

*2008 Fireline Safety Refresher Training  
Student Workbook*



*The Changing Fire Environment*



Mission Statement:

The intent of annual fireline safety refresher training is to focus line-going personnel on operations and decision-making issues related to fireline and all-hazard incident safety. Refresher training will ensure firefighters have information regarding current initiatives, the upcoming fire season, and any policy/guidance changes. Refresher training is provided in order to recognize and mitigate risk, maintain safe practices, and to reduce accidents and near misses.

***<http://www.nifc.gov/wfstar/index.htm>***

## COURSE MODULES

DESCRIPTION	GROUP DISCUSSION/ EXERCISE	PAGE
Module 1 – Introduction	Review—Standard Firefighting Orders, Watch Out Situations, LCES, IRPG, and Risk Management Process	6
Module 2 – Fire Behavior	Local fire behavior discussion; Look Up, Down and Around Review; Upcoming Fire Season (optional); Taking Good Weather Observations; Experiences with Unexpected Fire Behavior	9
Module 3 – Human Factors on the Fireline—The Alabaugh Canyon Fire	Leaders We Would Like to Meet—Ted Putnam; Mindfulness on the Fireline Human Factors Barriers to SA and Decision Making Review; Alabaugh Canyon Fire Entrapment and Shelter Deployment	11
Module 4 - Fire Operations in the Wildland-Urban Interface	Review—Wildland Fire Incident Structure Losses, Wildland-Urban Watch Out Situations, Structure Assessment Checklist, Structure Protection Guidelines, <i>Structure Triage and Defensible Space</i> ; LCES Flowchart and Basic Fire Behavior “Estimate;” Preplanning with Cooperators	14
Module 5 – Driving Safety	Review—21 <sup>st</sup> Century Common Denominators for Wildland Firefighter Fatalities and Carl Wilson’s Common Denominators of Fire Behavior on Tragedy Fires; The SMART <sup>®</sup> Driving System; <i>Applying Lessons Learned from the Aviation World to Driver Safety</i> ; Local Unit Driver Training	24
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# INTRODUCTION

This year's fireline safety refresher training, *The Changing Fire Environment*, is intended as an alternative delivery system for annual refresher training required for all personnel participating in fire suppression or prescribed fire activities who may be subjected to assignments on the fireline. Check specific agency policy to determine if this training package meets all refresher training requirements.

## *EXPECTATIONS*

Instructors should facilitate a quality refresher that engages all students no matter their ICS qualification or experience background. This is not a plug-and-play product; student interaction is required. The core topics should be addressed in such a manner that is appropriate for the audience. Classes with a wide array of experience and qualification can be an excellent opportunity for the less experienced to be mentored and for the more experienced to rethink old habits.

## *PREREQUISITES*

Students should have successfully completed S-130 and S-190 and have at least one season as a firefighter.

## *COURSE OBJECTIVES*

Upon completion of this training, the student will be able to understand and apply basic safety principles for wildland firefighting.

## MODULE 1 – Introduction

<b>2007 FATALITIES, ENTRAPMENTS AND SERIOUS ACCIDENTS</b>		
As Reported by the Safety and Health Working Team		
<b>TYPE</b>		<b>FATALITIES</b>
Entrapment	13 incidents 51 personnel—25 shelters deployed	
Burnover	3 burnovers 4 personnel	
Engines, Dozers, ATVs, and Vehicles	18 accidents—10 rollovers, 7 collisions, 1 other	4
Aircraft	1 accident	1
Heart Attack	2 incidents	2
Hazard Tree	3 incidents	1
Other	6 incidents	1

<b>2007 WILDLAND FIRE STATISTICS</b>
85,583 Wildfires
9,318,710 Acres Burned
(7-Year Average: 78,482 fires/ 7,904,524 acres)
24,068 Prescribed Fires
3,147,042 Prescribed Acres Burned
345 Wildland Fire Use Fires
430,529 Wildland Fire Use Acres Burned

## **STANDARD FIREFIGHTING 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.

### **FIRELINE SAFETY**

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

### **ORGANIZATIONAL CONTROL**

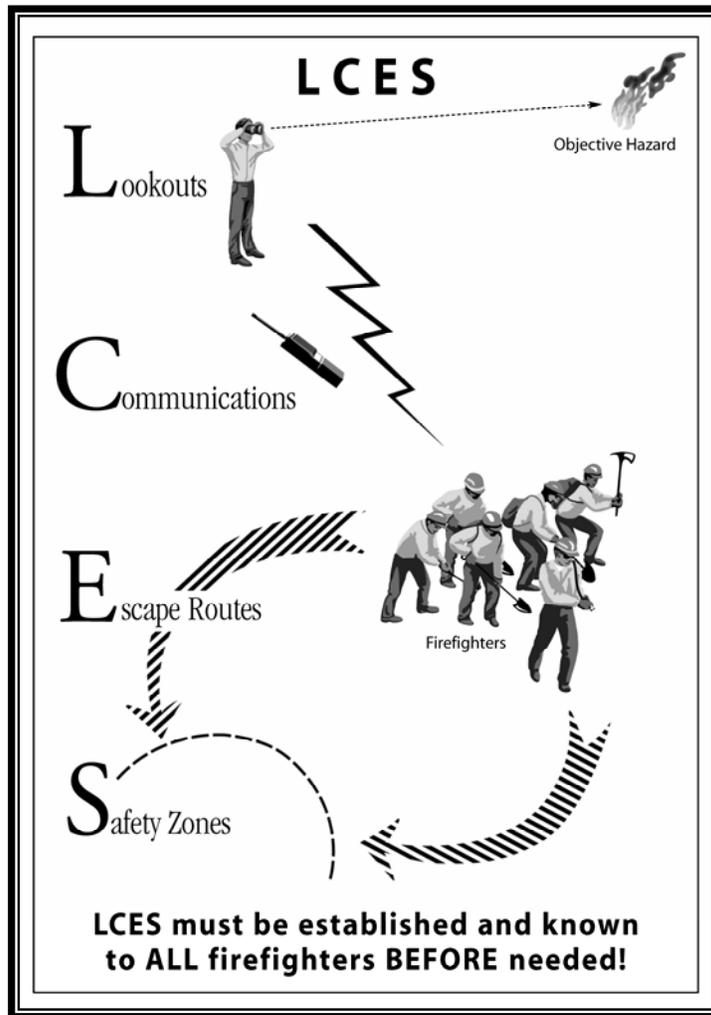
7. Maintain prompt communications with your forces, your boss and adjoining forces.
8. Give clear instructions and be sure they are understood.
9. Maintain control of your forces at all times.

### **IF YOU CONSIDER 1-9, THEN**

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

## **WATCH OUT SITUATIONS**

1. Fire not scouted and sized up.
2. In country not seen in daylight.
3. Safety zones and escape routes not identified.
4. Unfamiliar with weather and local factors influencing fire behavior.
5. Uninformed on strategy, tactics and hazards.
6. Instructions and assignments not clear.
7. No communication link with crew members/supervisor.
8. Constructing fireline without safe anchor.
9. Building fireline downhill with fire below.
10. Attempting frontal assault on fire.
11. Unburned fuel between you and the fire.
12. Cannot see main fire, not in contact with anyone who can.
13. On a hillside where rolling material can ignite fuel below.
14. Weather is getting hotter and dryer.
15. Wind increases and/or changes direction.
16. Getting frequent spot fires across line.
17. Terrain and fuels make escape to safety zones difficult.
18. Taking a nap near the fireline.



