

# FIREFIGHTER SAFETY

## IN THE WILDLAND/URBAN INTERFACE



**Sponsored by**

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**An instructional presentation to accompany the video series  
from the National Wildland/Urban Interface Fire Program**

For use with the Firefighter Safety Instructor Guide

**Video 3**

# Overview of the firefighter safety video

**Causes of fatalities**

**Safety as a personal responsibility**

**L-C-E-S**

**Crew cohesion**

**10 standard fire orders**

**18 watch out situations**

# Causes of wildland firefighter fatalities



- NWCG source document
  - Covers years 1910 through 2001
  - 773 fatalities listed
  - Average between 8 and 9 per year
  - Since 1990, average is trending higher
- Causes
  - 80 percent in three categories
    - Burnover
    - Vehicle accident
    - Medical

## *Discussion:*

Download the NWCG fatality report and select several incidents for more discussion.

# Causes of wildland firefighter fatalities



- Burnover fatalities
  - Includes spot fires and overrun by fire
  - Connection of dangerous winds and multiple fatalities
    - Sample individual incidents
      - “unanticipated upslope winds in afternoon” 12 fatalities
      - “unanticipated wind pushed fire upslope in late morning” 8 fatalities
      - “unanticipated evening downslope wind” 15 fatalities
      - “up-slope winds in p.m. Fire ran uphill” 11 fatalities

## *Discussion:*

Review the effects of strong winds on fire behavior.

Also review the time-of-day effects of winds.

Is this a factor in your area?

# Safety as a personal responsibility



- Personal responsibility when decisions are in individual's control
  - Physical fitness
    - Heart attack can be triggered by heavy physical exertion
    - Especially for those over 40 years old and inactive except for fire emergency
    - Exercise improves physical fitness and cardiac health
    - Firefighter makes personal choice to exercise or not exercise

## *Discussion:*

Discuss ways to increase the commitment to better physical fitness among firefighters who are over age 40.

# Safety as a personal responsibility



- Personal responsibility when decisions are in individual's control
  - Safe driving on the way to, and at, the fire
    - Vehicle accidents responsible for 18% of total
    - Improper haste with unfamiliar roads
    - Lack of training and operation of unfamiliar vehicles
      - Remember that an individual makes a *personal* decision on how to drive
    - Most frequent victims: volunteer firefighters

## *Discussion:*

Is driver training available for every individual in your agency who may be expected to drive fire apparatus under emergency conditions?

If not, do you think that is acceptable?

# Recipe for survival: L-C-E-S



- **Safety planning concept**
  - Safety workshops available
  - Must be continuously re-evaluated as fire conditions change
  - Each firefighter must know the roles
- **Four parts**
  - L = Lookout
  - C = Communications
  - E = Escape route
  - S = Safety zone

## *Discussion:*

Why might the L-C-E-S system be a more appropriate safety plan concept for individual firefighters than the 18 situations that shout watch out?

# LCES: Lookout



- **Qualifications**
  - Trained and able to observe the wildland environment and anticipate and recognize fire behavior changes
- **Duties**
  - Achieves view of entire scene
  - Knows location of escape routes and safety zones in relation to crew
  - Monitors fire and fire behavior
  - Stays in position until replaced
  - Maintains communications with all in area

## *Discussion:*

What will a lookout need to know about current wind speed and direction in order to determine an appropriate lookout location?

# LCES: Communications



- **Qualifications of communicator**
  - Understand what needs to be communicated
  - Have good listening skills
  - Able to use communications equipment
- **Duties**
  - Keep radio communications clear, concise
  - Stay aware of briefings, brief others
  - Share weather reports
  - Keep track of radio frequencies
  - Know contingency plans
  - Share changes in fire behavior

## *Discussion:*

In the video, did Captain Stibbard's crew receive evacuation communications in a timely manner?

# LCES: Escape routes



- Considerations

- Understand importance of escape routes
- Understand that conditions can change and affect escape routes
- Establish two escape routes for safety
- Test the escape route by walking it
- Clear any barriers to easy escape
- Routes are announced as crew moves into and through an area
- Don't allow safety margin to escape
- Fireline is escape route 90% of the time

*Discussion:*

In the video, what escape route consideration did the Doud's Landing firefighters overlook?

# LCES: Safety zone



- Considerations
  - Discuss safety zones before work begins
  - Keep one foot in the black
  - Safety zone can be created by burning out light fuels, but allow the extra time
  - Blackened area safety zone must have crown removed also
  - New safety zones are required as crew moves around in an area
  - Help less experienced people scrutinize safety zones

## *Discussion:*

In the video, why did Timber Weller, the Florida firefighter who was burned, fail to consider a safety zone before beginning to fight the fire?

