



FIRE PROTECTION TRAINING

Procedures Handbook 4300

FIREFIGHTER SAFETY

TOPIC: Lookouts, Communications, Escape Routes, and Safety Zones (LCES)

TIME FRAME: :45

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: A written examination

Behavior: The student will confirm a knowledge of lookouts, communications, escape routes, and safety zones

Standard: With a minimum 80% accuracy

MATERIALS NEEDED:

- Writing board with markers/erasers
- Aviation Handbook, 8300 manual

REFERENCES:

- LCES and Other Thoughts, Paul Gleason
- Fire Management Notes, 1991, Volume 52, Number 4
- Health and Safety Handbook, Handbook 1700
- NWCG Fireline Handbook, 2004 Edition

- NWCG Incident Response Pocket Guide, NFES #1077

PREPARATION: The common thread between all fire fatalities and near misses in the past twenty years is lack of or inadequate lookouts, communications, escape routes and safety zones (LCES). LCES is a systems approach. All components of LCES must be used. The system is interdependent of all components. Awareness of each component and how they interact is necessary to provide the safest working environment.



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PRESENTATION	APPLICATION
<p>a) Lack of experience</p> <p>1) Experience based decision making</p> <ul style="list-style-type: none">• Doing what is comfortable• Firefighters do what they are comfortable with when they do not know what else to do• Unfortunately normal courses of action may not be appropriate in critical situations <p>2) Training is NOT experience! It is imperative for <u>line supervisors</u> making critical decisions to have the appropriate experience base for the position held</p> <p>3) Other agencies may or may not have an appropriate level of wildland firefighting experience</p> <ul style="list-style-type: none">• Communicate! Ask questions <p>2. Training</p> <p>a) Lack of training - equals deficiencies in safety practices</p> <p>b) Poor quality of training - equals deficiencies in safety practice</p> <p>c) Training on safety checklists is conditioning. When lacking experience we can compensate by repetitive realistic training/drill on proper responses to bad situations</p> <p>C. Distractions</p> <p>1. Personal/Physical</p>	



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<ul style="list-style-type: none">a) Fatigue - long arduous shifts with little or no sleep for extended durationb) Stress - away from home, family concerns, money concerns, substance abuse, or other personal crisisc) Fear - of injury/death or the "unknown"d) Working in atmospheres with high carbon monoxide levels for long duration <p>2. Communication problems</p> <p>3. Public interference</p> <p>4. Overwhelming numbers of safety checklist items for the human mind to recognize and comprehend</p> <ul style="list-style-type: none">a) This is very true in periods of high stress <p>D. Competition</p> <ul style="list-style-type: none">1. Some competition is healthy but history has shown when carried to the extreme it can be disastrous2. This was probably one of the contributing factors on wildland incidents such as the Loop Fire, South Canyon Fire, Calabasas Fire <p>E. Arrogance, excessive pride or self-confidence</p> <ul style="list-style-type: none">1. Believing we are invincible will kill us<ul style="list-style-type: none">a) Fear of ridicule for showing concernsb) Heroics should not determine the success or failure of an operation	



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<p>F. Blind Faith - Following the lead of others based on respect and/or stature and/or position within the fire service</p> <ol style="list-style-type: none">1. Following supervisors directives out of respect and ignoring our safety checklists can be deadly2. <u>All</u> crew members are responsible for safety3. The fire service tends to be very rank conscious, sometimes to the extreme, including ignoring safety<ol style="list-style-type: none">a) It is everyone's responsibility to communicate safety considerations4. The inability to manage agreement – Where by<ol style="list-style-type: none">a) Organization members individually agree in private about the nature of the situation or problem facing the organization, but do not communicate this in the group settingb) Where members individually agree in private about what steps would be required to cope with the situation or problem, but will not express this if they think the group will disagreec) Organization members fail to accurately communicate their desires or beliefs to one another in the group environment<ol style="list-style-type: none">1) In fact they do just the opposite, thereby leading one another into misperceiving the collective reality	<p>Why is it important to manage agreement among organization members?</p>



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<ul style="list-style-type: none">d) With such invalid and inaccurate information, organization members make collective decisions that lead them to take actions contrary to what they want to do, thereby arriving at results that are counterproductive to the organization's intent and purposese) As a result of taking actions that are counterproductive fire crews may be placed in an unsafe situationf) If organization members do not deal with the inability to manage agreement, the cycle repeats itself with greater intensityg) The solution: if you have a concern, communicate it to the group	Information Sheet #1
<p>III. THE USE OF LCES</p> <ul style="list-style-type: none">A. A simple system incorporating the essential items of the 10 standard firefighting orders for many types of incidents or tactics on an incident<ul style="list-style-type: none">1. Roof ventilation2. Vehicle extrication3. Technical rescues4. Hazardous materials incidents5. Many other high risk assignmentsB. Consistently training with and applying the LCES principals can help keep firefighters from becoming a statistic	