<b>IRPG SECTIONS</b>	
Inside front cover .....	Size-Up Report
White .....	Table of Contents and Other References
Green .....	Operational
Yellow .....	All Risk
Red (Pink) .....	First Aid
Blue .....	Aviation
Inside back cover .....	Briefing Checklist
Back cover .....	Standard Firefighting Orders and Watch Out Situations



## MODULE 2 – Fire Behavior

<b>LOOK UP, DOWN AND AROUND</b> (Pay special attention to indicators in bold print.) (IRPG, pages 2 and 3)	
Fire Environment Factors	Indicators
<b>Fuel Characteristics</b> Assess	<b>Continuous fine fuels</b> Heavy loading of dead and down Ladder fuels Tight crown spacing (<20 ft.) Special Conditions: Firebrand sources Numerous snags Preheated canopy Frost and bug kill Unusual fine fuels High dead to live ratio
<b>Fuel Moisture</b> Feel and Measure	<b>Low RH (&lt;25%)</b> Low 10 hr FMC (<6%) Drought conditions Seasonal drying
<b>Fuel Temperature</b> Feel and Measure	<b>High Temps (&gt;85F)</b> High percentage of fuels with direct sun Aspect fuel temperature increasing
<b>Terrain</b> Scout	<b>Steep slopes (&gt;50%)</b> <b>Chutes – Chimneys</b> Box canyons Saddles Narrow canyons
<b>Wind</b> Observe	<b>Surface winds above 10 mph</b> Lenticular clouds High, fast-moving clouds Approaching cold fronts Cumulonimbus development Sudden calm <b>Battling shifting winds</b>
<b>Stability</b> Observe	Good visibility Gusty winds and dust devils Cumulus clouds Castellatus clouds in the a.m. Smoke rises straight up Inversion beginning to lift Thermal belt
<b>Fire Behavior</b> Watch	Leaning column Sheared column <b>Well-developed column</b> Changing column <b>Trees torching</b> Smoldering fires picking up Small firewhirls beginning <b>Frequent spot fires</b>

# TAKING GOOD WEATHER OBSERVATIONS (Excerpt)

John F. Saltenberger - Predictive Services  
Northwest Geographic Area Coordination Center, Portland, OR

## Preface:

The purpose of taking weather observations during a wildfire or prescribed fire project is to record environmental conditions prevalent at the site. Depending on the size of the project and the complexity of the terrain, several separate weather observation sites may be necessary to adequately convey weather conditions representative of the entire burn site.

Accurate weather observations are important in wildland fire management for several reasons:

**1<sup>st</sup>:** Meteorologists build their spot weather forecasts based on the observations reported from the fireline. The forecaster uses the observation to build a mental model of weather pattern in the vicinity of burn site. The more accurate and representative the weather observations are, the more effectively a meteorologist can forecast weather conditions at the site. This results in better fire behavior forecasts. If fireline weather observations are incomplete or unrepresentative, the forecaster will have a much more difficult time accounting for localized effects.

**2<sup>nd</sup>:** Meteorologists seek to verify the accuracy of their forecasts by comparing weather conditions observed at the site versus what was forecast. When differences are noted, the meteorologist can potentially learn from the errors and correct for the next forecast. The belt weather kit observation constitutes the best record of weather conditions near the fireline.

**3<sup>rd</sup>:** Belt weather kit observations become part of the official fire documentation record. If there is an investigation or litigation following some accident on the fire, belt weather kit observations comprise a key component for reconstructing environmental conditions surrounding the accident. These can prove critical during litigation.

## 1. Siting

**Key Point:** Regardless of whether the fire is a prescribed fire project or a wildfire, the weather observer should strive to pick observation sites that most accurately reflect environmental conditions around the fire's location.

## 2. Observation process

**Key Point:** To be effective, belt weather kits must be properly maintained and operated. Inspect kits for defects prior to each fire assignment. Old, dirty or broken parts should be replaced. Electronic sensors must be calibrated routinely during fire assignments. Proper procedure must be followed to extract the most accurate information from a weather observation.

## 3. Observation logging and remarks

**Key Point:** Careful record keeping is as important to the weather observation process as every other step. It's a good idea for the observer to double check recorded values for obvious errors before logging and submitting.

## 4. Transmission of observations

**Key Point:** The most accurate weather observation is of little use unless it is properly received by those who need its information. The weather observer should make sure that the chain of communication is functioning rapidly and efficiently at both ends.



For more information, review the entire article including tips at:  
[http://www.nifc.gov/wfstar/archives/weather\\_obs.html](http://www.nifc.gov/wfstar/archives/weather_obs.html)

# MODULE 3 – Human Factors

## The Alabaugh Canyon Fire

### LEADERS WE WOULD LIKE TO MEET—TED PUTNAM

December 7, 2004

by Bill Miller

**Miller:** Since you started in 1963, what are the biggest improvements you have witnessed in the wildland fire service?

**Putnam:** The biggest improvement is the willingness for firefighters to consider psychological and cultural processes affecting them and to use that knowledge to improve themselves and the fire organization. Some firefighters are now willing to look at mental errors and look within their own minds for causes and how to avoid similar future errors rather than seeing the blame outside their self.

A second major improvement is in the amount, quality and range of courses now being taught.



For more information, review the entire article and others at:

[http://www.fireleadership.gov/toolbox/interviews/leaders\\_TedPutnam.html](http://www.fireleadership.gov/toolbox/interviews/leaders_TedPutnam.html)



**Approximately 80%  
of all accidents and  
fatalities are caused  
by human error.**



For more information, *Finding From the Wildland Firefighters Human Factors Workshop* is available at:

[http://www.fireleadership.gov/toolbox/documents/human\\_factors.htm](http://www.fireleadership.gov/toolbox/documents/human_factors.htm)



## **SUGGESTED READING FOR MINDFULNESS (INSIGHT) MEDITATION AND THE UNDERLYING PSYCHOLOGY**

De Charms, Christopher, *Two Views of Mind* (Ithaca, Snow Lion) 1998.

Goleman, Daniel, *The Meditative Mind: Varieties of Meditative Experiences* (New York, G.P. Putnam's Sons) 1988.

Goleman, Daniel, *Vital Lies, Simple Truths: the Psychology of Self Deception* (New York, Simon and Schuster) 1985.

Goleman, Daniel, Editor, *Healing Emotions: Conversations with the Dalai Lama on Mindfulness, Emotions and Health* (Boston, Shambhala) 1997.

Goleman, Daniel, Editor, *Destructive Emotions: How Can We Overcome Them?* (New York, Bantam Dell) 2003.

Gunaratana, Venerable Henepola. *Mindfulness In Plain English* (Boston, Wisdom Publications) 1992.

Kabat-Zinn, Jon, *Coming to Our Senses: Healing Ourselves And The World Through Mindfulness* (New York, Hyperion) 2005.

Salzberg, Sharon and Goldstein, Joseph, *Insight Meditation: A Step-By-Step Course On How To Meditate* (Boulder, Sounds True) 2001. Listen to sample tape online at [www.soundstrue.com](http://www.soundstrue.com).

Shreeve, James, *Beyond the Brain*, National Geographic, March 2005, 2-31.

Wallace, B. Alan, *Choosing Reality* (Ithaca, Snow Lion) 1996.

Wilber, Ken, *A Brief History of Everything* (Boston, Shambhala) 1996.

