The National Fire Fighter Near-Miss Reporting System

Crew Resource Management
Threat & Error Management

www.firefighternearmiss.com  www.iafc.org/safetyAndHealthResources

Goals

- Introduce the concepts of Crew Resource Management and Threat & Error Management to fire fighters.

- Use the concept as a tool that can be used to save fire fighters’ lives, reduce injuries and the adverse impacts of human error.
…To err is human…

Marcus Tullius Cicero
106-43 B.C.

Managing error acknowledges that humans make mistakes.

Error Management

Traditional thinking focused on improving technology to prevent disasters.

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The Human Factor

- Cockpit Voice Recordings led analysts to conclude that 70% of all aviation accidents were the result of human error.
- Discovery reformed approach to preventing aviation disasters.

Innate Abilities & Learned Behaviors

- Led to the development of Cockpit Resource Management, then (CRM), Crew Resource Management, now Threat & Error Management (TEM).
- CRM proponents claim improved decision-making and reduced errors.
Error Management: Introducing Cultural Change

Contemporary thinking acknowledges that error is a way of life.

– Given the acceptance that human error may occur, the focus has become “How does one effectively manage error?”

– Proper error management greatly enhances safety.

Heinreich’s Theory (1930’s)

Intervening at the lowest level saves more lives, pain and suffering.
Human Factor Error Causes Gordon Dupont’s “Dirty Dozen”

- Lack of Communication
- Complacency
- Lack of Knowledge
- Distraction
- Lack of Teamwork
- Fatigue

- Lack of Resources
- Pressure
- Lack of Assertiveness
- Stress
- Lack of Awareness
- Norms

Helmreich’s Error Management Model

- AVOID
- TRAP
- MITIGATE

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Error Trapping

Layers of Defense = Redundancy = Increased Safety Margin

• To trap errors, keep as much redundancy in the crew for as long as possible.

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Layers of defense (redundancy) trap crew errors

Driver
Familiar with area

Crew member
Grew up in complex

On-Board computer
Provides running route and incident information

Officer-in-charge

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Even good barriers have holes . . .

James Reason’s “Swiss Cheese”

Follow SOPs

Use All Eyes & Ears

Maintain Good Situational Awareness

High Level of Proficiency

Error Mitigation

Be Vigilant, Stay Focused (BVSF)
“BVSF”

Constantly review and cross check that what you are doing is sensible for where you are, and where your are going (situational awareness)

- Example: Entering a second floor rear window when PPV is operating at the front door.
- Responding to Nelson Street vs. Nelson Lane

Overlap

“Redundancy” of the three layers fosters effective error management

- Example: SOPs
  - Avoid – because I am doing things by the SOP, I will avoid the chance of error.
  - Trap – SOPs can help catch (trap) errors.
  - Mitigate – Referring back to SOPs when things go awry mitigate error.
Crew Resource Management
Threat & Error Management

- Force multiplier
- Error Management
- Maximizes all resources
- Proven
- Institutionalizes Instincts

Photo by Carlos Alfaro, MCFRS

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Crew Resource Management (CRM) is a tool created to optimize human performance by reducing the effect of human error through the use of all resources.

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Principles

- Communication
- Task Allocation
- Teamwork
- Critical Decision Making
- Situational Awareness

Communication

- Formulate idea
- Select medium
- Transmit
- Receive
- Interpret
- Feedback
Do You Hear What I Say?

- Barriers and bias block communication
- “Standard” language benefits all
- Practice “active” listening
- Divide duties to prevent overload
- Minimize distractions

Barriers, Roadblocks & Standard Language

- Barriers & Roadblocks
  - Hazardous Attitudes
  - Fatigue
  - Inattention

- Standard Language
  - 500 most common words have 14,000 meanings.
  - Say what you mean and mean what you say, but know that what you mean to say may not be taken as what you meant to say.
Inquiry & Advocacy Skills

Inquiry Skills
- Be Proactive
- Use Clear, Concise Questions
- Express Concerns Accurately

Advocacy Skills
- Be Respectful
- Offer a Solution with your Concern
- Know When to Say When

Assertive Behavior

- Authority with Participation
- Assertiveness with Respect

*The genuine, complete & direct communication of ideas, wants & needs.*

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Todd Bishop’s Assertive Statement

- Opening/attention.
- State concern/owned emotion.
- State the problem as you see it.
- State a solution.
- Obtain agreement (aka buy-in).