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<p>IV. LOOKOUTS</p> <ul style="list-style-type: none">A. Train lookouts to observe the wildland fire environment and to recognize and anticipate fire behavior changes and other risks and hazardsB. It is critical that lookouts can see firefighters, risks and hazards<ul style="list-style-type: none">1. Announce to Division Supervisor and on the TAC Net the lookout position has been filledC. Lookouts must understand weather and fire behavior and know when to announce the alertD. Lookouts must understand how assignment relates to overall task and LCESE. Position and formally assign lookout(s) where both the hazard and the firefighters can be seen<ul style="list-style-type: none">1. The determination of how many lookouts to utilize should factor<ul style="list-style-type: none">a) Terrainb) Fuel type/loading/sizec) Fire sized) Behaviore) Weatherf) Crew locationg) Changes in crew location during the shifth) Length of anticipated line and its location	<p>What knowledge should your lookouts possess?</p>



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<ul style="list-style-type: none">i) Number of crewsj) Types of hazards<ul style="list-style-type: none">1) Falling or rolling rocks2) Air drops3) Falling trees4) Felling operation5) Dozers6) Adverse fire behavior signsF. Every firefighter has the authority and responsibility to warn others of threats to safetyG. Update position and numbers of lookouts throughout the shift, as neededH. The lookout is not established until communication with crews has been confirmedI. Remember! Lookouts don't stop at the fireline, they include:<ul style="list-style-type: none">1. Weather forecaster2. Anticipated changes included in the I.A.P3. Observations from adjoining forces <p>V. COMMUNICATIONS</p> <ul style="list-style-type: none">A. Face to face is:<ul style="list-style-type: none">1. Best and most common method	<p>Which method of communication is considered the most effective?</p>



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<ul style="list-style-type: none">2. Used to deliver pertinent messages among crew membersB. Ensure that the lookout(s) being utilized have communication with those whom they are to warnC. The communications must be fail safe and occur in a timely manner so the crew(s) can utilize there escape routes(s) or modify work locationD. Ensure communication up and down chain of command and with adjoining forcesE. Check the communications for effectiveness before deploying ground forces<ul style="list-style-type: none">1. Set and test the radio frequency to be used2. Update and provide additional frequencies as needed throughout the shift3. It is paramount that every firefighter receive the correct message in a timely mannerF. Check communications again once lookouts and firefighters are in placeG. Continued communication about safety during the shift must occur<ul style="list-style-type: none">1. This only takes a few seconds and it is time well spentH. Controls must be established where line personnel are assigned to communicate pertinent information at specific times during the assignment	<p>How can you get quick communication with an Air Attack or other CAL FIRE aircraft?</p>



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Procedures Handbook 4300

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<ul style="list-style-type: none">I. CAL FIRE's air to ground frequency is one of the guard (priority) channels in all CAL FIRE aircraft<ul style="list-style-type: none">1. If you need an immediate emergency drop, use this frequency2. On major incident, consult IAPJ. Remember! Timely communications are critical for ensuring a safe operation <p>VI. ESCAPE ROUTES</p> <ul style="list-style-type: none">A. Establish escape routes prior to deployment of ground forcesB. More than one escape route<ul style="list-style-type: none">1. Avoid uphill escape routesC. Continually update escape routes as the fire dynamics and crew location changes<ul style="list-style-type: none">1. This is probably the most elusive component of LCES. The effectiveness changes continuously2. As a firefighter works along the fire perimeter, fatigue and spatial separation increases the time required to reach the safety zoneD. The most common escape route is the firelineE. Fire crews usually have the most difficult escape routes<ul style="list-style-type: none">1. It is very important to constantly be aware of the difficulty for a crew to escape2. Communications of adjustments and additions of escape routes for crews is critical	



