During the funeral ceremony, Charleston, South Carolina, honoring the nine fire fighters who perished in the Super Sofa Fire, Chief Rusty Thomas stated nine times "he died because he was an aggressive fire fighter". There is a distinct difference between being aggressive and being careless. With this educational segment from the National Fallen Fire Fighters Fund we hope to give our members a working tool to distinguish between aggressiveness and carelessness. This Educational Power Point Presentation is based on a model implemented in New South Wales, Australia. The intent of the class is to establish and standardize a practice of continuous Dynamic Risk Assessment as a component of incident size up, incident management and operational training. These procedures take into account identification, assessment and control of hazards arising from the changing circumstances of an operational incident or training evolution. The objective is to recognize and reduce risks and maintain a high level of fire fighter safety while continuing to manage the incident or activity.

It is the responsibility of all fire fighters and commanding officers to continuously assess the hazards associated with each emergency incident or training evolution. This slide identifies specific roles and responsibilities for each participant within the incident.
Dynamic Risk Assessment

• The continuous assessment of risk during emergency response activities and training, taking into account changing environments and circumstances, whereby personnel can rapidly and effectively identify hazards, assess risks and decide on appropriate actions or control measures.

When properly performing a Dynamic Risk Assessment, it is crucial for the individual to continuously monitor the surrounding circumstances and conditions. Evaluate where the people you are responsible for, whether it is yourself or others, are located and the conditions of the environment they are in, whether they are inside a structure or outside. These evaluations must be continuous as conditions can change rapidly.

Terminology

• Hazard:
  - A situation that has the potential to cause injury, disease or damage

• Hazard Identification:
  - The recognition or detection of hazards that can potentially cause harm to people, equipment, buildings or the environment

• Hierarchy of Control:
  - The hierarchy provides a method and sequence for defining the most effective and appropriate control for risks

• Risk:
  - A measure of likelihood that the harm from a particular hazard will occur taking into account the possible severity of the harm

• Risk Assessment:
  - Determining the likelihood and consequence of the hazard being realized using the dynamic risk assessment matrix.

Hazards can be classified a number of ways including:
Biological Hazards (viruses, bacteria)
Chemical Hazards (liquids, gases, Fumes, dust)
Ergonomic Hazards (manual handling, equipment design, lighting, ladder conditions)
Physical Hazards (fire, noise, electricity, smoke)
Hierarchy of Control

- Each of the controls must be considered when mitigating an incident. The options descend from the most effective to the least effective in controlling hazards:
  - Elimination
  - Substitution
  - Engineering Controls
  - Administrative Controls
  - Personal Protective Equipment

Examples of control efforts include but are certainly not limited to:
Elimination (exterminate the fire, stop the hazardous materials leak through offensive operations, etc)
Substitution (replace Standard Operating Procedures, change the use of equipment)
Engineering Controls (the use of mechanical exhaust, technical rescue practices)
Administrative Controls (transferring people into roles where they can succeed, scope of authority)
Personal Protective Equipment (wearing equipment meeting accepted standards, full compliance of all PPE i.e. wear your hood)

Operational Risk Management

- The Fire Station should be considered the Staging Area. Our efforts for a safer work environment need to be directed to the actual work environment, the emergency scene
  - Two components to managing fire fighter safety during emergency operations
    - Safe Person Approach
    - Dynamic Risk Assessment

Emphasis should be placed on the consideration of our stations being staging areas. The fire service is making an effort to recognize the need for us to be more active in establishing a safe work environment. That will require fire fighters to take on the responsibility of protecting themselves and those around them.
Safe Person Approach

- There are two elements to the Safe Person Approach
  - The responsibility the organization has to its personnel
  - The responsibility that each individual has to their jurisdiction, themselves and those around them

Some departments, especially overseas, share the responsibility of protecting their members. There are many City, Village, Township, etc. administrators, and fire personnel, who advocate for safer work environments. Fewer actually incorporate this belief into their core philosophies. For an improved work environment for fire fighters both groups need to commit to their responsibilities.