Weick, Karl, *Sensemaking in Organizations* (Thousand Oaks, Sage) 1995.

### **Websites:**

[www.investigatingthemind.org](http://www.investigatingthemind.org) – Research efforts between Western scientists and Buddhist meditators.

[www.mindandlife.org](http://www.mindandlife.org) – Research efforts between Western scientists and Buddhist meditators.

[www.umassmed.edu/cfm](http://www.umassmed.edu/cfm) – Mindfulness in Medicine, Healthcare and Society.

[www.vipassana.com](http://www.vipassana.com) – Online free Vipassana (mindfulness) meditation courses and articles.

[www.whatthebleep.com](http://www.whatthebleep.com) – Quantum physicists, neuroscientists, philosophers and religious leaders in dialog about recent movie.

### **The above resources were provided by:**

Ted Putnam, Ph.D. Psychology

Mindful Solutions

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Missoula, Montana 59804-6303

406-728-3889

[tputnam@bresnan.net](mailto:tputnam@bresnan.net)



*Deep Psychology: The Quite Way to Wisdom* can be found at  
<http://www.myfirecommunity.net/documents/Putnam.pdf>.



## Optional Group Discussion:

In your groups, discuss the following questions regarding distractions and autopilot:

- What distractions keep you from performing your duties on the fireline?
- What method(s) do you use to focus on the task at hand?
- Describe an instance on the fireline where you found yourself or someone on your team running on autopilot.

## **HUMAN FACTORS BARRIERS TO SITUATION AWARENESS AND DECISION MAKING**

(IRPG, pages x and xi)

### **Low Experience Level with Local Factors:**

- Unfamiliar with the area or the organizational structure.

### **Distraction from Primary Duty:**

- Radio traffic.
- Conflict.
- Previous errors.
- Collateral duties.
- Incident within an incident.

### **Fatigue:**

- Carbon monoxide.
- Dehydration.
- Heat stress and poor fitness level can reduce resistance to fatigue.
- 24 hours awake affects your decision-making capability like .10 blood alcohol content.

### **Stress Reactions:**

- Communication deteriorates or grows tense.
- Habitual or repetitive behaviors.
- Target fixation – locking into a course of action, whether it makes sense or not; just try harder.
- Action tunneling – focusing on small tasks but ignoring the big picture.
- Escalation of commitment – accepting increased risk as completion of task gets near.

### **Hazardous Attitudes:**

- Invulnerable – That can't happen to us.
- Anti-authority – Disregard of the team effort.
- Impulsive – Do something even if it's wrong.
- Macho – Trying to impress or prove something.
- Complacent – Just another routine fire.
- Resigned – We can't make a difference.
- Group Think – Afraid to speak up or disagree.

# ALABAUGH CANYON FIRE ENTRAPMENT AND SHELTER DEPLOYMENT

Final Accident Investigation Report, July 8, 2007

## Summary (excerpt)

A Narrative Account and Decision Points were utilized to bring focus to what the involved fire fighters were focused on. The extreme weather and fire behavior are keys to understanding the complexities and time pressures arriving fire fighters were confronted with. Add to the environmental complexities changing leadership roles and the immediately over crowded tactical radio channels and we complete the physical and mental context for the entrapment that ensued. In this environment, mental functioning automatically degrades. Therefore we cannot expect decisions and actions to reflect full situational awareness, which cannot exist in this environment either. Rather we should expect reduced awareness and decision making and not be surprised when something “goes wrong”. Accidents are “normal” because they reflect the normal way your mind works in such environments. To improve mental functioning on the fireline requires improving your mental skills before you ever go to the fireline.

After the incident, OSC3 and DIVS discussed and pointed out that “we have seen this extreme fire behavior here for five years in a row.” Previously this type of fire behavior was rare. We have begun to “normalize extreme fire behavior” since it is becoming common. Because fire fighters are getting experienced with extreme fire behavior they’re learning new skills, strategies and tactics to keep pace. They do not feel they are intentionally taking higher risks but if you miss a cue or you are a bit slower implementing decisions then consequences “slam you” worse under extreme conditions.

More Wildland Urban Interface training was recommended to recognize trigger points to quickly determine which structures are savable and which are not. Trigger points for these actions reduce the amount of time and thinking to initiate appropriate actions. We need corresponding trigger points for noting when we are being physically or mentally overwhelmed and need to disengage. Were it not for the homes at risk, fire fighters would not have engaged this fire where they were at such a disadvantage.

If we return to the perennial observation that 80 percent of the casual factors are due to human errors and thus mental in origin, then it is reasonable to say training to improve the mind is long overdue. Such training is inherently different from filling the mind with still more information which can lead to overload. Mind or mental improvement enables you to use information, training and experience more efficiently by reducing stress and other distractions. In this entrapment such mental skills would keep you alert to the larger picture and would have warned the involved firefighters that it is time to back off, regroup, wait for daylight and come up with a more comprehensive plan and thus heed their own warnings.



For more information, review the final report at:

[http://www.wildfirelessons.net/documents/Alabaugh\\_Canyon\\_Fire\\_Final\\_SAI\\_Report\\_102407.doc](http://www.wildfirelessons.net/documents/Alabaugh_Canyon_Fire_Final_SAI_Report_102407.doc)

## MODULE 4 – Fire Operations in the Wildland-Urban Interface

The operational roles of the federal agencies as a partner in the Wildland Urban Interface are wildland firefighting, hazard reduction, cooperative prevention and education, and technical assistance. Structural fire suppression is the responsibility of tribal, state or local governments. Federal agencies may assist with exterior structural fire protection activities under formal fire protection agreements that specify the mutual responsibilities of the partners, including funding. (Some federal agencies have full structural protection authority for their facilities on lands they administer and may also enter into formal agreements to assist state and local governments with structural protection.)

*Source: 2001 Federal Wildland Fire Policy, p. 23*

### WILDLAND FIRE INCIDENT STRUCTURE LOSSES

(Data compiled and verified March 2007)

	Primary Structures	Commercial Structures	Outbuildings	Seasonal Dwellings*	Totals
1999	259	38	582	8	887
2000	867	53	791	n/a	1,711
2001	214	8	584	n/a	806
2002	1,090	85	1,643	n/a	2,818
2003	4,088	49	1,638	n/a	5,775
2004	340	20	819	n/a	1,179
2005	342	21	693	n/a	1,056
2006	728	67	1,536	n/a	2,331
2007	2,969	56	2,301	n/a	5,326
Averages	1,211	44	1,176	8	2,432

**Note:** Numbers are based on information provided on ICS-209 incident reports and may not reflect actual national losses.

\* Reporting seasonal dwellings was discontinued after 1999.

**Source:** Fire and Aviation Management Web Applications System (FAMWEB).

## **WILDLAND-URBAN WATCH OUT SITUATIONS**

(IRPG, page 11)

- Poor access and narrow one-way roads.
- Bridge load limits.
- Wooden construction and wood shake roofs.
- Power lines, propane tanks, and HazMat threats.
- Inadequate water supply.
- Natural fuels 30' or closer to structures.
- Structures in chimneys, box canyons, narrow canyons, or on steep slopes (30% or greater).
- Extreme fire behavior.
- Strong winds.
- Evacuation of public (panic).
- Don't park under power lines.
- Don't apply straight stream to power lines.

