

# LCES

LCES- A system for Operational Safety. In the wildland fire environment, where four basic safety hazards confront the firefighter - lightning, fire-weakened timber, rolling rocks, and entrapment by running fires - LCES is key to safe procedure for firefighters. LCES stands for "lookout(s)", "communication(s)", "escape routes", and "safety zone(s)" - an interconnection each firefighter must know. Together the elements of LCES form a safety system used by firefighters to protect themselves. This safety procedure is put in place before fighting the fire: select a lookout or lookouts, set up a communication system, choose escape routes, and select safety zone or zones. (See diagram)

In operations, LCES functions sequentially - it's a self-triggering mechanism: lookouts assess - and reassess - the fire environment and communicate to each firefighter threats to safety; firefighters use the escape routes and move to safety zones. Actually, all firefighters should be alert to changes in the environment and have authority to initiate communication.

**Key Guidelines.** LCES is built on two basic guidelines:

Before safety is threatened, each firefighter must be informed how the LCES system will be used.

The LCES system must be continuously reevaluated as fire conditions change.

**How to make LCES work**

Train lookouts to observe the wildland fire environment and to recognize and anticipate fire behavior changes.

Position lookout or lookouts where both the hazard and the firefighters can be seen. (Each situation - the terrain, cover, and fire size - determines the number of lookouts that are needed. As stated before, every firefighter has both the authority and responsibility to warn others of threats to safety.)

Set up communications system - radio, voice, or both - by which the lookout or lookouts warn firefighters promptly and clearly of approaching threat. (Most often the lookout initiates a warning that is sub-

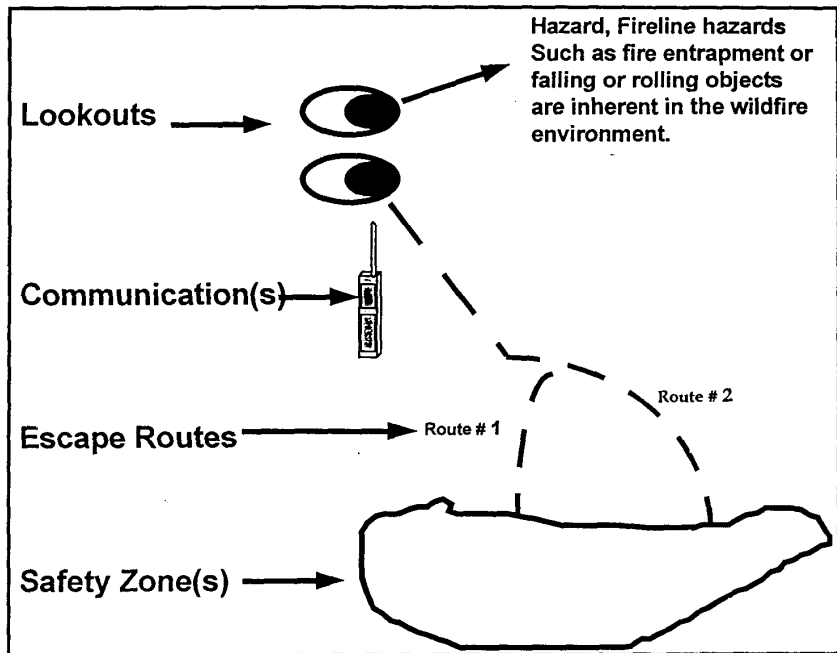
sequently passed down to each firefighter by "work-of-mouth". It is paramount that every firefighter receive the correct message in a timely manner.)

Establish the escape routes (at least two)- the paths the firefighters take from threatened position to area free from danger- and make them known. (In the Battlement Creek 1976 fire, three firefighters lost their

not imply that a shelter would not be deployed if needed, only that if there is a deployment, the safety zone location was not truly a safety zone.)

**A Final Word**

The LCES system approach to fireline safety is an outgrowth of my analysis of fatalities and near misses for over 20 years



lives after retreat along their only escape route was cut off by the advancing fire.)

Reestablish escape routes as their effectiveness decreases. (As a firefighter works along the fire perimeter, fatigue and distance increases the time required to reach a safety zone.

Establish safety zones - locations where the threatened firefighter may find adequate refuge from the danger. (Fireline intensity, air flow, and topographic location determine a safety zone's effectiveness. Shelter deployment sites have sometimes been termed, improperly and unfortunately, "safety zones". Safety zones should be conceptualized and planned as a location where no shelter will be needed. This does

of active fireline suppression duties. LCES simply refocuses on the essential elements of the standard FIRE ORDERS. Its use should be automatic in fireline operations. All firefighters should know LCES, the Lookout-Communication-Escape routes-Safety Zone interconnection.

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