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RISK-MANAGEMENT
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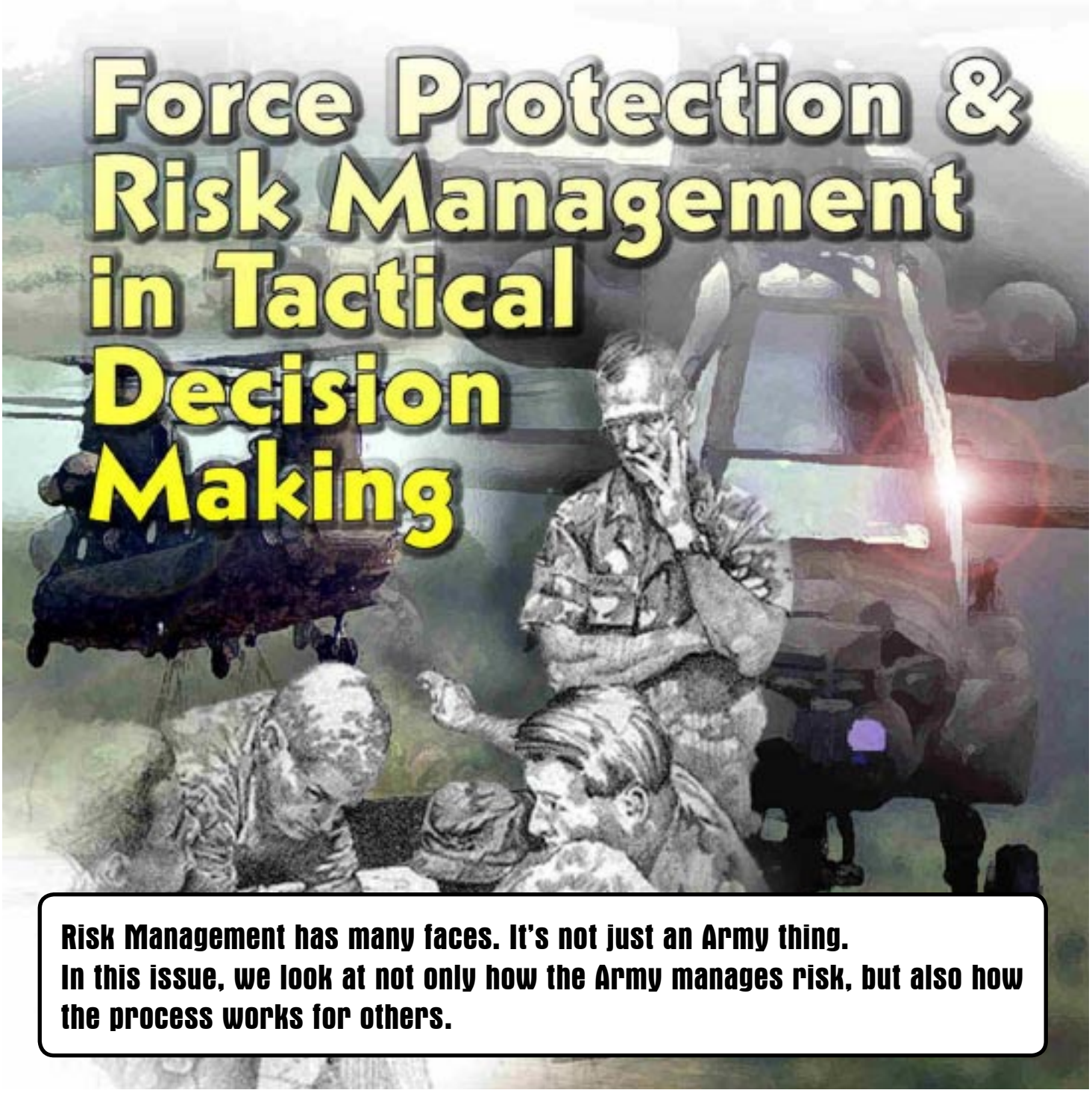

Force Protection & Risk Management in Tactical Decision Making

Risk Management has many faces. It's not just an Army thing. In this issue, we look at not only how the Army manages risk, but also how the process works for others.

RISK MANAGEMENT IN TACTICAL DECISION MAKING

"Risk management is not an add-on feature to the decision making process but rather a fully integrated element of planning and executing operations…Risk management helps us preserve combat power and retain the flexibility for bold and decisive action. Proper risk management is a combat multiplier that we can ill afford to squander."
General Reimer, Chief of Staff, U.S. Army, 1995

"Step up to the plate. It's a long way from the front office to the cab of a vehicle. Our challenge is to get the Safety Program to the soldier behind the wheel."
General Shinseki, Chief of Staff, U.S. Army, 1999

We operate in an inherently dangerous business, in an inherently dangerous environment, under inherently dangerous conditions. The art of war and preparation to fight and win our nation's wars are both complicated and risky.

The Army's process to identify, assess, and control risks is called Risk Management. Risk management provides a formalized, systematic tool to help commanders identify hazards and controls necessary to reduce or eliminate risks during operations planning and execution.

CONTROLLING HAZARDS PROTECTS THE FORCE FROM UNNECESSARY RISKS.

Eliminating unnecessary risks opens the way for audacity in execution, thus preserving combat power.

Risk management is a five step process and is explained in detail in FM 100-14, Risk Management:

STEP 1: Identify hazards: (The first step is conducted during the first four steps of the military decision making process (MDMP)- mission receipt, mission analysis, course of action (COA) development, and COA analysis.) A hazard is an actual or potential condition that can result in injury, illness, death, damage or loss of equipment or property and mission degradation. Focus on those hazards most likely to be encountered for the operational mission and environment.