## **STRUCTURE ASSESSMENT CHECKLIST**

(IRPG, pages 14 and 15)

### **Address/Property Name**

- Numerical street address, ranch name, etc.
- Number of residents on site

### **Road Access**

- Road surface driveable
- Adequate width
- Turnouts, turnarounds
- Bridges (load limits)
- Stream crossings
- Grade (greater than 15%)

### **Structure/Building**

- Single residence/multi-complex/out building
- Exterior walls
- Large unprotected windows facing heat source
- Proximity to any above-ground fuel tanks
- Roof material
- Eaves
- Other features (wood deck, wood patio cover and furniture, wood fencing)

### **Clearances/Exposures/Defensible Space**

- Structure location (narrow ridge, canyon, mid-slope, chimney)
- Adequate clearance—minimum of 30'
  - (Steep slopes = more clearance)
  - (Heavier fuels = more clearance)
- Trees, ladder fuel, shrubs adjacent to structure
- Other combustibles near structure (wood piles, furniture, fuel tanks)
- Adequate clearance around fuel tank
- Power lines or transformers

### **Hazardous Materials**

- Chemicals, pesticides, herbicides, petroleum products, paint

### **Water Sources**

- Hydrant/standpipe, storage tank, pool, hot tub, pond, irrigation ditch

### **Evacuation**

- Identify safe evacuation routes and refuge.
- Coordinate with on-scene law enforcement and emergency services personnel.

### **Estimated Resources for Protection**

- Number(s) and types(s) of engines, tenders, crews, dozers, aircraft.

## **STRUCTURE PROTECTION GUIDELINES**

(IRPG, pages 16 and 17)

### **Firefighter safety and survival is the number one priority.**

#### **Equipment Placement**

- Identify escape routes and safety zones.
- ALWAYS STAY MOBILE.
- Back equipment in for quick escape.
- Mark entrance to long driveways to show that protection is in place.
- Park in a cleared area.
- Keep egress route clear.
- Have protection line charged.
- DO NOT make long hose lays.
- Keep sight contact with all crewmembers.

#### **Water Use Guidelines**

- Keep at least 100 gallons reserve.
- Top off tank at every opportunity.
- CONSERVE WATER. Apply water only if it controls fire spread or significantly reduces heating of structure.
- Keep fire out of the heavier fuels.
- Knock down fire in the lighter fuels.
- Have enough water to last duration of main heat wave and to protect crew.

#### **Class A Foam Use Guidelines**

- Direct Attack – apply to base of flame.
- Indirect Attack – lay out wet line and burn out.
- Apply to structure (roof and siding) 10-15 minutes before fire arrives.

#### **Preparing Structure**

- Determine if residents are home.
- Place ladder on side with least fire threat and away from power drop.
- Clean roof of combustible materials.
- Cover vents.
- Remove and scatter fuels away from structure (ladder fuels, wood piles, etc.)
- Clear area around above-ground fuel tank, shutting off tank.
- Place combustible outside furniture inside structure.
- Close windows and doors, including garage, leaving unlocked. AS A LAST RESORT, YOU MAY NEED TO USE STRUCTURE AS REFUGE.
- Have garden hose(s) charged.

# STRUCTURE TRIAGE AND DEFENSIBLE SPACE

By John and Gary Harris

## DEFINING “STRUCTURE TRIAGE” CATEGORIES

### *LCES in place—DEFENSIBLE:*

- Requires little or no attention.
- Will require patrol status or homeowner presence.
- “Stand-alone” or “patrol”

### *LCES in place—DEFENSIBLE – “FD STAFFED”:*

- Safety zone at or near the structure for the apparatus and firefighters.
- The structure has a higher probability of ignition without firefighters intervention.

### *NO LCES in place—“PREP AND GO”:*

- If time allows, mitigate, apply retardant, CAF, BARRACADE, COLD FIRE, sprinklers.
- Use what you have.

### *NO LCES in place—“NON-DEFENSIBLE OR RESCUE/DRIVE-BY”:*

- No safety zone for apparatus or firefighters.

## DEFINING A “DEFENSIBLE SPACE” FOR STRUCTURE PROTECTION

Some fire texts and firefighters are advocating that we need three to four times the distance of maximum flame length to protect a structure. Many uphill fire runs will have 15- to 50-foot flame lengths. In the real world this is not practical due to “fire on fire effect” as defined in Doug Campbell’s fire behavior prediction system called *The Campbell Prediction System* (<http://www.dougsfire.com/>).

Classes that Gary and I teach will define “defensible space” by observing structures in the community utilizing a real-world combination of terrain, fuel load, barriers, construction, and assuming different weather patterns to establish the fire behavior prediction. In addition, consider the following *negatives* and *positives* to assist in your judgment in structure triage, **never forgetting LCES.**

### *Negatives*

- Any structure on a slope (mid-slope structure) with the fire approaching from a lower elevation.
- A structure that is in a draw, chimney, box canyon.
- A structure that will require locating your engine between the structure and the fire.
- A structure that has vegetation up against the structure (ornamental or native).
- A structure that has an LPG tank that is impacted with brush.
- A structure that has trees surrounding it or the branches are from tree to tree, entwined (closed canopy) so as to give the appearance the structure is in a tunnel or cave.
- The steeper the slope below the structure, the greater the hazard.

- A structure that has the appearance of being a junk yard (stuff) with considerable flammable, easily ignitable material such as old construction wood, piles of brush, leaves.
- Aspect (the direction the slope faces). The south, southwest, and west aspects are the most hazardous locations to defend the structure.
- Time of day and aspect should be considered as a unit. I highly recommend Doug Campbell's *Wildland Fire Signature Prediction Methods* training to further your size-up and triage ability.
- Fuel Type and Height. We know all Southern California fuel types will burn; however, company officers should know the basics. Sages, buckwheat, and chemise will burn much faster than the heavier fuels, especially if they have grasses as a component of their fuel bed. Heavier fuels—sumac, ceanothus, mountain mahogany, and buckthorn—will give off greater amounts of BTUs and have greater flame length in some cases but will generally burn at a much slower rate of spread.
- No water source or limited water source. Remember; don't bet your crew's life on water supply or a hose line.
- A wood shingle roof, wood-sided structures.

These are a few of many negatives and are just that. They are not red lights but yellow lights. However, if you have numerous yellow lights, you better take your foot off the aggressive firefighting and reevaluate your position.

### Positives

- + A structure on a ridge with a roadway or driveway on the opposite side of the approaching fire.
- + A structure with over one hundred feet of clearance and no ornamental vegetation near weak points of the structure.
- + A structure where your safety zones jump out at you (large green areas, east access to a non-combustible exterior and roof).
- + A fire is approaching from higher elevation than the structure you are protecting, with little or no wind.
- + A backing fire (fire burning against the wind towards your location).
- + Generally speaking, structures on a north or east aspect are safer to protect provided low wind speed (<15 mph).
- + There is a source of water—hydrant, private water tank, or garden hose supply.

The most important issue is feet of clearance at the location where the flaming front will first impact your crew. In some cases 10 feet will be adequate (backing fire). In other cases, we need 40 to 50 feet; and in some cases, 100 or 200 feet won't be adequate (wind driven, mid-slope structure in full alignment).



***JP (John) Harris is a retired Battalion Chief, Los Angeles County Fire Department.***

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Personnel may order additional information on interface fires from

<http://www.firestormvideos.com>.

Interface Fire Fighting for Fighters by Firefighters, a 3 hour 40 minutes DVD series depicting actual interface firefighting (narrated by JP Harris and Tony Duprey, retired USFS).