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<p>F. When Establishing escape routes, ensure the routes will facilitate the arrival of crews to safety zones in a timely manner</p> <p>G. Once escape routes have been established communicate location(s) to everyone who might need to use them</p> <ol style="list-style-type: none">1. Specific color flagging identified as escape route marking2. NWCG standard is Hot Pink with “ESCAPE ROUTE” in Black print <p>H. Night time operations may need special identification</p> <ol style="list-style-type: none">1. Scouting of escape route2. Distance perception may be skewed at night <p>I. There is a time to run in the fire service</p> <ol style="list-style-type: none">1. Run early, run hard, and run fast enough to ensure your escape route is viable and to beat the encroaching fire2. Utilize the best available escape route3. If you are utilizing an escape route, use the Air Attack to help you!<ol style="list-style-type: none">a) They can: obtain fixed wing & helicopter support, i.e., drops and evacuation4. Do not be afraid to drop equipment, packs, and tools when it is time to run!5. If packs are discarded, be sure to keep your fire shelter6. If you are not going to make the safety zone, find the best available deployment site and deploy your fire shelter	



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Procedures Handbook 4300

LOOKOUTS, COMMUNICATIONS,
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<p>J. Use vehicles to expedite escape routes</p> <ol style="list-style-type: none">1. Dozers2. Engines3. Crew transports4. Utility vehicles<ol style="list-style-type: none">a) Positioned for escape <p>K. Fire line supervisors should be very specific when giving directives to mark escape routes and build safety zones</p> <ol style="list-style-type: none">1. Who2. What3. Where4. When5. Why6. How7. Give the authority, responsibility and hold the responsible person(s) accountable8. Identify marker to be used	
<p>VII. SAFETY ZONES</p> <p>A. Safety Zone = An area that is free from danger, risk, or injury</p> <ol style="list-style-type: none">1. Not a shelter deployment site	<p>What is the definition of a safety zone?</p>



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<ul style="list-style-type: none">2. A location where firefighters may find safe place from danger3. Should be conceptualized and planned as a location where no shelter is needed <p>B. The use of safety zones is not intended for the firefighter to hesitate to deploy their shelter if needed or the use of a vehicle as a refuge</p> <ul style="list-style-type: none">1. When using a shelter one can equate it to a Peace Officer using "Deadly Force"<ul style="list-style-type: none">a) Use of a gun is the last option but when they pull their gun the intent is to use deadly forceb) The same concept applies to shelters when the firefighter pulls the shelter as a last choice2. If a shelter is deployed the location is not a true safety zone3. Use vehicles as a refuge if appropriate, when the encroaching fire blocks the escape route to the safety zone <p>C. When choosing a safety zone consider</p> <ul style="list-style-type: none">1. Flame length<ul style="list-style-type: none">a) Firefighters must generally know average flame length and judge the needed size for the Safety Zone2. Must be large enough to accommodate all crews in the area in case of burn over3. Natural and human made barriers<ul style="list-style-type: none">a) Large rocks	



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<ul style="list-style-type: none">b) Lee side of ridgesc) Solid structures4. Time needed to utilize escape routes to the safety zone5. The changing dynamics of current and expected fire behavior6. Updating and/or adding safety zones to ensure the viabilityD. Remember depending on the fire environment, structures can be safety zones	
<p>VIII. DAILY TRAINING</p> <ul style="list-style-type: none">A. Situational awareness of the four components must become a part of daily training sessionsB. We will respond to and perform on emergency incidents exactly the way we trainC. Training sessions must occur in similar environments as to those faced on emergency incidentsD. If LCES, becomes part of the daily routine it will become a part of the incident and not an after thoughtE. <u>Everyone</u> is responsible for LCESF. Try to remember Lookouts, Communications, Escape Routes, and Safety Zones in this manner and not complicate the system<ul style="list-style-type: none">1. Acronyms are nice but they create one more step to remembering the all too many items on the ever increasing safety lists	



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Procedures Handbook 4300

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<ul style="list-style-type: none">2. One of the attractive features of this system is the simplicity and the incorporation of the essential elements of the 10 standard fire orders3. Keep it simple but make it safeG. Continue to train on and monitor all safety practices.<ul style="list-style-type: none">1. The process of utilizing lookouts, communications, escape routes, and safety zones is not intended to replace other safety lists2. Continue to monitor the fire orders, situations that shout "watch out", and downhill fire line construction safety lists3. Utilize personal protective equipment properly4. Injury and Illness Prevention Programs (IIPPs) must continue to be updated and reviewed for effectiveness<ul style="list-style-type: none">a) This includes making changes when new technology and concepts become available	

Written Quiz

SUMMARY:

The common thread between all fire fatalities and near misses in the past twenty years is lack of or inadequate lookouts, communications escape routes and safety zones. All four of these components and all of their factors must be present in order to provide a safe working environment.

EVALUATION:

A written quiz.

ASSIGNMENT:

To be determined by instructor.