Fire Department Responsibilities

- Selection of personnel – Right Person for the Right Job
- Provide information of risk – Station Drills, Con-Ed, Safety Alerts
- Provide proper Personal Protective Equipment
- Provide proper equipment – Appliances, SCBA’s, etc
- Provide safe procedures and work requirements – SOP’s, General Orders, SOG’s
- Effective instruction and supervision
- Continuous and effective training
- Performance measurements – Incident statistical review, post incident debriefing, employee evaluations

The responsibilities listed above are the responsibility of the City, Village, Township, etc. and fire administrations. It is the responsibility of fire officers, fire fighters and their representatives to advocate for the proper support from the administrations.
Personal Responsibilities

- Each individual MUST accept responsibility for his or her own safety! Every person needs to ensure they are:
  - Capable of performing the tasks assigned
  - An effective member of the team
  - Self-disciplined to work within accepted guidelines
  - Adaptable to changing circumstances
  - Vigilant for his or her own safety, vigilant for the safety of their colleagues and others
  - Able to recognize and express his or her own limitations

Just as City and Fire administrations have the responsibility of providing the needed equipment, staffing, training and support to ensure the safety of fire fighters, fire fighters themselves have the responsibility to protect themselves and those around them.

Dynamic Risk Assessment

- The level of risk is determined by considering the consequence of something occurring and then considering the likelihood of it happening

- The DRA process involves using the following steps as a guide to the identification, assessment and control of risks

We know that actions may have consequences. The goal of the Dynamic Risk Assessment is to help fire fighters learn how to assess situations, and develop the skills to reliably predict the possible consequences of their actions or decisions.
Dynamic Risk Assessment Process

- The DRA process involves using the following steps as a guide to the identification, assessment and control of risks
  - Evaluate the Situation, Tasks and Persons at Risk
  - Select Tactics
  - Assess the Chosen Tactics
  - Introduce Additional Controls
  - Re-Assess Tactics and Additional Control Measures

One of the most important aspects of the Dynamic Risk Assessment is repetition and consistency. Fire fighters and officers must develop the habit of performing the assessment in a similar step fashion every time they are involved in a training activity or emergency response.

Step one begins prior to the call being received. Are we performing our inspections and learning from them? Do we know our pre-plan assignments when an alarm is received from a designated location? When the call is received are we beginning to process the information?
Step Two: Select Tactics

- Consider the possible tactics and choose the most appropriate for the situation
- The starting point for consideration must be procedures that have been established in pre-planning and training
- Ensure that personnel are competent to carry out the tasks that they have been assigned

Upon arrival it is important to understand what is happening before assigning tasks. Many times decisions have been made en-route without assessing the true situation causing fire fighters to be placed in compromising situations, or at the least delaying more appropriate tactics and tasks to be employed.

Step Three: Assess the Chosen Tactics

- Assess the chosen tactics and the level of risk
- The acceptable level of risk will depend on a range of factors including, but not limited to:
  - Information on whether there are lives at risk that can be saved
  - The potential risk to fire fighters
  - The real value of the asset involved
  - The likely cost from the incident or potential escalation

The process of assessment can take some time but usually occurs very quickly, as soon as decisions are made begin the process of monitoring progress, assessing risks and possible options.
Are the Risks Proportional to the Benefits?

- If YES proceed with the tasks after ensuring:
  - Goals, both individual and team are understood
  - Responsibilities have been clearly allocated
  - Safety measures and procedures are understood
  - Risks are continually monitored

During the Risk Assessment, when risk has been identified there is a need to make sure they are proportionate with the expected benefits. If there is life safety involved we can risk more, but if it is a vacant property, are we risking too much?

Even if risks are proportionate with the potential rewards, or benefits, the process of monitoring the Risk Assessment does not stop. It is a continual process.

Remember the National Fire Protection Association’s NFPA 1500, Annex A, Section 8.3.2 which outlines the following Rules of Engagement:

We will risk our lives a lot, in a calculated manner, to save Savable Lives;
We will risk our lives a LITTLE, in a calculated manner, to save SAVABLE property;
We WILL NOT risk our lives at all for a building or lives that are already lost.

Step Four: Introduce Additional Controls

- Consider the following:
  - Eliminate or minimize remaining or additional hazards as far as is reasonably practicable using the hierarchy of controls
  - Can safer equipment/tools be used to further minimize risk
  - Can additional specialist resources be used
  - Can additional PPE be used?
  - Consult with Incident Commander, Sector Chiefs, Safety Officers or specialist personnel

As additional risks are introduced or recognized, we need to identify avenues to address the risks to reduce or neutralize them.
Step Five: Re-Assess Tactics and Additional Control Measures

- If any risks remain, does the benefit gained outweigh the possible consequences
- If the benefits outweigh the risks then proceed
- If the risks outweigh the benefit DO NOT proceed with the tasks but consider alternative tactics

As a situation progresses a few things can happen, but mainly our actions are improving the conditions to bring the incident in control, we have stabilized a situation to provide better protection to personnel so they may initiate rescue, or the situation is deteriorating and conditions warrant increased measures to protect fire service personnel including defensive operations. Any way the situation proceeds we need to continually monitor and assess our options and decisions.