STEP 2: Assess Hazards: (The second step is done during three steps of the MDMP - mission analysis, COA development, and COA analysis.) Examine each hazard in terms of probability and severity to determine the risk level of one or more hazards that can result from exposure to the hazard. The end result is an estimate of risk from each hazard and an estimate of the overall risk to the mission that cannot be eliminated. *Steps 1 and 2 together comprise the risk assessment. The risk assessment provides for enhanced situational awareness.

STEP 3: Develop Controls and Make Risk Decisions: Accomplished in two sub-steps: develop controls and make risk decisions. (This step is done during the COA development, COA analysis, COA comparison, and COA approval of the MDMP.) After assessing each hazard, develop one or more controls to either eliminate the hazard or reduce the risk (probability and/or

severity) of a hazard. Then compare and balance the residual risk against mission expectations. A key element of the risk decision is determining if the risk is justified. The individual with the appropriate level of responsibility must decide if the controls are sufficient and acceptable and whether to accept the resulting residual risk. If the risk level is determined to be too high, he must develop additional controls or alternate controls, or modify, change or reject the course of action.

STEP 4: Implement Controls: Controls are integrated into standing operating procedures, written and verbal orders, mission briefings, and staff estimates. The critical check for this step, with oversight, is to ensure that controls are converted into clear, simple execution orders understood at all levels. This step is done during the orders production, rehearsal and execution and assessment of the MDMP.

STEP 5: Supervise and Evaluate: Supervise mission rehearsal and execution to ensure standards and controls are enforced. Techniques may include spot-checks, inspections, situation reports, brief-backs, buddy checks, and close supervision. Continuously monitor controls to ensure they remain effective, and modify controls as necessary. Anticipate, identify, and assess new hazards to implement controls.

Continuously assess variable hazards such as fatigue, equipment serviceability, and the environment. Modify controls to keep risks at an acceptable level. This step is done during rehearsal and execution and assessment of the MDMP.

After a mission, evaluate how well the risk management process was executed.

■ Determine how to ensure that successes are continued.

■ Capture and disseminate lessons learned.

■ Consider the effectiveness of the risk assessment.

■ Determine whether the residual risk was accurately estimated.

■ Evaluate whether the controls were effectively communicated, implemented, and enforced.

There are no new accidents! We continue to kill and maim soldiers in the same ways. We still have POV accidents, AMV accidents, aircraft accidents, and range accidents. We continue to make the same mistakes. It is a tragedy that we must pay for the same mistakes in blood, again and again. The Risk Management process provides a commander with a mechanism to capitalize on lessons learned, identify and assess hazards, and put control measures in place to prevent predictable mistakes and failures. ✧

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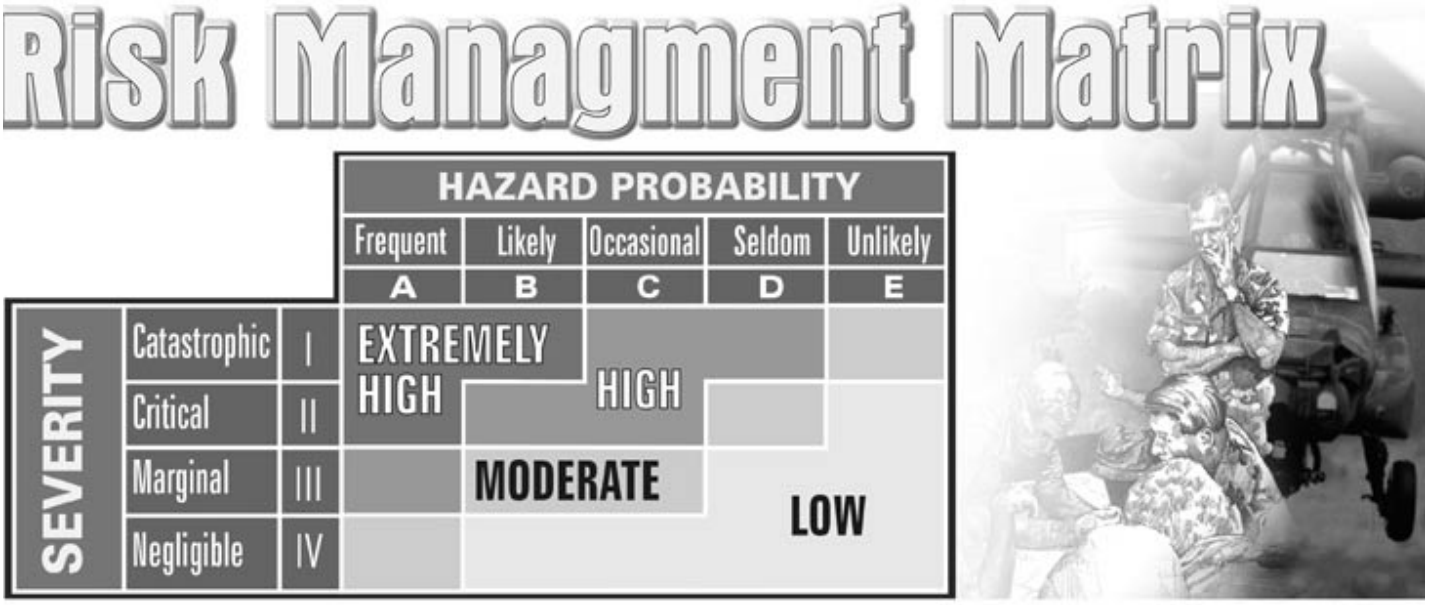

Risk Management — Mom's way

Operational Risk Management is a six-step process.* A lesson from Mom helps hammer home the point.

The first step is to identify the hazard. But, before we identify a hazard, we have to have a mission or an objective. Let me recount an experience I had in my early youth.

The objective is for you and me to cross the street to play with our friend who lives across the road. We'll do this without Mom's supervision.

