Enabling Army Level Risk Mitigation

U.S. ARMY COMBAT READINESS CENTER

Fall 05 TEMAC
Soldier Accidental Fatalities

As of 30 September 05

The Arrow Continues to go in the Wrong Direction
FY05 Soldier Accidental Fatalities

Total Army: 302

Everywhere Else: 207

CENTCOM AOR: 95

As of 04 October 05
Is this an Enemy Threat?

Taliban Mobile Assault Tank
CRC Process

Quick Turn
Known facts back to the Field

Report Loss
Immediate Notification

Loss Occurs

Accident Investigation

Fatality Data
Combat, Medical, Criminal, & Suicide

Within 48 Hours
PLR

Within 24 Hours
Automated Report

6 weeks
Close the Loop
Learn & Apply CALL, TTPs

The Army
Operations & Training
OVERCOMING OUR CULTURAL DILEMMA

REALITY
- Do more with less
- Reluctance to say no
- Ability to accept change
- HOOAH Factor

RESULT
- Decision Level
  - Mitigate Risk

REQUIREMENT
- Conscious Decision to Control Hazards or Accept Risks

Resources

- Assess Hazards
- Make Decisions
- Implement Controls
- Supervise

IPR6-350
Risk Management Roles

- **AAE**
  - Define Army safety, health, and environmental risk management policies and act as the risk decision authority for high risk residual hazards associated with Army systems.
  - Fund and evaluate safety, health, and environmental research and development programs to address resolution of generic systemic safety, health and environmental problems.

- **PEO**
  - Safety Officer for assigned systems. Act as the risk decision authority for medium risk residual safety hazards.

- **PM**
  - Responsible for identifying all hazards, eliminating or mitigating when possible, and providing an assessment of hazards that are not eliminated.

- **DASAF**
  - Assist integrating agents, provide Risk Management information, assess Risk Management performance

Reference AR 70-1 & AR 385-16
System Safety Primary Objectives

- Ensure hazard control measures are designed in up front & not trained out

- Ensure lessons learned are applied to new developments; don’t reinvent the wheel (TIMING DEPENDENT- you’ve got to get in early to apply them)

- Ensure hazards are “risk managed”; residual risk accepted by the appropriate authority.

- Apply risk management throughout the life cycle
Implement System Safety Early

Over a program’s lifecycle it costs less to integrate safety EARLY

Late safety involvement costs more

Safety Program Entry Point

Early safety involvement costs less

System Engineering/Acquisition Phases

Pay Me Now, or Pay Me Much More Later!!!
Order of Precedence

- **Lowest Risk**
  - Design for Minimum Hazard
    - Best to design risk out of System
  - Incorporate Safety Devices/Features
    - If can’t design out, design controls in (H/W Devices & S/W Features as Interlocks)
  - Provide Warning Devices
    - Generate adequate visual or audible warning signal
  - Develop Procedures & Training
    - Susceptible to Personnel Turnover
    - Susceptible to Human Error

- **Highest Risk**
  - Transfers Risk to the Field

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The goal is to “design out” not “train out” hazards
Composite Risk Management Occurs at Each Level

All Losses are at a Unit Level but all Controls are not!

Unit Level
Higher Level
Army Level

Risk Management occurring at the system level and throughout the lifecycle prevents unnecessary safety challenges for Soldiers

Higher Level: Additional procedural/training controls tax available manpower and mission effectiveness with no reduction in the severity of the risk
- Risk transferred to the Soldier reduces mission effectiveness
  - Develop/modify TTP
  - Provide training range
  - Provide additional Manning to support increased operational tasks
  - Mission resources diverted to training
  - Increases exposure to hazard

Unit Level: At this level, the Soldier can never get rid of the hazard—IT WILL ALWAYS BE WITH HIM
- Both the Risk and the Controls transferred to the Soldier through procedures and training
  - TTP
    - Rollover Drills
    - Water Egress Drills
  - Increases task load
    - Subject to human error
  - Limited risk reduction
    - Does not reduce severity; reduces probability by only one level

Army Level: Best position for risk mitigation—SOLDIERS CAN'T AFFORD TO PAY FOR ARMY LEVEL HAZARDS
- Hazard identified, assessed and controlled to an acceptable level of risk (using Order of Precedence)
  - Possible control alternatives:
    - Design: alternate egress access when inverted (reduces severity and probability)
    - Safety Devices: combat door latch wrenches (reduces probability only)
  - Residual risk reduced to level acceptable at the PM Level
  - Residual risk mitigated; not transferred to the Soldier
  - Lower order of precedence controls (i.e. TTP) would have required risk acceptance at the AAE level
  - Procedural/training: Rollover Drill
Summary

USACRC supports the ASP by—

- Reviewing total Army operations from platoon-level to HQDA-level daily to identify RMI opportunities for keeping soldiers safe
- Providing information & tools that commanders can use to make informed risk decisions
- Assessing risk management performance

Supporting commanders' safety programs worldwide
Eliminate Hazards through Design Selection:
Procedural Controls for Hazards are Subject to Human Error
Set Warfighters Up for SUCCESS
BACKUP SLIDES
Where we’re engaged in supporting acquisition safety:

- Developing hazards/controls information for disseminating historical safety lessons learned for new systems (ASMIS-1)
- Synchronizing acquisition & safety policies
- Reviewing DAU coursework safety content

- DSOC
- DoD ESOH IPT
- JSSC
- Safety Coord. Panel
- Acquisition Safety IPT

- Safety Campaign Plan
- JSSC MOA “System Safety in Materiel Acquisitions”
- DASAF Memo “Eliminating Hazards through Design Selection”
- ASA(ALT) Bulletin

- Providing Independent Safety Assessments at MDRs/IPRs for ACAT I & II
- Participating in program IPTs & SSWG to provide proactive guidance
- Conducting Accident Investigations of selected accidents
- Review of System Safety Risk Assessments & Safety Notification Messages
Army Safety Program Key Players & Interfaces

- ARSTAF: Army Safety Action Team
- Technical Center for Explosive Safety
- DASAF: Safety Coordinating Panel
- MACOM Commanders - Safety Director
- Corps/Division Cdrs - Safety Professional
- Aviation Bde/Bn Cdrs - ASO
- Ground Bde/Bn Cdrs
- SAIE
- ACSIM
- IMA Safety Advisor
- TIM Regions Safety Advisor
- Garrison Commander Safety Director
U.S. Army Combat Readiness Center (CRC)

DCO

CG CRC & DASAF

XO

SGM

Personal Staff

Admin
Advisor
Aide

Special Staff

G1/4
G3
G5
G6
G7

Media & Marketing

TF Ground
TF Air
TF Driving

OUTPUT
Composite Risk Management Is The Key To Success

Training or Combat, it’s still the same 5-step process and it works!

1. Identify Hazards
2. Assess Hazards
3. Develop Controls & Make Decisions
4. Implement Controls
5. Supervise & Evaluate

Assessing risk from multiple hazards cumulatively!
SUPervise & EvaluATe
"FeedBack"

- USACRC provides the independent "honest broker" feedback

- How?
  - System Safety Advocacy
  - ISA's

- If we don't perform this step of the cycle, the risk management process is incomplete.
Integrating Agents:
OPPORTUNITY FOR
WORLD CLASS SAFETY
PERFORMANCE

DEVELOP THE FORCE
Integrating Agent: CG TRADOC

DOCTRINE
• RM connected to Strategic Plan
  - Embed emerging but mature doctrine & TTP
  - FM 101-5

COMBAT DEVELOPMENT
• Human performance synergy
  • Accident investigation & followup
  • Materiel issues
  • SSRA in Battle Labs

TRAINING
• RM standardization
• RM in tug development
• RM integration in lesson plans and MTPs

LEADER DEVELOPMENT
• Embed RM in BCTP
• Embed RM in Prairie Warrior

SUSTAIN THE FORCE
Integrating Agent: CG AMC

• Materiel acquisition policy changes
• Strengthened acquisition process by codifying system safety risk assessment procedures
• World class performance by PEOs and PMs
• Handoff info about hazards to soldiers

PROJECT THE FORCE
Integrating Agent: CG FORSCOM

Power Projection
• Planning
• Training
• Warfighting

Force Projection Platforms
• Deployment
• Mobilization
• Redeployment
• Demobilization
A Major Subjective Analysis Shortfall…

All “Line-Item Inventory” Hazard Analysis / Risk Assessment methods * suffer this shortfall:

THE ANALYTICAL CONSTRUCT

<table>
<thead>
<tr>
<th>HAZARDS</th>
<th>SEVERITY</th>
<th>PROBABILITY</th>
<th>RISK</th>
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- Examples:
  - Preliminary Hazard Analysis
  - Failure Modes and Effects Analysis
  - Functional Hazard Analysis

THE ANALYST’S VIEW of SYSTEM RISK

\[ R_T = \sum (s_1 \times p_1) + (s_2 \times p_2) + (s_3 \times p_3) + \ldots + (s_n \times p_n) + \]

RISK SUMMATION METHODS ARE NEEDED!
Establishing Safety Performance in the Capability Identification Process

PROBLEM: Historical safety lessons learned, accident data, known hazards, etc. are not leveraged in the selection process. Preliminary hazard analyses do not occur.

SUPPORT: System safety resources needed:
- System safety engineers in all combat developments
- Hazards information from accident data

“Safety should be a requirement up front and across the DOTML-PF”
— Hon. Claude Bolton, AAE

RESULTS: Safety performance criteria established in requirements documentation.
How do our efforts affect the design?
Where we can help you...

- Supporting risk management decisions
  - System Safety Risk Assessments (SSRA)
  - Army Safety Action Team (ASAT)

- Providing hazards information from Army accidents to influence design selection

- Coordinating safety investment strategies to fund safety improvements
  - Safety Coordinating Panel (SCP)

- Analyzing and communicating safety information
  - Countermeasure, Flightfax, Impax, PLRs
Where we need your help...

- Ensuring an effective SSMP is developed & executed as part of the acquisition strategy
- Providing design solutions for recurrent hazards that produce accidents
- Enabling acquisition leaders to routinely assess safety performance
- Integrating system safety within the overall systems engineering process
- Establishing safety performance capabilities for the user
What’s going to kill me & my buddies, Enemy or Accident?