LCES: LOOKOUTS, COMMUNICATIONS, ESCAPE ROUTES, SAFETY ZONES

The LCES System must be identified prior to when it must be used. Each firefighter must know the interconnection of LCES - lookouts, communications, escape routes, and safety zones.

It is a system that looks at the Watch Out Situations to evaluate the assignment, identify the hazards, analyze the risks, and implement steps to ensure safety by interconnecting with the Fire Orders.

Each situation needs to be re-analyzed as it changes. Fire is dynamic which will increase your exposure to entrapment.

Firefighters are often in Watch Out Situations. Many times we are faced with multiple Watch Out Situations at once. The probability of entrapment increases through time and space, unless everything goes as planned.

To reduce the risks of fire entrapment, Lookouts must be posted with communications to each firefighter, and have a minimum of two Escape routes from the firefighter's work location to a Safety zone (not a shelter deployment site) every time the firefighters working around an objective hazard.

LCES functions sequentially - it's a self-triggering mechanism. Lookouts assess and reassess - the fire environment and communicate threats to safety; firefighters use escape routes to safety zones. All firefighters should be alert to changes in the fire environment and have the authority to initiate communication.

The nature of wildfire suppression dictates continuous evaluation of LCES and, when necessary, re-establishment of LCES as time and fire growth progress.
LCES is a refocusing on the essential elements of the FIRE ORDERS. The system's design stresses the importance of the components working together.

**LOOKOUTS**

When should a lookout be posted?

- Fire not scouted and sized up.
- In country not seen in daylight.
- Unfamiliar with weather and local factors influencing fire behavior.
- Uninformed on strategy, tactics, or hazards.
- Constructing line without a safe anchor point.
- Building fire line downhill with fire below.
- Unburned fuel between you and the fire.
- On a hillside where rolling material can ignite fuel below.
- Weather is getting hotter and drier.
- Taking a nap near the fire line.

Back off if the situation is too complex. Base All Actions on Current and Expected Fire Behavior. Post lookouts; establish escape routes and safety zones. Re-assess your tactics. Two situations where firefighters traditionally have found themselves getting into trouble are **downhill** and **indirect** fire line operations.

- The lookout needs to be in a position where both the objective hazard and the firefighters can be seen.
— The lookout must be trained to observe the wildland fire environment and to recognize and anticipate wildland fire behavior changes.
— The number of lookouts needed is determined by the size of the fire and the terrain it covers.

COMMUNICATIONS

Under what conditions would you need communications?

— In country not seen in daylight.
— Safety zones and escape routes not identified.
— Unfamiliar with weather and local factors influencing fire behavior.
— Uninformed on strategy, tactics, or hazards.
— Instructions and assignments not clear.
— No communication link with crewmembers, supervisors and adjoining forces.
— Constructing line without a safe anchor point.
— Building fire line downhill with fire below.
— Attempting a frontal assault on a fire.
— Unburned fuel between you and the fire.
— Cannot see the main fire, not in contact with anyone who can.
— On a hillside where rolling material can ignite fuel below.
— Wind increased or changes direction.
— Getting frequent spot fires across the line.
— Terrain and fuels make escape to safety zones difficult.

The method used to alert firefighters of approaching hazards must be prompt and clear

Communication devices:

— Radios.
— Phones.
— Word-of-mouth.
— Flagging.

If you have doubts about your ability to communicate, back off. Take the time to get it right!
ESCAPE ROUTES
An escape route is a path the firefighter takes from a location exposed to danger, to an area free from danger.

— The effectiveness of escape routes changes continuously, therefore, constant re-evaluation and re-establishment must be done.
— Escape routes should be established at all times.

Under what situations should you re-evaluate escape routes?

— In country not seen in daylight.
— Safety zones and escape routes not identified.
— Unfamiliar with weather and local factors influencing fire behavior.
— Uninformed on strategy, tactics, or hazards.
— Instructions and assignments not clear.
— Constructing line without a safe anchor point.
— Building fire line downhill with fire below.
— Attempting a frontal assault on a fire.
— Unburned fuel between you and the fire.
— Cannot see the main fire, not in contact with anyone who can.

More than one escape route must be available to the firefighter.

— In front of the firefighter.
— To the rear of the firefighter.

The most common escape route is the fire line. Fatigue and distance increases the time required to reach the safety zone. If terrain and fuels make escape to safety zones difficult. Consider other tactics or change location.

SAFETY ZONES
Safety zones are locations where the threatened firefighter may find refuge from danger.

— A safety zone is a place where a fire shelter is not needed.
— Safety zones must be established at all times during fire line operations.

Examples of some situations are:

— Fire not scouted and sized up.
— In country not seen in daylight.
— Unfamiliar with weather and local factors influencing fire behavior.
— Uninformed on strategy, tactics, or hazards.
— Constructing line without a safe anchor point.
— Building fire line downhill with fire below.
— Attempting a frontal assault on a fire.
— Unburned fuel between you and the fire.
— Cannot see the main fire, not in contact with anyone who can.
— On a hillside where rolling material can ignite fuel below.
— Weather is getting hotter and drier.
— Wind increases or changes direction.
— Getting frequent spot fire across the line.

The fire line intensity and safety zone topographic location determines the safety zone effectiveness. Safety zones should be one and one half times the height of the surrounding vegetation or large enough to accommodate everyone without using fire shelters. Firefighters need to stay alert to changing safety zone and escape route locations. As line construction proceeds, your position changes in relation to safety zones and escape routes.

Re-examine your situation. Base all actions on current and expected fire behavior. Back off until you find escape routes and safety zones. Are safety zones large enough to accommodate everyone without using fire shelters? Consider other tactics, and provide for safety first.

MAKING LCES WORK

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

Position lookouts where both the hazard and the firefighters can be seen. Terrain, cover, and fire size determine the number of lookouts needed; every firefighter has the authority and the responsibility to warn others of threats to safety.)

Set up communications system - radio, voice, or both - by which the lookout warns firefighters promptly and clearly of approaching threat. It is paramount that every firefighter receives the correct message in a timely manner.

Establish at least two escape routes and make them known. (In the 1976 Battlement Creek Fire, three firefighters lost their lives after their only escape route was cut off by the advancing fire.)

Re-establish escape routes as their effectiveness decreases. (As firefighters work along the perimeter, fatigue and distance increase the time required to reach a safety zone.)
Establish safety zones - locations where the threatened firefighter may find adequate refuge from the danger. (Fire line intensity, airflow, and topographic location determine safety zone effectiveness. Shelter deployment sites have sometimes been termed, improperly and unfortunately, "safety zones." Safety zones should be planned as locations where no shelter will be needed. This does not imply that a shelter should not be deployed if needed, only that if there is a deployment, the safety zone location was not truly a safety zone.)