The hazard in this case is obvious, cars on the street whiz by at 25 mph. While an impact between us and the car might not hurt the car very much, Mom tells us that we could definitely be maimed or killed by a car striking our fragile and precious bodies.

But we don't want to be noted as neighborhood wimps. So we set out to see if Mom is really in touch with reality. At this point we are certain that we don't want to be maimed or killed or be the focus of Mom's wrath if we even come close. So we sit on the porch and watch the flow of traffic. We live near the corner, where there is a crosswalk and a "Walk/Don't Walk" signal, and we notice that there are other folks crossing the street at this location. We are now stepping up to the plate at step two of the process—we are assessing the risk.

While sitting by the curb we notice that nobody gets killed or maimed, or even has to dodge traffic, if they cross on the "Walk" light. But Mom notices that some cars push the light, and she isn't comfortable with us crossing because there is an added risk of some of the drivers ignoring the risk and barreling through a red light. Ah, we counter, if we look all ways to ensure all the drivers are stopping and that there are no turners who may not see us, then we can safely cross the street and she needn't be anxious for our safety.

She is impressed that she hasn't raised dummies but her maternal instincts still cause her stomach to churn with a considerable amount of concern, because what if…

Mom thinks about this for awhile, and engages into step three of the process we have already started. She is analyzing our risk control measures. Mom, realizing that we have to grow up sometime and accept responsibility for our behavior, reluctantly says, "OK, but you must tell me when you go and when you are coming back."

We are thrilled because that means that we can cross the street without Mom holding our hand.

She has just made control decisions that will affect how we achieve our objective.

We tell her that we are leaving and that we will follow all the rules and be disciplined in our street crossing behavior. We will look and only cross on the "Walk" light. We promise to be cautious and arrive safely on the other side of the street. We are executing our mission and employing risk control implementation. We are following the rules; Mom knows when we are going and coming; and we have significantly managed the risk to keep Mom happy and ourselves safe.

Notice that the risk isn't eliminated, only managed.

We have a great time at our friend's house, and the time passes quickly—too quickly. Not only are we likely to get home late, but traffic is denser.

Mom knows this—that's why she's the Mom and we're the kids. She's anxious again and watches through the living room window for our return.

Not wanting to incur Mom's wrath by being late for supper, we, of course, dart across the street between cars and buses. Now we expect that Mom is going to be proud of us because we arrived safely home and just in the nick of time. We come running up the steps to the front porch expecting to leap into the arms of our proud mother.

But nooooooooo!

We find Mom furious with us. Notice that we have failed to manage the risk and have exposed ourselves to increased risk in a misguided effort to follow a rule (to be home on time).

She just completed the last step of ORM. She has supervised and reviewed our behavior. Mom started the process over. She made some

adjustments to our lack of understanding of the hazard, our incomplete analysis of the risk, our faulty analysis, and our failure to adhere to risk control measures or apply risk control implementation on the way home.

So she did what every good Mom should (and every good leader should too). She corrected our behavior and gave us another chance. ✧

*ORM, the Air Force's Operational Risk Management, is a six step process.

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Cold Weather—Are You Prepared?

The good news is that all the satellite and weather balloon measurements of temperature agree that the surface temperature measurements are all lower than the models and that global warming isn't really happening. The bad news is this means winter will be cold as usual. Cold weather brings cold injuries, at least for those who are not prepared. This has been true from Hannibal crossing the Alps, to the soldier wearing jungle boots on guard duty in Bosnia in January.

How do you prepare? The first thing in any battle is to know the threat.

■ **Dehydration:** In the cold, dehydration is a problem because it is unexpected. Most of us think that dehydration is only found with heat injuries—this isn't true. In the heat, you sweat, and it's easy to think of drinking water to replace the sweat. Working in the cold, you still sweat; but because you are not hot, you might not think you need fluids. Symptoms of dehydration include dizziness, weakness, headaches, and nausea. A good rule of thumb is that if your urine is dark yellow, you're not drinking enough water. (Note: Diarrhea and vomiting can also promote dehydration or make it worse.)

✚ **First Aid:** DRINK WATER! Have the soldier replace lost fluids. Water is best; however, sports drinks are also acceptable if available. Fluids should be sipped, not gulped. Sodas, coffee, tea, or other caffeine drinks won't help. If the soldier isn't improving quickly with fluids and rest (preferably in a warm location), seek medical help.

■ **Immersion Foot:** This is also called trench foot after the first descriptions of the condition when it occurred in World War I soldiers. The cause is continued exposure to wet, cold conditions. The surprising factor is that it doesn't have to be freezing cold, trench foot can occur at temperatures up to 60 degrees Fahrenheit if the exposure is around 12 hours. Of course, if the temperature is lower, it can occur sooner. Symptoms include cold, numb feet that may have shooting pains, as well as redness, swelling, and bleeding particularly involving the toes.

✚ First Aid: The most important step is to re-warm and dry the feet. Expose the feet to warm air and/or gently wrap in dry blankets or towels. Do NOT massage, rub, or use salves or ointments on the feet. Do not expose the feet to extreme heat; if the feet are numb, the victim may get burned and not realize it. If you suspect trench foot, get medical help immediately.

■ **Chilblain:** This is a condition caused by exposure of bare skin to continued temperatures

ranging from 20-60 degrees, depending on an individual's acclimatization. Symptoms of chilblain include tender, hot-feeling, red and itching skin, mainly on exposed areas like the cheeks, ears, and fingers. Feet, however, may be affected also.

✚ First Aid: Warm the soldier's affected body part with direct body heat, or move the soldier to a warm area. Do NOT massage the area, rub with snow or ice, or apply salves or ointments. Do NOT expose the area to any intense heat. If the soldier does not improve, seek medical help.

