available).....		
– Goggles & scarf (dust, mud, snow, rain, etc.).....		
– Kevlar/CVC helmet .....		
– Hearing protection .....		
<b>Night vision devices</b> _____		
<b>Tailgate/ramp safety (safety strap if applicable)</b> _____		
<b>Canvas/bows</b> _____		
<b>Insect repellent &amp; stinger kits</b> _____		
<b>CLOTHING:</b>		
<b>Appropriate gear (seasonal)</b>		
– Inventory (accountability).....		
<b>NBC protective gear</b> _____		

## Controls for Most-Likely Hazards 7

### Vehicle fire

- Brief/rehearse fire procedures IAW appropriate operators manuals

### Vehicle rollover

- TC/senior occupant brief rollover procedures; ensure rollover drills conducted

### Improper turning

- Yield the right of way
- Avoid oversteering
- Perform U-turns only in authorized areas/locations

### Improper passing

- Pass other vehicles only at safe places & times considering road, visibility, & traffic conditions
- Know the clearance space needed for both vehicle & trailer

### Unsecure hatch/ramps

- Inspect and repair unsafe condition
- Secure with locking pin or latch devices during operation

### Crew/passengers exposed during operation on rough terrain (tracked vehicles)

- Position no higher than “nametag defilade”
- Equipment/cargo stowed and secured IAW load plan
- Wear seatbelts when seated

### Improper crew coordination (tracked vehicles)

- Positive communication (confirm that crewmembers received & understood your communication or signal)
- Announce decision/action
- Perform all actions in the proper sequence & at the right time
- Provide & request assistance when needed

## Controls for Most-Likely Hazards 8

### Seating/placement of passengers (wheeled vehicles)

- Spot check vehicles to ensure -
  - No passengers placed in the trailer/cargo area of vehicles carrying ammo, explosives, or hazardous material or in last vehicle of convoy.
  - Only one driver & passenger in the cab of vehicles with manual transmission.
  - Seating provides three points of contact on fixed surface inside vehicle/sideboards.

### Hot/cold-weather injuries

- Identify soldiers not acclimated or who have had previous heat/cold injuries.
  - Report these soldiers to the chain of command.
  - Assign appropriate duties.
  - Watch closely for symptoms.
- Enforce work/rest/hydration schedules.
- Adjust work load during temperature extremes (over 80°F, under 32°F).

### Dismounted movement in conditions of limited visibility or adverse terrain

- Use night vision devices.
- Wear eye protection.
- Run/jump only when tactically necessary.
- If you cannot see -- STOP!
- Use marked lanes when available.
- Warn others of hazards encountered.
- Maintain three points of contact in steep/slippy slopes.

### Improper lifting/carrying of weapons and individual equipment

- Brief/enforce the following precautions:
  - Use safe lifting/balancing/carrying techniques.
  - Schedule rest halts and rotate heavy loads during halts.
  - Treat all weapons as being loaded.
  - Keep blank and live ammo separate.
  - Keep weapons on SAFE until ready to fire.
  - Do not use weapon as a support or pull stick.

# Risk Management Worksheet

1. MSN/TASK: Execute Attack ARTEP 7-8 MTP (7-3/4-1100)		2. DTG BEGIN: 240100Feb99		3. DATE PREPARED: 23 Feb 99	
4. PREPARED BY: 2LT Eager, 1st Plt Ldr Co. B (Rank/Last name/Duty position)		11. HOW TO IMPLEMENT Unit TACSOP OPOD Eng Handbook Battle roster		12. HOW TO SUPERVISE Cont supv Cont supv PCC/PCI Cont supv Cont supv Cont supv	
5. HAZARDS		7. CONTROLS		13. CONTROLS EFFECTIVE?	
Obstacles		Develop and use obstacle reduction plan		Y	
Inexperienced soldiers		Ensure experienced soldiers are distributed throughout the platoon		Y	
Operating under limited visibility		Use NVDs Use IR markings on vehicles		Y	
Steep cliffs		Rehearse use of climbing ropes		Y	
Insufficient planning time		Use platoon chain of command to prepare for mission while you complete plan		Y	
6. INITIAL RISK LEVEL		8. RESIDUAL RISK LEVEL		10. RISK DECISION AUTHORITY: (Rank/Last name/Duty position)	
E		H		LTC Bart, BN CDR	
H		M			
E		E			
H		M			
E		H			
9. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (CIRCLE ONE): LOW MODERATE HIGH EXTREMELY HIGH					