# LCES FLOWCHART

Structural "PROTECTION" = Structural "TRIAGE"

## LCES

**1st Priority**  
Need 1 Safety Zone for Apparatus  
Plus 1 additional Safety Zone for Personnel  
(could be Leaside of house)

LCES in Place

Fire Behavior Prediction

Defensible with Staffing

Lookouts

Mitigations

Trigger Points

Take Cover in Safety Zone

Let Fire Pass — Extinguish Spot Fires

NO  
LCES in Place

Fire Behavior Prediction

Prep and Go

Rescue  
Driveby



# BASIC FIRE BEHAVIOR "ESTIMATE"

Tactics Begin with Terrain

Time	<u>0500-0900</u>	<u>0901-1130</u>	<u>1131-1500</u>	<u>1501-1700</u>	<u>1701-2000</u>	<u>2000-0500</u>
Terrain*	_____	_____	<input type="text"/>	<input type="text"/>	_____	_____
Aspect**	_____	_____	<input type="text"/>	<input type="text"/>	_____	_____
Wind	_____	_____	<input type="text"/>	<input type="text"/>	_____	_____
Humidity	_____	_____	<input type="text"/>	<input type="text"/>	_____	_____
Temperature	_____	_____	<input type="text"/>	<input type="text"/>	_____	_____
Alignment	_____	_____	<input type="text"/>	<input type="text"/>	_____	_____
Spotting (Currently/Expected)	_____					

## Fuel Bed Considerations:

Fuel Type \_\_\_\_\_

Dead to Live Ratio\*\*\* \_\_\_\_\_

Fuel Moisture \_\_\_\_\_

Shading Effects (clouds, smoke, sunset): \_\_\_\_\_

## Fire History:

Currently, what is the fire doing? \_\_\_\_\_

What was the fire doing yesterday at this time? \_\_\_\_\_

Previous fire same ground \_\_\_\_\_

Homeowners

Local fire personnel

## Comments and Reminders

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\*Terrain between your location and the fire—**little picture, big picture.**

\*\*Aspect—peak heat ranges: east, 0900; south/southwest, 1200-1500; west, 1600-1800

\*\*\*Dead to live ratio—include bug kill, die-back, and blow down in your estimate



### **Optional Group Exercise:**

In your groups, evaluate the *LCES Flowchart and Basic Fire Behavior “Estimate”* found on pages SWB-21 and -22 and determine if this tool is applicable to your local area or if it needs to be customized.

- What are the important fire behavior indicators in your fuel type and location?



*Faces: The Story of the Victims of Southern California's 2003 Fire Siege* by Robert Mutch

<http://www.wildfirelessons.net/documents/FACES.pdf>



### **Group Discussion:**

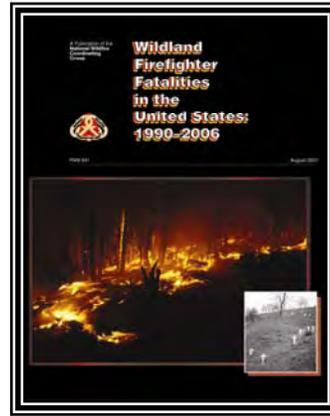
Discuss the following questions in your group:

- What needs to be done on your local unit to prepare local cooperators for this fire season?
- How can you cross train with local cooperators using JP Harris' *LCES Flowchart*?
- What lessons learned in California can be of value to your local unit?

# MODULE 5 – Driving Safety



[http://www.fs.fed.us/fire/safety/ref\\_material/content/fatalities.pdf](http://www.fs.fed.us/fire/safety/ref_material/content/fatalities.pdf)



<http://www.nwcg.gov/pms/pubs/large.html#841>

**21st-Century Common Denominators for Wildland Firefighter Fatalities**

As the major causes of firefighter fatalities shift, additional factors need to be considered:

1. Firefighters are most likely to die in an aircraft accident. Before every flight, fire managers must ask, “Is this flight essential?” and “Is everyone onboard essential to the mission?”
2. Firefighters are nearly as likely to die in a vehicle accident as in an aircraft accident. Driving too fast for the conditions, failure to wear seat belts, rushing to a fire, and driving home while exhausted from firefighting kills firefighters.
3. Firefighters can reduce their risk of dying from heart attacks on the job by staying fit, maintaining their body weight, and having regular medical checkups.
4. Unexpected events such as falling snags, rolling rocks, downed power lines, and lightning strikes cause more than 8 percent of fatalities during wildland fire fighting operations. Firefighters and fire managers can reduce fatalities by learning to expect these unexpected events.

More than 20 percent of fatalities during wildland firefighting operations continue to occur in burnovers. Carl Wilson’s original common denominators are just as important in the 21st century as they were in the 20th.

**Carl Wilson’s Common Denominators of Fire Behavior on Tragedy Fires**

There are four major common denominators of fire behavior on fatal and near-fatal fires. Such fires often occur:

1. On relatively small fires or deceptively quiet areas of large fires.
2. In relatively light fuels, such as grass, herbs, and light brush.
3. When there is an unexpected shift in wind direction or wind speed.
4. When fire responds to topographic conditions and runs uphill. Alignment of topography and wind during the burning period should always be considered a trigger point to re-evaluate strategy and tactics.

<b>WILDLAND FIREFIGHTER FATALITIES IN THE UNITED STATES: 1990-2006</b>		
Aircraft accidents .....	72 fatalities.....	23%
Vehicle accidents.....	71 fatalities.....	23%
Heart attacks .....	68 fatalities.....	22%
Burnovers .....	64 fatalities.....	21%

## THE SMART<sup>®</sup> DRIVING SYSTEM

### Study

- The rules of the road
- Your vehicle before you turn the key
- What is going on around your vehicle at all times—even when parked

### Maintain

- A safe cushion of space around your vehicle
- A straight line of travel
- Your vehicle
- Yourself

### Anticipate

- What other motorists/pedestrians are going to do
- Changing traffic signals
- Changes in intersections
- Changing road conditions

### Respond

- To changing conditions
- To identified hazards
- To unsafe drivers

### Train

- Carefully
- Consistently
- Constantly

Source: Joe Darden Group™



For more information about how The SMART Driving System™ can benefit you and your agency/local unit, visit <http://www.joedardengroup.com>.

Joe Darden Group, LLC  
9220 SW Barbur Blvd #119-146  
Portland, OR 97219  
Phone: (503) 367-7643

## APPLYING LESSONS LEARNED FROM THE AVIATION WORLD TO DRIVER SAFETY

What lessons from the aviation world can be applied to driver safety? In *Situation Awareness* (<http://www.2pass.co.uk/awareness.htm>), a professor from Cardiff University addresses how pilots have honed their situational awareness skills over the last few decades and how those skills can be applied to driving a vehicle.

The professor notes, “One advanced skill learned by both pilots and drivers is anticipation, and it is anticipation that leads to enhanced risk perception. The same set of techniques used by pilots to increase their anticipation can also be used by us drivers to increase our risk perception skills.”

In his article, the professor addresses defensive driving and risk perception techniques that can enhance a driver’s situation awareness ability. He starts his discussion by breaking situation awareness into three levels that “come together in a balanced and interlinked circular flow of looking, thinking, and anticipating.”