■ Frostbite: This is a very common and potentially dangerous injury. The body is mainly water and water freezes at 32 degrees. Frostbite occurs when the body cannot maintain sufficient internal heat in certain parts, and the water in cells freezes. Areas that are most often affected are those areas exposed, or where blood flow can be decreased, such as fingers, toes, ears, and other facial parts. Exposure to bare skin on metal, extremely cool petroleum, oils, and lubricants (POL), wind chill, and tight clothing, particularly boots, can make the problem worse. Symptoms include numbness or tingling in the affected part; blisters, swelling, or tenderness; body parts that feel dull or wooden; and pale, yellowish or waxy looking skin—gray in dark-skinned soldiers..

✚ First Aid: Frostbite is a medical emergency; the victim should be evacuated as soon as possible. If not treated properly, frostbite can lead to gangrene and amputation. Prior to evacuation, the soldier should be moved to a warm area and warm the part affected with direct body heat or warm air. Do NOT warm with hot water, expose the part to any intense heat, rub or massage the area, rub with snow or ice, or use salves and ointments. Do not allow the part to thaw and then refreeze.
nHypothermia: This is a serious medical emergency. Hypothermia is caused by severe body heat loss due to prolonged cold exposure. Immersion in water can make hypothermia worse or come on more quickly because the water increases heat loss. Symptoms include lack of shivering and what has been described as "the Umbles"—stumbles, mumbles, fumbles, and grumbles—all of which are signs of mental slowing and lack of coordination. Hypothermia can progress to unconsciousness, irregular breathing and heartbeat, and eventually death.

✚ First Aid: If you find a soldier in the earlier stages of hypothermia—still conscious—start to warm the soldier immediately. If the clothes are wet, remove them. Loosen any restrictive clothes. Wrap the victim in dry blankets or a sleeping bag. Another person can get into the sleeping bag as an additional heat source. Get medical help immediately.

If the soldier is unconscious, cold to the touch, and appears to have no pulse or breathing, DO NOT assume that the soldier is dead! Normal body temperature is 98.6 degrees. When it gets down to 90 degrees, the body tries to save energy and heat by trying to "hibernate." Blood flow to the arms and legs is decreased, and pulse and breathing become shallow. A soldier may appear dead, but his heart rate and breathing might be so low that untrained personnel miss it. People with temperatures as low as 82 degrees have been resuscitated. Get the soldier to a medical facility as soon as possible!

Cold Injury Prevention:

The most important thing is planning for the cold. Planning factors include: making sure you have accurate weather information for the area and time of the mission, being particularly aware of rain, snow, and winds; ensuring soldiers have appropriate cold weather clothing; if the tactical situation permits, use covered vehicles for troop transport, and have warming tents or areas available. If possible, have warm food and drinks available. Wet conditions and windchill greatly increase chance of injury. Pay particular attention to soldiers manning FARPS - not only are they exposed to cold, but also wet conditions (either from rain, snow, or possibly POL) and also increased windchill from rotorwash. In addition, they are handling cold metal objects, and there can be a real chance that skin can freeze to them. Aircrew are not immune to the same hazards, and need to be cautious if flying with either doors, ramps, or windows open, or exposed to rotorwash.

The most important individual preventive

measure is the proper wear of cold weather clothing; soldiers frequently get cold injuries simply by improper wear of clothing. Jungle boots are not appropriate for snow, the Gore-Tex™ parka is designed to keep you dry, it is not intended to be the main overgarment in extreme cold, and definitely not approved for use while flying - the shell is nylon and burns or melts easily. Wearing every article of cold weather clothing issued can be bad, because it may cause overheating, or restricted circulation. All cold weather clothing should be worn loose, and in layers. This allows for insulation by air trapped between the layers. Socks should be changed frequently, and boots rotated. Proper wear of boots is important. If you have intermediate cold weather boots (Gore-Tex™ lined, like Matterhorn™ boots) you might think you are safe from trench foot - not so. Many soldiers wear them both indoors and out, some year round. The problem here is that the Gore-Tex™ lining is designed to keep water out, but it can also keep water in. So, soldiers may wear them indoors (or when it is warm out) where the feet may sweat freely, then go out into a cool environment. Because the feet are wet from the sweat, they have set themselves up for the conditions that can lead to trench foot. Also, if the boots are off at night, for example, and not allowed to dry by a heat source, the sweat can freeze. What has happened is that soldiers have gotten injuries by putting their feet into ice (frozen sweat) the next morning. It is important to keep clothing clean and dry. Dirt, POL, or water can increase the rate of heat loss by reducing the insulation ability of the clothes, and through evaporation. It is also important to keep the clothing repaired - a broken zipper cannot keep the cold out. Headgear is extremely important, the body can lose large amounts of heat through the head. It is important to protect the hands and fingers by wearing proper gloves. Aviators - your Nomex™ gloves are designed to protect you from fires, they are not designed for extreme cold, and will do little to protect your hands when wet. Long underwear for flight crew should be wool or cotton - polypro can burn or melt. Use of Air Force cold weather flight suits with the nylon liner is also prohibited, aviators have been injured in fires when the lining has melted into the skin.

Other factors influencing cold injuries:

- **Previous cold injuries.** Soldiers with previous cold injuries are more susceptible to having another. It is extremely important to identify these soldiers, and for first-line supervisors to monitor them closely.
- **Tobacco.** Nicotine, regardless if it comes from a cigarette, snuff, pipe, cigar, or patch causes blood vessels to constrict. This is particularly dangerous in the hands and feet, and can lead to, or worsen a cold injury.
- **Alcohol & caffeine.** These can lead to increased urination and dehydration.
- **Meals.** If you skip meals, the first thing the body does is to slow the metabolism. Slower metabolism means less heat production and more chance of cold injury.
- **Activity.** Huddling up and not moving is the wrong thing to do. The more you move, the more heat you produce. Decreased activity decreases the time it takes to get an injury.
- **Buddy system.** The buddy system is a great way to help prevent injuries if soldiers are trained to know what to look for.
- **Self-checks.** A simple self-check is to pinch the fingernails and watch how fast they return to red. The slower the return, the higher the potential for an injury to the fingers or toes.

