



# FIRE PROTECTION TRAINING

Procedures Handbook 4300

FIREFIGHTER SAFETY

**TOPIC:** Common Denominators of Fire Fatalities

**TIME FRAME:** :30

**LEVEL OF INSTRUCTION:** Level I

**BEHAVIORAL OBJECTIVE:**

*Condition:* A written quiz

*Behavior:* The student will list and describe the common denominators of fire behavior on fatal and near-miss wildland fires

*Standard:* With a minimum of 80% accuracy

**MATERIALS NEEDED:**

- Writing board and markers/erasers
- NWCG: NFES 1077, PMS #461 IRPG
- Appropriate visual aids
- Audio visual equipment

**REFERENCES:**

- Wildland Firefighting, Clayton, Day, and McFadden, Chapter 12
- Firefighter's Handbook on Wildland Firefighting, 3<sup>rd</sup> Edition, Teie, Chapter 1, 2005
- USDA Forest Service: Common Denominators of Fire Behavior on Tragedy and Near-Miss Fires, Wilson, 1978

**PREPARATION:**

Analysis of firefighter deaths and close calls over the past 70 years has revealed many common factors. By understanding the basic fire behavior characteristics that produced these situations you may identify a similar occurrence and avoid being overrun.



# FIRE PROTECTION TRAINING

Procedures Handbook 4300

COMMON DENOMINATORS OF FIRE  
FATALITIES

PRESENTATION	APPLICATION
<p><b>I. WILSON-SORENSEN STUDY (1926-1974)</b></p> <ul style="list-style-type: none"><li>A. Most incidents occurred on relatively small fires or isolated sections of large fires</li><li>B. Unexpected or unpredicted winds were often given as the major cause of "Erratic Behavior"</li><li>C. Most of the fires were innocent in appearance (in some cases the mop-up stage) prior to the flare-up or blow-up</li><li>D. Flare-ups occurred in deceptively light fuels</li><li>E. Fires ran uphill in chimneys, gullies, or on steep slopes</li><li>F. Suppression tools can adversely modify fire behavior (helicopter and air tanker vortices have been known to cause flare-ups)</li><li>G. There are no erratic fire behavior situations. Our inability to predict fire behavior causes us to fall back on the term "Erratic"</li></ul> <p><b>II. USFS STUDY (1926-1976) ANALYZING CAUSE OF DEATHS AND NEAR MISSES ON WILDLAND FIRES</b></p> <ul style="list-style-type: none"><li>A. Study based on 125 wildland fires accounting for 236 fatalities and 66 near miss situations<ul style="list-style-type: none"><li>1. Fire ran upslope: 29.0%</li><li>2. Sudden wind shift: 20.8%</li><li>3. Head made fast run: 13.6%</li></ul></li></ul>	<p>Ask students how they think most deaths and near misses occur based on wildland fire behavior.</p>

4306.4



# FIRE PROTECTION TRAINING

Procedures Handbook 4300

COMMON DENOMINATORS OF FIRE  
FATALITIES

PRESENTATION	APPLICATION
<p>4. Fire spotted across line: 9.6%</p> <p><b>NOTE:</b> Emphasize the first four</p> <p>5. Fire ran downslope: 6.4%</p> <p>6. Concentrated fuel flare-up: 4.8%</p> <p>7. Gusty cumulus clouds overhead: 4.0%</p> <p>8. Aircraft turbulence: 0.8%</p> <p>9. Equipment failure: 0.8%</p> <p>10. Other (heart attack, electrocution, etc.): 9.6%</p>	

4306.4



# FIRE PROTECTION TRAINING

Procedures Handbook 4300

COMMON DENOMINATORS OF FIRE  
FATALITIES

---

## **SUMMARY:**

Because history does have the tendency to repeat itself, it is important to understand the common denominators of fire behavior on fatal and near-miss wildfires. By following the 10 Standard Fire Orders and 18 Situations that Shout "Watch Out" you may avoid being counted in a future wildland fire fatality study.

## **EVALUATION:**

A written quiz.

## **ASSIGNMENT:**

To be determined by instructor(s).