### SITUATION AWARENESS LEVELS

Level 1 – Where we look and perceive basic information

Level 2 – Where we think about and understand the meanings of that information

Level 3 – Where we use the meanings in order to anticipate what will happen ahead in time and space

Most organizations require their employees to take defensive driving in order to operate a motor vehicle. Individuals can have all the driving knowledge in the world; but if they don’t become skilled in developing good situation awareness, they may subject themselves to unnecessary risk.

Enhancing situation awareness is the responsibility of every wildland firefighter to ensure that he/she is as safe as possible regardless of the task at hand. Step 1 of the Risk Management Process specifically addresses situation awareness (IRPG, page 1). Every wildland firefighter should make a concerted effort to hone his/her situation awareness ability.

The professor reiterates that point. “I cannot over emphasize that by fully understanding the process of developing situation awareness, and systematic building of the skill you can vastly improve your safety skills when driving. More importantly, by building up the elements of this method, and practising [sic] this SA strategy you can begin to make it a habit. It is the best habit you can have, and it may help to offset some of the bad habits that can creep in. It can help to maintain a sense of your driving as a professional task, and as the only task to be engaged in while in the driving seat of a road-vehicle.”

The following suggestions are ways to improve each level of situation awareness:

### Improving Level 1 Situation Awareness

- Learn to look (and think and anticipate) effectively.
- Widen your knowledge of driving theory.
- Learn through practical driving experience.
- Use a scanning strategy to increase the perception of relevant information.
- Maintain the context (threats to safety) while switching between areas of focused attention (looking for more threats to safety).
- Practice the scanning and concentrating your attention.
- Eliminate distractions from your driving.

### Improving Level 2 Situation Awareness

- Think through events and consequences in a step-by-step manner—constantly check what you see and what you are doing.
- Pay more attention to the pros and cons of events.
- Talk yourself through what you see in the road environment and what it means in terms of safety and threats.

### Improving Level 3 Situation Awareness

- Anticipate what is going to happen.
- Aim to stay out of range of threatening events.
- Pay conscious and thoughtful attention to what we are doing—be “aware of being aware.”
- Rescan to see if things are progressing the way you predicted.
- Take a professional attitude to your task of driving.
- Learn about road-transport and treat road safety as a constant professional responsibility.
- Learn more about the human factors involved in driving, and feed all this information back into your understanding of how you stay aware.

*(Refer to pages x and xi of the 2006 Incident Response Pocket Guide for the “Human Factors Barriers to Situation Awareness and Decision-Making”)*

In closing, the professor makes one very important statement. “The ‘meta-skill’ of situation awareness complements and enhances your cognition while driving; it does not replace road craft skills. Situation awareness is all about knowing the future situation, but what you do not know about you cannot predict. It will most likely be the thing you have not yet learned about that will most likely harm you, as you probably won’t see it coming. So building your knowledge base of road craft is as important to driving as is looking out of the windscreen.”



For more information, review *Situation Awareness*, complete with actual techniques, at <http://www.2pass.co.uk/awareness.htm>.



### **Group Discussion:**

After reading *Applying Lessons Learned from the Aviation World to Driver Safety* on SWB-26 and SWB-27, discuss the following questions in your group:

- How do you personally maintain good situation awareness (SA) while driving?
- What is your role as a passenger in helping the driver maintain good SA?



### **Optional Group Discussion:**

In your groups, discuss how your local unit currently trains engine operators and crew drivers.

- What have you learned in this module about driving that can be incorporated into driver training at your home unit?
- What will you apply to your personal driving?

# MODULE 6 – Fire Shelter Deployment Procedures



## Refresher Comments:

Complete the *Annual Fireline Safety Refresher Comments* form on SWB-41 and submit to your facilitator. Input is crucial to the development of the program.

*NOTE: If you have crew videos, season summaries, or other training materials that you would like to be considered for inclusion in future refresher training programs, please make reference as such on the comments form at the end of your Student Workbook.*



## Exercise – Fire Shelter Inspection/Deployment Practice:

Following the guidance of the facilitator, review the process of visually inspecting a fire shelter and demonstrate the proper technique for deploying a fire shelter.

## FIRE SHELTER USE INSTRUCTIONS

1. Pick the largest available clearing. Avoid saddles, chimneys, and draws; avoid **anything** that will burn.
2. Wear gloves, hardhat, and if you have one, a face and neck shroud. Throw packs, fuses, chain saws, and gas far from your deployment site.
3. Scrape away flammable litter—if time permits.
4. Pull the red ring to tear off the plastic bag.



5. Grasp the shake handles (**LEFT HAND, black** lettering—**RIGHT HAND, red** lettering).



6. Shake until the shelter is unfolded.



7. Lie face down in the shelter. Keep your feet toward the oncoming fire. Push out the sides for more protection from the heat. Slip your arms through the holddown straps on the shelter floor. Keep your mouth near the ground.

### Remember...

- Do not open the plastic bag until the shelter is needed for emergency use.
- You **MUST BE ON THE GROUND** when the fire arrives!
- After the fire has cooled, pick the safest area and wait for help.
- Watch for falling snags and rolling rocks!

[http://www.fs.fed.us/fire/safety/shelter/shelter\\_index.html](http://www.fs.fed.us/fire/safety/shelter/shelter_index.html)



## Fire Shelter Update 2007

[Home](#) | [Training Topics](#) | [Reference Materials](#) | [Featured Websites](#) | [Policy Statements](#) | [Training Principles](#) | [Contacts & Suggestions](#) | [Safety Essays](#) | [Archives](#)

The New Generation Fire Shelter redesign project started in January 2000. The new shelter system, which includes the fire shelter, training shelter, video and booklet, became available to fire fighters in 2003. Even though the New Generation Fire Shelter is available through GSA and private vendors, a complete transition from the old-style shelter to the New Generation Fire Shelter for all firefighters may take another one to three years.

An interagency Fire Shelter Task Group has been formed. The purpose of the group is to guide the fire shelter program into the future, to involve stakeholder groups in decisions of the fire shelter management, and to ensure that MTDC receives needed support and direction from leadership. Members of the group represent most Federal and State fire agencies. They include hot shots, smokejumpers, Fire Safety Officers, fire training staff, equipment specialists, and NIFC and W/O engineering personnel. The task group is currently developing a transition and communication plan.

The following Tech Tips can be ordered in hard copy through MTDC or can be accessed electronically on the T-D internet site. You will be prompted for a user name (*t-d*) and password (*t-d*).

A 2003 Tech Tip entitled "[New Generation Fire Shelter Developed for Wildland Firefighters \(0351-2313-MTDC\)](#)" provides information on the new fire shelter system. Instructions are included for modifying existing fireline packs to fit the new shelter.

The 2003 Tech Tip entitled "[Fire Shelters Weaken Transmissions From Hand-Held Radios \(0351-2342\)](#)" provides information on the difficulty firefighters may have communicating with hand-held radios while inside fire shelters. Transmissions from the older VHF Bendix-King radios were not weakened as badly as those from the newer UHF Motorola Astro XTS 3000 radios. A table is included that shows how much the transmissions were weakened in different situations.

The 2005 Tech Tip [Large New Generation Fire Shelter Now Available \(0551-2325\)](#) provides information on the new large-size fire shelter. This Tech Tip discusses the differences between the fire shelters, which size firefighters should use, training, and ordering information.

The 2006 Tech Tip [What's New With The New Generation Fire Shelter \(0651-2322\)](#) provides latest information concerning the fire shelter. The Tech Tip discusses topics raised by firefighters about the fire shelter and describes the process to reinforce the PVC shelter bags that were produced before June 2005.