More information on cold injuries can be found in FM 21-10 and FM 21-11, GTA 5-8-12 (this is a good pocket guide for soldiers), and Technical Note No. 92-2, Sustaining Health and Performance in the Cold: Environmental Medicine Guidance for Cold-Weather Operations, published by the U.S. Army Research Institute of Environmental Medicine.

Conclusion

All cold weather injuries are preventable! Prevention is the responsibility of leaders at all levels, as well as the individual soldier. Battling the cold is like battling any other enemy—mission success happens only through planning and training.

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We Are All Safety Officers... Or Are We?

Providing a Facelift for the Army Safety Profession

As we enter the 21st century we are experiencing great advances with the integration of risk management in Army operations. As the processes which afford us safer training evolve, we as safety professionals should be careful to nurture our profession as well as its public image.

It is apparent the Army is taking "safety" and all its integers (risk management, POV safety, OSHA compliance, *et al*) quite seriously. At the Army level we see the initiation of Risk Management Chain Teaching. At the unit level, we find command teams and staffs integrating risk management into operations from inception to execution. We no longer find "safety" added as an afterthought annex to operation orders. We find units routinely meeting or exceeding OSHA requirements for workplace safety, not just before an external inspection as we may have seen years ago.

With all these great advances taking place in our field why is it that we still hear grumbling in formation prior to a long weekend safety brief? Why is it that safety officers are viewed as individuals who would rather cease training or eliminate an activity rather than mitigate the risk and train as safely as possible?

While the safety aspect of operations is moving forward, the view of the safety professional seems to be caught in a slump. This may seem unimportant; why worry about public opinion when statistics show we are performing effectively? Imagine how much more effective we could be if commanders sincerely sought the insight of the safety officer in planning rather than checking the block by filling out the risk management worksheet. How could we better affect operations if personnel felt at ease in approaching us with situations and potential problems, knowing that we will try to find a solution rather than finding fault or shutting down operations?

Imagine how much more effective we could be if commanders sincerely sought the insight of the safety officer in planning rather than checking the block by filling out the risk management worksheet.

PERCEPTION IS REALITY

Perception is reality and the perception in many units is that "we are all safety officers." While this age-old saying is alive and well at a range near you, it does nothing for the credibility of you or I as an ASO or Safety NCO. If Lt./Pvt. Snuffy is brought up to believe "we are all safety officers," then he or she sees little need for a safety professional. LT or PVT Snuffy's opinion may not seem important in the overall scheme of maneuver, but this is the kind of baseline shift that we need to have occur in our units.

As of last July every soldier in the United States Army is now formally trained in risk management as mandated by the Army Chief of Staff. Let's train soldiers and leaders alike that we are all risk managers—we are. Let's save the title of Safety Officer for those properly trained in the profession.

Please don't think I'm so naïve as to believe a name change will shift the face of Army safety; it will take much more than that. We as safety professionals need to relook one of the first lessons taught at the Safety School:

CREDIBILITY, CREDIBILITY, CREDIBILITY!

Why is it that the safety field is viewed by many to be the job of choice for underachievers and those too weak in their profession to perform in another field? Too many individuals before us have done the minimum needed to ensure compliance. If

we are performing our jobs at the level that should be expected and to which we are trained, there is no reason our profession should not be held in the esteem presently reserved for IP's and MTP's. While these professions are admirable, they are singularly focused. What other career field in the Army, other than that of a unit commander, is so diversified as ours?

Not only do we operate as productive pilots and crew members but also as *the* subject matter expert in areas ranging from accident investigation to respiratory protection.

RESPECT

If we do not earn and maintain the respect of those we work with and for, we are relegated to the job of a file clerk, a necessary and mandatory file clerk, but not the integrated subject matter expert that we should be. Rather than checking the block for our commanders by merely ensuring compliance we need to be proactive in every aspect of our units operation. Sure, that's a huge undertaking, but that should be what we signed up for. We need to be out on the hangar floor, interacting with the crew chiefs. We need to be at the convoy SP ensuring PCI's are complete and licenses are current. We need to be in the S-3 shop assisting in planning and ensuring the commander isn't going to be blindsided by an unforeseen risk. Sure, that's a lot of work, but there are many out there currently doing it and doing it well. We as safety professionals must take it upon ourselves to raise the bar, raise the standards of our unit's safety programs.

THE FUTURE

Some say "That sounds great, but other career tracks are provided follow-on training and career progression." Until now the only training an ASO or SNCO could hope for after the initial school was mentoring from those already in the field and possibly a two-week refresher at Fort Rucker. This is all about to change.

As the Army has seen a need to transition from a compliance based safety program to that of an integrated system, it has also seen a need for further training of its safety professionals. The USASC is currently developing a program that will provide industry-based follow on training to safety professionals. According to CW5 Wootten, former Director of the Army Safety Officer Course, the training will be rank and position based, ensuring we are provided the training necessary to be effective advisors in progressively challenging assignments.

We in the safety business find ourselves in a blossoming occupation. The Army as a whole is placing more and more emphasis on the product that is the end result of our efforts, safer, effective operations. We can stand by, content with the status quo or we can lead the movement through heightened standards and proactive efforts, transforming the outdated Safety Geek into the modern Safety Professional. ✧

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CORRECTION:

The website address for TRI-MAX is incorrect (the hyphen is omitted) as it appeared in the October issue. The correct address, which allows military users to download manuals, is www.tri-maxkoldcaf.com

Wartime Safety– Risk Management in World War II

(Editor's note: This article appeared in 1986, and it was not new then. These principles have stood the test of time.)