Teamwork

- Leadership
- Followership
Leadership

- Authority
- Mentoring
- Conflict Resolution
- Mission Analysis

Leadership

- Mandated by rank
- Truly derived through respect
  - Personal competence
  - Technical competence
  - Social competence
- Risk vs. Gain
- Develop strategy
Followership

Self Assessment

- Physical Condition
- Mental Condition
- Attitude
- Understand Human Behavior

Followership Skills

- Respect authority
- Personal Safety
- Crew Safety
- Accepts authority
- Knows authority limits
- Leader success
- Good communication skills

- Learning attitude
- Ego in check
- Balance assertiveness/authority
- Accept orders
- Demand clear tasks
- Admit errors
- Provide feedback
- Adapt
Task Allocation

- Know your limits.
- Know your crew’s limits.
- Capitalize on strengths.
- “Eat the elephant one bite at a time.”

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Task Allocation

- Proper use of automation
- Control distractions
- Follow SOPs
- Delegate
- ICS
- Use CRM

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Critical Decision Making

Traditional Decision Making
- Identify problem
- Assess hazard
- Assess resources
- Solicit solutions
- Select best option
- Monitor results

Fire Service Decision Making
- Recognition Primed Decision Making
- Naturalistic Decision Making
- Cue Based Decision Making

Recognition Decision Making
- Rapid, intuitive process
- Looks for critical causes
- Relates to previous experiences
- Recalls previous conclusions & best actions taken
- Issues direction
- Experience

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Cue Based Decision Making

- Individual is prompted to act based on “cues” from event.
- Cues are sensory elements (sights, sounds, smells) that recall previous actions under similar circumstances.

Ways to Improve Decision-Making

- Experience
- Training
- Communication
- Preplanning

Photo by Carlos Alfaro, MCFRS

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Situational Awareness

The skill of becoming aware of the situation as it actually exists.

*Reality times Perception still equals Reality.*

- The Killer Equation
• “Fight the fire!”
• Assess problems in the time available.
• Gather info from all sources.
• Choose the best option.
• Monitor results – alter as necessary.
• Beware of SA loss factors!

Situational Awareness
Loss Factors

• Ambiguity
• Distraction
• Fixation
• Overload
• Complacency
• Improper Procedure
• Unresolved Discrepancy
• “Nobody Fighting the Fire”
Elements of Good Situational Awareness

- Good crew coordination
- Proper task completion
- Understanding
- Smooth ride
- Crisp and appropriate radio calls
- Use of checklists

Preventing Loss of Situational Awareness

- Crew mental joggers
  - “What do we have here?”
  - “What’s going on here?”
  - “How are we doing?”
  - “Does this look right?”
Preventing loss of Situational Awareness

Personal Mental Joggers

– What do I know that they need to know?
– What do they know that I need to know?
– What do we all need to know?

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If we continue on the current LODD/injury path, the fire service will experience 1000 fatalities and 100,000 injuries in the next ten years.

“If not now, when?
If not us, who?”

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• Human error is the leading cause of accidental injury, death and property damage.

• Errors can be effectively managed and mitigated through the consistent use of CRM.

• The aviation, military and medical industries have over 25 years of experience that validates the value of Crew Resource Management and Near Miss Reporting.

**CRM & Near Miss**

• What are the ties between the two?

• Can you do one without the other?

• Which one is more effective?

• Who else is using this stuff?
Ties That Bind

- Near Miss Reporting
  - Intervenes @ "Unsafe Acts"
  - Greater ratio of opportunity for intervention
  - All members participating

- CRM
  - Targets "Unsafe Acts" area
  - Most eyes/ears working
  - All member commitment

CRM & Near Miss

- Compliment and support each other.

- Effectiveness is based on commitment and support of department leadership.

- All major U.S. air carriers, U.S. Military, Wildland fire service, individual fire departments.
www.firefighternearmiss.com

- Voluntary
- Confidential
- Secure
- Web based
- Free

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I am responsible for my own safety,
I am responsible for my crew’s safety,
I am responsible for ending home in my family after every shift.

nearmiss@iafc.org – type “subscribe-crm” in subject line.

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QUESTIONS?

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