**New Large-Size Shelter:**

The new large-size fire shelter for use by firefighters who find the regular-size shelter to be a tight fit is available through GSA. It is recommended that people more than 6 feet 1 inches in height obtain and carry a large-size fire shelter. The large shelter will provide better protection for larger people by allowing less contact of the shelter material with an occupant's body, by providing more air space between the shelter and an occupant, and by reducing the stress on the shelter material caused when a larger person stretches out inside the shelter. The large shelter fits in the same carrying case as the regular-size New Generation Fire Shelter. The word "LARGE" is stenciled on the orange quick deployment strap of the shelter. Firefighters less than 5 feet 7 inches in height should carry the regular-size fire shelter.

	Old-Style Shelter	Large New Gen	Regular New Gen	
<b>Weight</b>	3.4 lbs	5.2 lbs	4.6 lbs	
<b>Dimensions</b>	8.5" x 5.5" x 3"	9" x 5.5" x 4"	8.5" x 5.5" x 4"	Figure 1 - New fire shelter
<b>Deployed</b>	Length - 71" Height - 24" Width - 48"	96" 19.5" 33"	86" 15.5" 31"	

**Recent Development:**

Through development work by MTDC, a higher strength floor material is now being used in production. This creates a shelter design with a stronger one-piece floor that doesn't need seam reinforcements, which in turn lessens weight and bulk. The shake handles have been improved by adding a ¾-inch diameter plastic pipe that allows the shake handle to be held easier with gloved hands. The attachment of the shake handles to the shelter has also been strengthened. An additional line of fiberglass stitching has been added to improve strength of the major seams at low and moderate temperatures. Quartz thread, already present in the seams, maintains its strength in the very high temperatures that can occur during a fire shelter deployment.

**How will adoption of the New Generation Fire Shelter affect wildland firefighters?**

From the perspective of how we train firefighters to use fire shelters, very little has changed. Though the new shelter offers better protection from flames than the old-style shelter, survival of the occupant is more likely if direct flame contact with the shelter is avoided. Even though the new shelter provides increased protection compared with the old-style shelter, firefighters still need to know how to recognize potential entrapment situations and how to avoid them. The same evaluation process that firefighters have been using to identify survivable sites still applies. Teaching firefighters to avoid deploying shelters in or near fuel concentrations, chimneys, and other potentially hazardous areas will continue to remain an important part of fire shelter training.

The New Generation Fire Shelter provides significantly better protection in direct flame than the old-style shelter, but it is not failsafe. In extreme conditions the new shelter may not offer sufficient protection. And, as with the old-style shelter, the high temperature materials used in the new shelter must be treated with care during storage, while being carried on the fireline, and during deployment. Excessive force on the material or contact with sharp objects can cause the cloth to tear. For the best protection, treat your fire shelter with care. More importantly, avoid situations that can lead to entrapment. Plan your actions on the fireline so that you never need to deploy your fire shelter.

### **Use of Original Fire Shelter**

The original (old-style) fire shelter still provides good protection if used as described by existing guidelines. The old-style shelters can be used until the transition to new shelters is complete and as long as they meet the Inspection Criteria outlined in the booklet *Your Fire Shelter, 2001 Edition*. (NFES1570)  
<http://www.nwccg.gov/pms/pubs/fireshell01.pdf>

Inspection of the shelters is critical to the shelter's structural integrity. In July 2006, ten firefighters deployed their fire shelters at the Little Venus fire in order to save their lives. Five of the ten shelters were old-style shelters. Of those five, three shelters had severe damage upon opening; one had a tear 43 inches long! Failure to inspect the fire shelters led to the firefighters carrying these damaged shelters while working fires.

### **Fire Shelter Training Aids**

Fire shelter training materials for either shelter system includes the *Entrapment Avoidance-It's Your Call!* training program (2002), and the *Lessons From the Thirtymile Fire* html/PowerPoint training program.

Instructors providing training for persons with original (old-style) fire shelters will need to utilize the *Using Your Fire Shelter* video, 2001 edition (NFES# 1568) to demonstrate the most current original fire shelter information available today. A previous fire shelter training video, *Your Fire Shelter*, 1986 edition (NFES# 1568), shows techniques that are no longer recommended. Since both videos have the same NFES number and similar titles, eliminate the 1986 version from training libraries to prevent confusion.

The *Your Fire Shelter* booklet (NFES #1570) 2001 edition, and the *Avoid the Flames* pamphlet (99-M40-MTDC) can also be used as training materials.

### **Training for New Shelter**

During the spring burning season of 2006, MTDC conducted additional fire shelter field testing inside a prescribed burn. It is critical to receive proper training in the use of the New Generation Fire Shelter before it is taken on the fireline. This requires at a minimum reading the training pamphlet, viewing the training video or DVD, and practicing deployments using a practice fire shelter. The video (and DVD) and pamphlet include information about how the shelter works, how to deploy it, how to select a deployment site, what entrapment experience might be like, how to train to use the shelter, and how to care and inspect the shelter.

NFES#2711, VHS Fire Shelter training video *The New Generation Fire Shelter*  
NFES#2712, same video in DVD format  
NFES#2710, pamphlet, *The New Generation Fire Shelter*

Spanish versions are also available  
NFES 2735, video, VHS, *El Refugio de Proteccion Nueva Generacion* and  
NFES 2736, pamphlet, *El Refugio de Proteccion Nueva Generacion*.

Training materials can be ordered through the Great Basin Cache located at the National Interagency Fire Center (NIFC). All fire shelter training materials are contained within PMS 411. For more ordering information, go to the NWCG publications website:  
<http://www.nwccg.gov/pms/pubs/pubs.htm>

Fire shelters for training can be purchased through GSA's Wildland Fire Equipment Catalog or through private distributors.

- New generation practice fire shelters
- Regular size, complete: NSN 6930-01-499-0605
- Large size, complete: NSN 6930-01-529-8807

**Remember**, fire shelters are not fail safe, carrying a fire shelter should never be considered as an alternative to safe firefighting.

# OPTIONAL TOPIC 1 – Communications Update

As incidents advance in complexity, communication management becomes a challenge. An ever increasing number of personnel with radios, a general lack of available frequencies, and multiple events requiring information sharing including: logistical needs, fire behavior and location, weather, tactical assignments, medical emergencies, travel management, coordination with dispatch, and of course the inevitable "what's your location" tie up frequencies and reduce timely communications that affect the safety of all incident personnel.

- What is [radio etiquette](#)? How can radio etiquette be used to improve incident communications? What are examples of radio etiquette?
- Have you ever been on an incident where tactical frequencies were [tied up](#)? What happened? How did you adjust your operating procedures?

Frequency use on incidents is a challenging management predicament, lots of activity and many resources equates to busy tactical frequencies. Busy tactical frequencies on incidents, however, are not necessarily communication problems, but may be linked to coordination or [planning problems](#). One way to prevent overloaded frequencies may be to request additional radio frequencies sooner rather than later on emerging incidents and to develop a plan for the use of additional frequencies.

- How can you [plan](#) for emerging incident communications, to provide for more effective communications?
- What points should be addressed when [briefing incoming resources](#) on incident communications?
- Can you give an example of an [incident communications briefing](#)?
- How can the use of dedicated command, tactical, and crew nets assist with the implementation of effective communications? What are the appropriate uses of these frequencies?