Unquestionably safety has become an integral part of the flying mission—at least in peacetime. But what about in time of war? In the crucible of battle do we really have the luxury of safety programs—and does it really make any difference anyway?

A World War II general gives us an excellent example of how a vigorous safety program actually did work in a combat theatre, and how safety made a difference in the success of the mission. In his lively memoir, *Over the Hump,* republished by the Office of Air Force history in support of Project Warrior, General William H. Tunner recalls his stint as commander of the crucial India-China airlift during the last year of World War II.

In the 1940s, the very concept of military airlift was in its infancy. In fact, the India-China airlift had only been reluctantly called into existence by a ground-oriented command because a deadly combination of Japanese and geography made the better-known Burma Road somewhat less than efficient.

The purpose of the airlift: To carry enough supplies into Western China to keep the Chinese in the war. A Chinese military presence tied down approximately two million Japanese troops—troops that otherwise could be used against US forces in the Pacific.

When General Tunner arrived in India in the summer of 1944, the airlift had been in operation about two years. Its performance was barely adequate in terms of tonnage transported, but the major problem was safety. General Tunner described the situation:

"Here, in a strange land far from home, on the fringes of a mysterious backward civilization, were all the conditions that bring hazardous flight: Fog, heavy rain, thunderstorms, dust storms, high mountains, a necessity for oxygen, heavy loads, sluggish planes, faulty or no radio aids, hostile natives, jungles, and one-way airfields set in mountainous terrain at high altitude."

As tonnage had gradually increased during the airlift's operation, so did the mishap rate. In January 1944, the accident rate was 1.97 —per 1,000 flying hours!! Every 200 trips over the hump cost one airplane; for every 100 tons flown into China, three Americans died. As General Tunner put it:

"Not only was the accident rate alarming, but most of the accidents were washouts—total losses, with planes either flying into mountain peaks, or going down in the jungle. In many of the cases in which there was reason to believe that some or all crew members had been able to parachute from their planes, the men were never seen again. The jungle had simply swallowed them up. The combination of a high accident rate with the hopelessness of bailing out was not conducive to high morale in the flying crews."

Certainly an understatement.

General Tunner soon identified a major problem. All efforts up to that point had concentrated on increasing tonnage, the prime indication of mission success. But all consideration for safety had been ignored.

Night flying had been introduced on the Hump, although radio communication and navigational facilities were nonexistent except at the

terminals. Weather conditions were virtually ignored; the common saying was "there is no weather on the Hump." Many planes flew in violation of standard Air Corps specifications. As one report indicated: "If Air Corps technical orders were now in force, I doubt that there would be an airplane in the air."

General Tunner's challenge became immediately clear: Increase tonnage **and** lower the accident rate, seemingly contradictory actions in a wartime environment. Yet the record shows the two were not at odds at all. By instituting a safety program that seems obvious to us today, it became possible to change the whole tenor of the airlift.

What was the program? Nothing more than the basics distilled into four main points:

(1) Analysis of existing flight and maintenance procedures and practices,

(2) statistical investigation and analysis of the accidents,

(3) recommendations for the correction of faults revealed in the foregoing analysis,

(4) prompt action and follow-up on that action.

In particular, General Tunner and his staff carefully investigated the training of the pilots and made up for any gaps before sending them over the Hump. They began to take weather and communications seriously (there **was** weather on the Hump) attacking such conditions as icing and turbulence and becoming more familiar with navigational equipment and how best to deal with its absence.

Another major area was one we hear much more about today, particularly in the area of human factors—pilot discipline. General Tunner was very specific about the use and importance of the checklist, an aid which told the pilot "the exact procedure he must follow from the time prior to starting the engine to that following his cutting it off at his destination. We found planes without checklists and pilots who didn't bother." Both situations had to be corrected.

Briefing and debriefing, according to General Tunner, lay at the heart of the program:

"Briefing and debriefing proved to be of the greatest importance. Briefing involved not only a thorough preparation of the pilot for the route he was to take, but a check to make certain that the crew was competent to make the proposed flight safely. Debriefing would show up incompetent flight procedures, indicating the need for corrective action and additional training. Debriefing also provided our best weather reports."

Did all of this work? In August 1944, (just before General Tunner's arrival) they airlifted 23,000 tons to China with an accident rate hovering around 2.0 per 1,000 flying hours. In January 1945 with close to 40,000 tons airlifted, the accident rate dropped to .301. By July 1945, total tonnage jumped to 71,042 with an accident rate of .239. During August, the final big month of the airlift, 20 planes were lost during 136,000 flying hours, bringing the accident rate down to .154 per 1,000 flying hours. General Tunner makes the statistics come to life by looking at them another way:

"If the accident rate in 1943 and early 1944 had continued, along with the great increase in tonnage delivered and hours flown, American would have lost not 20 planes that month, but 292, with a loss of life that would have shocked the world."

Serious military airlift was born in this distant theater on the almost forgotten edge of the twentieth century's greatest war. Along with it, however, came safety. Especially the realization that safety was a necessary part of a wartime mission. ✧

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NCO Corner

All those messages...

Messages, messages, you get lots of messages. They are all important, but some are more important than others. Here's a rundown.