# Types of Accidents

## GROUND OPERATIONS

- Wheeled vehicle
- Tracked vehicle
- Weapons handling
- Maintenance
- Materiel handling
- Combat soldiering

## AVIATION OPERATIONS

- Tree strike
- Wire strike
- Brownout
- Overtorque
- Hard landing

## Cause Factors

### Human Error (80%)

(see pages 5-8 in this booklet)

### Environment (15%)

- Surface/space (rough, inclined, slippery, confined, etc.)
- Illumination (dark, bright, etc.)
- Temperature/humidity (cold, hot, etc.)
- Precipitation (rain, ice, snow, etc.)
- Wind/turbulence
- Contaminants (carbon monoxide, fumes, chemicals, foreign objects/debris, etc.)
- Animals/bugs/birds/snakes/poisonous plants

### Materiel/Equipment Failure (5%)

- Wheeled vehicle (brakes, tires, electrical systems, etc.)
- Tracked vehicle (hatches, weapon system, tracks, etc.)
- Aircraft (fuel control, compressor, cargo hook/sling, etc.)
- Weapon (machinegun, pistol, pyrotechnic simulator, etc.)
- Maintenance (wheel split rims, winches/hoists, hand tools, etc.)

Are you/your soldiers ready to perform duties?		Y	N
<b>QUALIFICATION:</b>			
License _____			
Leader/NCO certification _____			
Combat lifesaver _____			
<b>TRAINING:</b>			
<b>Drivers training (wheeled &amp; tracked)</b>			
- Adverse weather/terrain.....			
- Safe speed for conditions.....			
- Convoy procedures (tactical/nontactical).....			
- Vehicle capabilities.....			
- PMCS (before/during/after).....			
- Ground-guide procedures (signal, distance, etc.).....			
<b>Drivers training (tracked only)</b>			
- Rollover procedures (passengers/crew).....			
- Crew coordination.....			
<b>Material handling</b>			
- Lifting, carrying, balance, footing, etc.....			
<b>Loading &amp; securing (vehicles/trailers)</b>			
- Equipment.....			
- Personnel.....			
<b>Night operations</b>			
- METL, collective, & individual task.....			
<b>Night vision devices</b>			
- Capabilities.....			
- Maintenance.....			
- Wear while performing.....			
METL.....			
Collective task.....			
Individual task.....			
<b>Weapons handling (safety procedures)</b>			
- Ammunition.....			
- Duds.....			
- Pyrotechnics.....			
- Laser.....			
- Fratricide prevention.....			
- Clearing.....			
- Limited visibility/adverse weather.....			

## Controls for Most-Likely Hazards

### Vehicle deficiencies not identified/fixed due to improper PMCS

- Report deficiencies to proper authority in a timely manner
- Ensure proper PMCS by conducting maintenance spot checks of vehicles before dispatch/operation

### Unsafe road conditions (wheeled vehicles)

- Select & brief routes that minimize unsafe conditions
  - Slippery surface (wet/mud/ice/etc.)
  - Inclines
  - Curves
  - Narrow/congested passages

### Excessive speed

- Brief TCs/senior occupants/drivers on speed limits for:
  - Road/trail/terrain hazards
  - Limited visibility
  - Convoy catch-up
  - Vehicle design/cargo loads
  - Bivouac areas/battle positions
  - Closed/open NBC protection modes

### Following too close

- Set convoy vehicle intervals based on condition of drivers, visibility, road and vehicles. Increase intervals for:
  - Fatigued drivers
  - Limited visibility (night, fog, rain, snow, dust)
  - Slippery/rough road
  - Vehicles heavily loaded/poor condition

### Improper ground guiding

- Ground guide required while:
  - Operating in limited visibility (bivouac, maintenance, assembly & battle positions)
  - Vehicle intercom system inoperative (tracked vehicles only)

### Unsecure/unstable load

- Ensure loads are secured IAW load plan & applicable manuals
- Spot check vehicles with emphasis on cargo center of gravity, ammo, & pyrotechnics