Firefighters pride themselves on ingenuity, adapting to and overcoming challenges, and creating opportunities. For example, using available technologies (cell phones, satellite phones, and data transmission devices) to transmit and receive information reducing the amount of time radio frequencies are tied up on incidents. Use of available technologies in this way has both positive and negative aspects. Communications technology aspects that need to be planned and mitigated for include: one to one communications, coverage, powering devices, lack of contact information, and adhering to national policies for the use of alternative communications devices on incidents.

- What non-radio communications devices have you used or have seen used on an incident? What are the benefits and consequences of using those communications devices on wildland fire incidents?
- How should [non-radio communications](#) be used on wildland fire incidents? Why?
- How might you mitigate or plan for the above communications challenges?

There is no fix all solution for these challenges, but prior planning, briefing incoming resources on the implementation of an incident communications plan, and using proper radio etiquette are

effective ways to mitigate unnecessary chatter on tactical frequencies and to promote essential information sharing through various communications technologies.

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*Communications Update* was taken from the WFSTAR website:  
<http://www.nifc.gov/wfstar/hottopics/communications.html>

Visit the Wildland Fire Communications website at:  
<http://www.fireradios.net/>

## OPTIONAL TOPIC 3 – Burnover Interview

### **FIRE SHELTER DEPLOYMENT**

I-90 Complex, Lolo National Forest

Northern Rockies

Missoula, Montana

August 10, 2005

*(This is the first known deployment of the New Generation fire shelter.)*

#### Negative Causal Factors~

- The time allowed for the dozer to travel to the safety zone was based on fire behavior observed previous days and up to that point, they did not anticipate the fire behavior which actually occurred.



The Negative Causal Factors excerpt was taken from the I-90 Complex Accident Investigation Report. The report can be viewed in its entirety at:

[http://www.wildfirelessons.net/documents/I-90\\_Report.pdf](http://www.wildfirelessons.net/documents/I-90_Report.pdf)

# OPTIONAL TOPIC 4 - What's New in Leadership?



A Publication of the  
National Wildfire  
Coordinating Group

## Leading in the Wildland Fire Service



PMS 494-2  
NFES 2889

January 2007



*Wildland Fire Leadership  
Development Program*

### Preface Excerpts:

This book expresses the fundamental leadership concepts of the wildland fire service. It outlines the framework, values, and principles that guide wildland fire leaders in providing leadership across a broad range of missions. The concepts in this book are universal to every person in the wildland fire service—from first year employee to senior manager.

This book does not state policy. It cannot provide black-and-white answers to the unlimited volume and variety of situations a leader will face. Instead this book simply outlines the broad concepts of leadership by which expectations of leaders may be established and performance of leaders may be judged. It is intended to make better leaders of us all.

**Do you know an individual or group who has shown exceptional leadership?**

*Nominate them for the Paul Gleason Lead by Example Award.*



See <http://fireleadership.gov> for more information.

# Notes

# INTERNET WEBSITE LINKS

[http://www.blm.gov/nifc/st/en/prog/fire/training/fire\\_training/projects/refresher.html](http://www.blm.gov/nifc/st/en/prog/fire/training/fire_training/projects/refresher.html)

Website for 2001, 2002, 2003, 2004, 2005, 2006, 2007, and 2008 Fireline Safety Refresher  
(Student Workbook and Facilitator Guide)

[http://www.nifc.gov/safety\\_study/index.htm](http://www.nifc.gov/safety_study/index.htm)

- ◆ 6-Minutes for Safety
- ◆ SAFENET
- ◆ Radio Education and Information
- ◆ FireFit
- ◆ Accident Investigation Resources

[www.nifc.gov/wfstar/index.htm](http://www.nifc.gov/wfstar/index.htm)

(Also accessed through the Safety link on the NIFC home page)

- ◆ Wildland Fire Safety Training Annual Refresher (WFSTAR)

What's New for 2008

- 2008 Annual Fireline Safety Refresher Video
- Basic Firing Operations Training Package
- Fire Vehicle Driver Orientation
- Human Factors
- FireFit
- Wildland Firefighter Fatalities in the US, 1990-2006 (PMS 841)
- Home Grown Programs

2008 National Emphasis Topic:

- Thinking Ahead

2008 Hot Topics:

- Incident Communications
- WUI Safety
- Risk Management for Alternative Strategies and Tactics
- How Can We Improve Aviation Safety?
- Why Submit a SAFENET?

[www.nwcg.gov/pms/pms.htm](http://www.nwcg.gov/pms/pms.htm)

- ◆ Qualifications – PMS 310-1
- ◆ Taskbooks
- ◆ ICS Training and Forms
- ◆ Job Aids

[www.nwcg.gov/pms/pubs/pubs.htm](http://www.nwcg.gov/pms/pubs/pubs.htm)

- ◆ National Fire Equipment System Catalog – Part 2 Publications 2007 edition Catalog Update (November 19, 2007)
- ◆ Your Fire Shelter, video, 2001, NFES 1568
- ◆ Your Fire Shelter: 2001 edition, pamphlet, PMS 409-2, NFES 1570
- ◆ Incident Response Pocket Guide, PMS 461, NFES 1077
- ◆ Fireline Handbook, PMS 410-1, NFES 0065
- ◆ Interagency Standards for Fire and Fire Aviation Operations - 2008, NFES 2724
- ◆ The New Generation Fire Shelter (2003), pamphlet, NFES 2710, PMS 411
- ◆ The New Generation Fire Shelter, video, VHS (2003), NFES 2711
- ◆ The New Generation Fire Shelter DVD (2003), NFES 2712

[www.firelineleadership.gov](http://www.firelineleadership.gov)

Interagency Wildland Fire Leadership Development Program's website

(Leadership Toolbox includes information regarding Staff Rides, STEX/TDGS, Self-Development Plan)

[www.wildfirelessons.net](http://www.wildfirelessons.net)

Wildland Fire Lessons Learned Center's website

- ◆ Library – contains thousands of reports and other documents sent in by wildland fire professionals from around the world
- ◆ Case Studies

[www.nifc.gov/nicc/predictive/predictive.htm](http://www.nifc.gov/nicc/predictive/predictive.htm)

Predictive Services' website

- ◆ Intelligence, Weather, Fuels & Fire Danger
- ◆ Daily, 7-Day Fire Potential, Monthly, and Seasonal Outlooks

# Notes

# ANNUAL FIRELINE SAFETY REFRESHER COMMENTS

Today's Date: \_\_\_\_\_

How many seasons have you worked as a firefighter? \_\_\_\_\_

How many season have you worked in support of fires \_\_\_\_\_

What agency do you represent? \_\_\_\_\_

What is your current function in fire suppression?

- Line Firefighter
- Fireline Supervisor
- Other IMT Section

- Fire Support Personnel
- FMO/Resource Advisor/  
Agency Administration

What will you do differently after viewing this refresher? (Refer to specific modules, if appropriate.)

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What topics would you like to see in future refresher programs?

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*If you have crew videos, season summaries, or other training materials that you would like to be considered for inclusion in future refresher training programs, please contact Scott Anderson at the addresses below.*

Feel free to provide additional comments on the back.

Facilitator, please return this form to the address below. Comments by e-mail are welcome.

**BY MAIL:** NWCG Training Development  
Attn. Scott Anderson  
3833 S. Development Ave.  
Boise, ID 83705

**BY FAX:** (208) 387-5378  
**E-MAIL:** Scott\_Anderson@nifc.blm.gov

**Additional Comments:**