1. Safety of Flight Messages

SOF messages are defined as electrically transmitted messages pertaining to any defect or hazardous condition, actual or potential, that can cause personal injury, death, or damage to aircraft, components or repair parts where a medium to high risk safety condition has been determined per AR 385-16. These messages may also authorize the immediate use of technical changes to publications announced in the message pending receipt of the DA authenticated change. The types of SOF messages are as follows:

a. Emergency: An emergency message immediately grounds a fleet of aircraft or a designated portion of a fleet of aircraft. This occurs when a hazardous condition exists that has the potential to cause a catastrophic accident resulting in injury or death of personnel, damage, or destruction of aircraft. (These messages are for grounding purposes only. Emergency messages will always be followed by operational or technical messages.)

b. Operational : An operational message may ground an aircraft for operational reasons, other than emergency, to correct hazardous conditions pertaining to aircraft operation. These may include flight procedures, operating limitations, or operational policy.

c. Technical: A technical message may be issued to effect grounding for material or maintenance conditions. This message can be an independent or a follow-up to an emergency SOF message. Required corrective action must be completed within the time frame or frequency established by the initial message or published in subsequent SOF messages or publications. Technical messages may include the following:
(1) Corrective action not involving a configuration change.
(2) Aircraft, component, or repair parts modification to be accomplished by an urgent Modification Work Order.
(3) One-time inspection requirements for aircraft, components, or repair parts to be accomplished by an urgent Technical Bulletin (TB).
(4) Replacement of safety related items that require continuous monitoring.

2. Aviation Safety Action Messages :

Aviation Safety Action messages are defined as electrically transmitted messages which convey maintenance, technical or general interest information where a low-to-medium risk safety condition has been determined per AR 385-16. ASAMs are of a lower priority than SOF messages. ASAMs may direct, modify and clarify maintenance actions, update technical publications pending receipt of DA authenticated changes, or provide information to include aviation related equipment (for example, NVG, ALSE...). A maintenance mandatory ASAM will not ground aircraft but may require accomplishment of a task and require report of completion of findings. The types of ASAMs are as follows:

a. Maintenance mandatory: A maintenance mandatory ASAM directs maintenance actions and/or updates technical manuals and may also require compliance reporting and task/inspection reporting.

b. Informational: An informational ASAM will provide status and information of a maintenance, technical, or general nature.

c. Operational: An operational ASAM pertains to aircraft operation, flight procedures, limitations or operational policy.

3. Maintenace informational Messages:

Maintenace informational messages (MIMs) are a lower priority than ASAMs. MIMs are informational messages that apply to aviation maintenance personnel. Normally, MIMs do not require any entries on forms and records.

4. Safety of Use messages:

SOU messages are developed, prepared, and electronically

sent by the Aviation and Missile Command (AMCOM) to all users of Army nonaircraft equipment. AR 750-10 covers procedures for issue, compliance, and management of SOU messages, urgent MWOs, and TBs. SOU messages are different from SOF messages and ASAMs; the different types of SOU messages are listed below.

(1) Operational: This type of message changes operating procedures or places limits on equipment usage.

(2) Technical: This message deadlines aviation associated equipment, used in support of aircraft and other aviation associated equipment, because of materiel or maintenance deficiencies. This type of message calls for modification of the equipment or its components, modules or parts. The information will be published later as an urgent MWO.

(3) One-Time Inspection: This type of message immediately deadlines equipment and directs inspection procedures before its next use. Equipment found to be deficient will remain deadlined until the deficiency is corrected. This type of message will not direct or prescribe a configuration change. SOU one-time inspection messages that are superseded by SOU technical messages will be published later as emergency TBs.

(4) Advisory or Technical Maintenance or Operational: This type of message contains new operational or technical maintenance information vital for equipment operators or maintenance activities. Advisory messages will not deadline equipment or direct accomplishment of a task or maintenance function.

The point of contact for SOF/ASAM message distribution, compliance reporting, and administrative matters is the AMCOM Safety Office. Technical or logistical questions should be addressed to the points of contact indicated in the messages. AMCOM Safety Office representatives can be reached at: Commercial (256) 842-8620 or 313-2097; DSN 788-8620 or 897-2097; and EMAIL safeadm@redstone.army.mil. Lost a message, or need to check and see if any new ones are out ? http://www.redstone.army.mil/sof

5. Safety –Alert notifications :

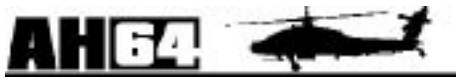
SANs are issued by the U.S. Army Safety Center to notify users of existing and potential hazardous conditions identified during the course of an accident investigation. These are posted on the Safety Center's website at : http://safety.army.mil

The point of contact for Safety Alert notifications distribution is Ed Heffernan, DSN: 558-2660, Com (334) 255-2660, or e-mail him at heffern@safetycenter.army.mil

—SFC Ralph McDonald, Aviation Division, US Army Safety Center, DSN 558-3754 (334) 255-3754, mcdonalr@safetycenter.army.mil

Accident briefs

Information based on *preliminary* reports of aircraft accidents



Class C

A series

■ During NOE flight, main rotor blade contacted power line, resulting damage to tip cap.

Class D

D series

■ During postflight inspection, aircraft drive shaft cover was found open. Preliminary inspection revealed scarring to No.5 tail rotor drive shaft, and structural damage to tail rotor drive shaft cover.

Class E

A series

■ After completion of tactical refuel, crew began transition from day to night-aided flight. During runup for NVS flight, pilot's Night Vision Sensor picture was found to be unstable. PIC aborted mission, returned to home airfield unaided, completed landing and taxied to parking without further incident. Maintenance troubleshooting revealed faulty Pilot Night Vision System. System was replaced, and aircraft was released for flight.

■ While on the ground, engines running, aircraft's HARS/Doppler was found to be inoperable. Aircraft was shutdown without further incident. Doppler signal data converter was replaced.

D series

■ During landing, No.2 generator failed. Aircraft was shutdown without further incident. Replaced spline adapter.

■ During approach, utility hydraulic level caution message was announced. Aircraft landed without further incident. Replaced utility hydraulic shutoff valve.

C12

Class C

N series

■ While taxiing, aircraft's left wing pod contacted a parked fuel truck. Damage occurred to left wing instrument pod, wing tip and NAV light. Aircraft was flown under one-time flight authorization back to home station.

T series

■ Crew observed No.2 engine over-temp reading shortly into flight. Crew continued flight to home station. Postflight maintenance inspection revealed engine TGT reading of 813°C for 28 seconds. Engine replacement pending.