# The importance of crew cohesion



- **Definition**
  - Ability or tendency of a crew to stick tightly together as a group
    - Especially when conditions deteriorate and when decisions can mean life or death
    - Comes from training, leadership, “chemistry”
- **Connection with fatal incidents**
  - Poor crew cohesion increases chances for bad decisions leading to fatal incidents
  - More crew cohesion = fewer accidents

## *Discussion:*

How does poor crew cohesion contribute to bad decisions and more safety risks for firefighters in a major fire?

# The importance of crew cohesion



- Two types of crew cohesion
  - Intracrew cohesion
    - Holding together of the individual members of a single crew
      - Example: Mann Gulch Fire, 13 fatalities, and Thirtymile Fire, 4 fatalities
  - Intercrew cohesion
    - Cohesion of separate crews working in the same vicinity of the same fire
      - Example: South Canyon Fire, 14 fatalities, and Thirtymile Fire (had problems with both types of crew cohesion)

## *Discussion:*

Describe crew cohesion factors and their impact at the Mann Gulch, South Canyon, and Thirtymile fires.

# Crew cohesion and transition fires



- Transition fires
  - When fire has grown beyond initial attack stage
  - Transitioning to extended attack stage
  - But additional resources not yet in place
  - New strategies, tactics may not yet be communicated to all
  - Time of greatest safety risk to fire crews
  - Increased chance of firefighter independent action
  - Crew cohesion put under more pressure

## *Discussion:*

What are some ways to prevent extra safety risks to firefighters in transition fires?

# Improving crew cohesion



- Importance of improvement
  - Up to 72% of fatalities during transition
- Special training required
  - To recognize what about transition fires increases danger risk
  - Some individuals have more ability than others to promote crew cohesion
- Be especially cautious
  - Until new crews and managers learn to work together

## *Discussion:*

Describe additional ways that crew cohesion factors can be identified and strengthened in your local area.

# 10 standard fire orders



- Overview
  - Changes in 2001
  - Originally developed in 1957
    - “The 10 Standard Fire Orders are firm. We don’t break them; we don’t bend them. All firefighters have a right to a safe assignment.”
- New organization in three categories
  - Fire behavior
  - Fireline safety
  - Organizational control

## *Discussion:*

Are the 10 standard fire orders taught to all firefighters in your agency?

If not, why?

# 10 standard fire orders



## Fire behavior

1. Keep informed on fire weather conditions and forecasts.
2. Know what your fire is doing at all times.
3. Base all actions on current and expected behavior of the fire.

### *Discussion:*

Review fire behavior factors from the Fire Behavior video.

# 10 standard fire orders



## Fireline safety

4. Identify escape routes and make them known.
5. Post lookouts when there is possible danger.
6. Be alert. Keep calm. Act decisively.

### *Discussion:*

Compare these fireline safety orders to the L-C-E-S system.

# 10 standard fire orders



## Organizational control

7. Maintain prompt communications with your forces, your supervisor, and adjoining forces.
8. Give clear instructions and ensure they are understood.
9. Maintain control of your forces at all times.

If 1 through 9 are considered, then...

10. Fight fire aggressively, having provided for safety first.

# 18 situations that shout watch out



Click to start list...

1. The fire is not scouted and sized up.
2. You're in country not seen in daylight
3. Your safety zones and escape routes are not identified.
4. You're unfamiliar with weather and local factors influencing fire behavior.
5. You're uninformed on strategy, tactics, and hazards.

# 18 situations that shout watch out



6. Instructions and assignments are not clear.
7. You have no communication link with crew members or supervisor.
8. You're constructing a line without a safe anchor point.
9. You're building a fireline downhill, with fire below.
10. You're attempting a frontal assault on the fire.

# 18 situations that shout watch out



11. There is unburned fuel between you and the fire.
12. You cannot see the main fire, and you're not in contact with someone who can.
13. You're on a hillside where rolling material can ignite fuel below.
14. The weather is becoming hotter and drier.
15. The wind increases and/or changes direction.

# 18 situations that shout watch out



16. You're getting frequent spot fires across the fireline.

17. The terrain and fuels make escape to safety zones difficult.

18. You feel like taking a nap near the fireline.

# Stay safe for the long haul



- Interface fires can have long duration
  - Be conscious of effects of fatigue
  - During down times, learn how to rest without losing focus
  - Stay in good physical shape
  - Wear the right gear
    - Lightweight wildland gear is better suited for interface conditions
    - Structural firefighting gear is not designed for extended wildland environments; too heavy