Slide 18

Identify the Consequence of the Hazard

<table>
<thead>
<tr>
<th>Category</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catastrophic</td>
<td>Death</td>
</tr>
<tr>
<td></td>
<td>Multiple/excessive injuries</td>
</tr>
<tr>
<td></td>
<td>Severe loss of operational capability</td>
</tr>
<tr>
<td>Major</td>
<td>Loss of consciousness</td>
</tr>
<tr>
<td></td>
<td>Injuries requiring time off work</td>
</tr>
<tr>
<td></td>
<td>Loss of significant equipment – time lost</td>
</tr>
<tr>
<td>Moderate</td>
<td>Injuries requiring first aid and medical follow-up</td>
</tr>
<tr>
<td></td>
<td>Repair to equipment required – may result in time lost</td>
</tr>
<tr>
<td>Insignificant</td>
<td>Minor injuries requiring on scene first aid</td>
</tr>
<tr>
<td></td>
<td>Minor equipment loss/damage – no time lost</td>
</tr>
</tbody>
</table>

The charts are self-describing and are meant to be used as a sum of the decision making. Consequences and the Likelihood of an occurrence determine the Level of Risk.
### Slide 19

**Determine the Likelihood**

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certain</td>
<td>Will Happen</td>
</tr>
<tr>
<td>Very Likely</td>
<td>Will probably happen</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Could happen</td>
</tr>
<tr>
<td>Rare</td>
<td>Could happen only in exceptional circumstances</td>
</tr>
</tbody>
</table>

Use slide 19 with the prior chart on slide 18.

### Slide 20

**Determine the Level of Risk**

<table>
<thead>
<tr>
<th>Assessing the Likelihood</th>
<th>Consequence</th>
<th>Catastrophic</th>
<th>Major</th>
<th>Moderate</th>
<th>Insignificant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certain</td>
<td>Extreme</td>
<td>Extreme</td>
<td>High</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Very Likely</td>
<td>Extreme</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Unlikely</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Rare</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td></td>
</tr>
</tbody>
</table>

Using the charts above of the consequences and likelihood will determine the Level of Risk.
Once you have determined the Level of Risk now you can relate this to possible actions taken and decision making.

### Level of Risk Key

<table>
<thead>
<tr>
<th>Risk Rating</th>
<th>Actions Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extreme</td>
<td>Do not proceed/alternative tactics required</td>
</tr>
<tr>
<td>High</td>
<td>Close supervision/back-up required</td>
</tr>
<tr>
<td>Medium</td>
<td>Normal procedures should suffice</td>
</tr>
<tr>
<td>Low</td>
<td>Monitor for escalation</td>
</tr>
</tbody>
</table>

Risk a Lot to Save a Lot – Risk Little to Save Little
Escalation of Control

- From the moment fire fighters arrive on an emergency scene, the situation and the resources available to control it will evolve. As time elapses, there will often be an increased ability to implement higher levels of control.

When the fire service arrives on an emergency scene we will perform a Risk Assessment. If additional resources are available and requested they can be utilized to bring the scene under control. Additional hand lines, rescue equipment or aerial ladders can lead to an increase in fire fighter safety and also lead to a more rapid conclusion to an event, which in turn would reduce the amount of exposure the fire fighters experience.

Post Incident Debrief

- Following incidents, debriefs must be conducted to ensure procedural, training or equipment issues or other opportunities for improvement are identified, resolved and communicated.

We must take the opportunity to learn from our experiences. A Post Incident Debriefing can lead to fire fighters learning what decisions and tactics led to success and those that did not turn out so well.
To wrap up the presentation briefly review some of the points the audience identified with as reinforcement. Emphasize that Dynamic Risk Assessment is in the name, it is a dynamic action or series of assessments, decisions, actions and re-assessments.

A safe person approach requires responsibilities of both the organization and the individual. Review each step of the Dynamic Risk Assessment and it is a continuous effort that needs to be established for every training and emergency event. Learn from our successes and our failures.
NFPA 1500, Annex A
Section 8.3.2

- We will risk our lives a lot, in a calculated manner, to save SAVABLE LIVES

- We will risk our lives a LITTLE, in a calculated manner, to save SAVABLE property

- We WILL NOT risk our lives at all for a building or lives that are already lost