Class E

F series

■ A report believed to be thunder was heard during flight, but no flash of light was noted. As the FMS 800 had malfunctioned during an earlier flight, no change of operation was noted. Damage to the antenna was discovered on the post flight inspection.

CH47

Class C

D series

■ While aircraft was at a 15-ft hover, two slingloaded HMMWVs separated. Both vehicles sustained extensive damage.

Class E

D series

■ During ramp and cabin check, flight engineer noticed hydraulic fluid seeping from the No.1 AFCS Roll ILCA, upper pressure tube. No cockpit caution capsules illuminated. Maintenance panel indicated minor loss of hydraulic fluid. Crew terminated training and returned to home station without further incident.

OH58

Class A

C series

■ Aircraft reportedly descended while circling at terrain flight altitude, and impacted the ground. Crew sustained treatable injuries. Aircraft destroyed.

D (I) series

■ Aircraft was Chalk 2 in a multi-ship contour flight when it contacted wires. Aircraft landed under its own power; damage was sustained to one main rotor blade.

■ RSP experienced uncommanded engine acceleration during engine run-up procedures. Engine monitor display revealed that engine had exceeded allowable NP limits (128% for 2 seconds).

Class C

D series

■ During termination phase of low-level autorotation, main rotor blades struck the tail rotor driveshaft cover. Aircraft was shutdown without further incident. Damage to 2 main rotor blades, tail rotor driveshaft and cover, and embedded global positioning system/inertial navigational system antenna.

Class E

A series

■ As the aircraft transitioned from low level to contour flight entering the training area, the pilot on the flight controls noted medium and high frequency vibrations in the pedals. As power and airspeed were stabilized, vibrations decreased to slight high frequency. When power and air speed were reduced again vibrations increased. Medium frequency was especially noticeable at airspeed less than 40 Kias. A Precautionary Landing was performed. Maintenance personnel determined the tail rotor was out of balance.

TH67

C series

■ Engine would not start. Aircraft was shutdown without further incident. Replaced key switch.

UH60

Class E

A Series

■ Aircraft experienced total electrical failure during hover, landed without further incident. Replaced starter generator.

Class C

A series

■ Crew noticed chip detector illumination upon nearing their intended landing point and immediately initiated their descent to land. Crew then experienced drooping of the main rotor blades just prior to touchdown. Crew executed a normal landing and aircraft-shutdown. Postflight inspection confirmed non-flyable status. Subsequent maintenance inspection revealed that all 4 MRB had made contact w/the ALQ 144.

Class D

A series

■ After hot refueling and taxi to pickup point, aircraft shutdown to await passengers. During the shutdown, APU running, engines at idle, master caution boost, SAS and No.2 Res low light illuminated. Crew chief observed hydraulic fluid cascading down right side of aircraft. Shutdown without further incident.

Class E

A series

■ During approach after NVG training flight, crew attempted to use the landing light without success. After landing, the landing light bulb was found to be hanging from its wires. Maintenance personnel determined that the light's retaining ring failed, allowing the bulb to become loose and dangle from its wires, thus becoming jammed. The light assembly was replaced and the aircraft was released for flight without further incident.

■ While on the ground, engines running, No.2 engine failed. Aircraft was shutdown without further incident. Replaced Hydro mechanical unit. MOC test flown OK.

For more information on selected accident briefs, call DSN 558-9855 (334-255-9855). Note: Information published in this section is based on preliminary mishap reports submitted by units and is subject to change.

Vehicle Safety Quiz

1. Speed, fatigue, alcohol and non-use of seatbelts are most likely to kill soldiers.

❑ ***True*** ❑ ***False***

2. A soldier is required by Army regulation to use seat belts at all times, on and off the installation, while riding in a POV (privately owned vehicle).

❑ ***True*** ❑ ***False***

3. Seatbelts are not necessary if your vehicle is equipped with air bags.

❑ ***True*** ❑ ***False***

4. Most fatal POV accidents in which the Army driver is at fault occur in which time period:

❑ **a. 0600-0900**
❑ **b. 0900-1500**
❑ **c. 1600-2000**
❑ **d. 2100-0500**

5. If you are driving and feel sleepy, you should:

❑ **a. Roll down the windows so the fresh air will wake you up**
❑ **b. Turn the radio volume up to keep you alert**
❑ **c. Turn the air conditioner to a higher setting; the cool air will wake you up**
❑ **d. Stop and get some sleep**
❑ **e. Any of the above**

6. One beer or less in an hour can affect judgment and loosen inhibitions in the average 160-180 pound individual.

❑ **True** ❑ **False**

7. Which of the following factors determine safe driving speed? (Choose all that apply.)

❑ **a. Posted speed limit**
❑ **b. Road and weather conditions**
❑ **c. Time of day**
❑ **d. Amount and type of traffic**
❑ **e. a and b**
❑ **f. a through d**

8. Most fatal POV accidents in which the Army driver is at fault occur on:

❑ **a. Monday and Friday**
❑ **b. Wednesday, Thursday, and Friday**
❑ **c. Friday, Saturday, and Sunday**
❑ **d. Sunday and Monday**

Answers: 1. True 2. True 3. False 4. D. 5. D. 6. True 7. F. 8. C.

Cold weather publications

Your aircraft –10 TMs often refer you to FM 1-202, *Environmental Flight*, for additional info on cold weather operations.

Forget that! FM 1-201, *Fundamentals of Flight*, has replaced the old FM 1-202. The new pub has updated cold weather information, and includes the info from FM 1-203, *Fundamentals of Flight*; TC 1-201, *Tactical Flight Procedures*; and TC 1-204, *Night Flight Techniques and Procedures.*

—PS Magazine

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POV Fatalities

through 30 Sep

FY00	FY99	3-yr Avg
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U.S. ARMY SAFETY CENTER

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