

FIRST-IN TRAINING

“Train as if your life depends on it.... Because it does!”

First-In Training

The *Hot Topic* in this edition of “First-In Training” is the first part of an article written by Battalion Chief John P. Harris of the Los Angeles County Fire Department. Chief Harris gives us some food for thought by combining concepts of LCES with firefighting around structures in the urban interface. The second part of this article will be in the next edition.

In *Welcome to Your Future*, read about current events in your Career Guidance Unit.

We have included articles about new Automatic External Defibrillators and Autism in *Tips of the Trade*.

The *Network News Flash* has a reminder about alternate sources of water AND this hydraulics brainteaser: While attempting to establish an anchor point at a brush fire your Strike Team Leader requests four 1 1/2”, 100’ each with the 125 gpm tips. The nearby reservoir cannot be reached with the Strike Teams’ hardsuctions but you do have the SPAWS available. There is 15’ of lift between the surface of the reservoir and the center of your pump. *Solve the problem, Hot Shot!*

In this issue

Hot Topic -
 L.C.E.S. 1
Welcome to Your Future -
 Career Guidance.....5
Tips of the Trade -
 A.E.D.....6
 Autism..... 7
Network News Flash -
 Water, Water, 8

Hot Topic - L.C.E.S. and Structure Triage (Part 1)

This article is printed courtesy of the Los Angeles County Fire Department's Battalion Chief John P. Harris, a well respected authority on brush fires.



This document contains several views/opinions that may be new or contradictory to conventional teaching and are not necessarily the policies of the Los Angeles County Fire Department. Some of these are:

1. If you are committed to a structure, plan on staying until the fire passes.
2. When performing TRIAGE, the first issue to decide is to ensure a safety zone for the apparatus.
3. Utilization of safety zones by options, not priorities.
4. Hook up to hydrants whenever available.
5. If structure protection assignments do not provide safety zones for apparatus and firefighters, review with supervisors/commanders to ensure that safety zones are identified.

RULES & PROCEDURES OF ENGAGEMENT

The Wildland Fire Fighting Rules of Engagement and Procedures are short safety statements that were issued following fatal wildland fires.

They are:

- Fire Orders (there are 10)
- Watchout Situations (there are 18)
- Downhill Indirect Line Construction (there are 9)
- Common Denominators Of Fire Behavior On Fatal Fires (there are 4)
- Urban Interface Watchout Situations

After being on several fatal fires, Paul Gleason, a United States Forest Service veteran firefighter and a current Forest Service Fire Chief of a National Forest in Colorado, analyzed our Rules Of Engagement, and determined we were overloaded. Of all the orders and watchouts, the most important were the following Fire Orders:

- Establish **LOOKOUTS** in potentially hazardous situations.
- Remain in **COMMUNICATION** with crew members, your supervisor and adjoining forces.
- Determine **SAFETY ZONES** and **ESCAPE ROUTES**.

Chief Gleason took these fire orders and developed a system referred to as “LCES”. an acronym for LOOKOUT(S), COMMUNICATION(S), ESCAPE

Continued on page 2

L.C.E.S - *Continued from page 1*

ROUTE(S), and SAFETY ZONE(S). These four items are to be implemented as an INTEGRATED SYSTEM by a SINGLE RESOURCE UNIT, STRIKE-TEAM or an INDIVIDUAL. In some situations "LCES" may be instituted at a Division, or Group Level. However, implementation of "LCES" on the Division and Group level has been inadequate. Therefore, it is highly recommended that the responsibility be accepted and placed on the first line supervisor to ensure implementation of "LCES", **(the absolute minimum safety requirement during all firefighting operations, including anytime a firefighter is in an operational area).**

USE OF "LCES" DURING STRUCTURE PROTECTION.

The "assignment" of structure protection is often interpreted by engine company officer that he/she has no choice but to accept the assignment, without size-up, triage, making a fire behavior prediction, or determining if safety zones are present for apparatus and personnel.

I recommend that each officer who receives an assignment of structure protection immediately convert this assignment to **STRUCTURE TRIAGE**. Upon arrival at the structure, **RAPIDLY ANALYZE THE COMPONENTS OF "LCES"**. **The first component of "LCES" to decide is safety zone.** Unlike conventional/traditional teaching, or wisdom, **I recommend considering first, do we have a safety zone for our apparatus?** If yes, this will allow the officer to rapidly determine if additional safety zone options exist. Generally, there will be a safety zone on the leeward side of the structure or on the side away from the approaching fire, and an additional safety zone is usually inside of the structure. (Not necessarily in heavy timber fires).

In reviewing, keep in mind that no supervisor ever wants any of us to accept an unsafe assignment. Overhead personnel are relying on company officers to accept or reject the assignment after performing structure triage "LCES". Many times on wind driven wildland interface fires, overhead personnel may not have had time to triage an area to determine the safety of their order. The overhead probably will be making these assignments from a map, and in many situations may not be familiar with the area.

THEREFORE IT IS THE ULTIMATE RESPONSIBILITY OF THE BOTTOM LINE SUPERVISOR AND COMMANDERS TO VERIFY THE SAFETY OF THE ASSIGNMENT, AND TO VALIDATE THE ASSIGNMENT ON THE MERITS OF SAFETY (LCES) FOR HIS/HER SUBORDINATES.

SAFETY ZONES

Let us begin by reviewing each component of "LCES"in order of importance.

In my view, SAFETY ZONE(S) is by far the first and foremost component of LCES. Your SAFETY ZONE is also the first item that must be identified by individual resource supervisors, strike team leader, division or group supervisor. Then, you must inform your assigned firefighters of each SAFETY ZONE. Do not prioritize safety zones. When discussing the identified safety zones with your subordinates, talk in terms of options and trigger points to changing conditions, such as, when the fire reaches the bottom of the canyon, or if the fire comes from this direction, we will utilize the safety zone behind the house, or if the fire comes up faster and with greater flame length than I predict, we will consider going into the structure until the fire passes. If this happens, we will take the 1 1/2" line inside the structure. This must be done **prior** to engaging in any fire suppression tactics.

If the structure, area, or tactic you have been assigned does not afford you a SAFETY ZONE, then the assignment must be declined.

Continued on page 3

L.C.E.S - Continued from page 2

DEFINING A “DEFENSIBLE SPACE” FOR STRUCTURE PROTECTION AND DETERMINING ADEQUATE SAFETY ZONES

In Al Simmons’ 1993 and 1996 Firestorm videos of the Old Topanga and Calabasas Fires, there are tremendous flame lengths of 100 to 200 feet near power poles as the fire crested a ridge top.

Some fire texts and firefighters are advocating that we need two to three times the distance of maximum flame length to protect a structure. Many uphill fire runs will have 15', 20', or even 50 to 100'+ flame lengths as the flaming front advances up slope.

Doug Campbell’s Fire Behavior Prediction System graphically demonstrates what he refers to as ‘Fire on fire effect.’ Basically, this is the result of off gassing due to the fire preheating the fuel as it progresses. As added heat and gases are given off, the flaming front will increase in speed/intensity, and the flame length will increase drastically as the fire nears the ridges.

Structures are generally located in four terrain settings in the interface.

1. Ridge-top structures with the roadway or driveway, away from the advancing fire slope.

This will allow firefighters to place their apparatus in a safety zone on the opposite side of the flaming front, utilizing the structure for a buffer. In this scenario, the firefighters will have a safety zone option on the opposite side of the structure (away from the approaching fire), plus, they will have an additional option of a safety zone in the structure.

2. Ridge top structures with the roadway or driveway located next to the fire slope.

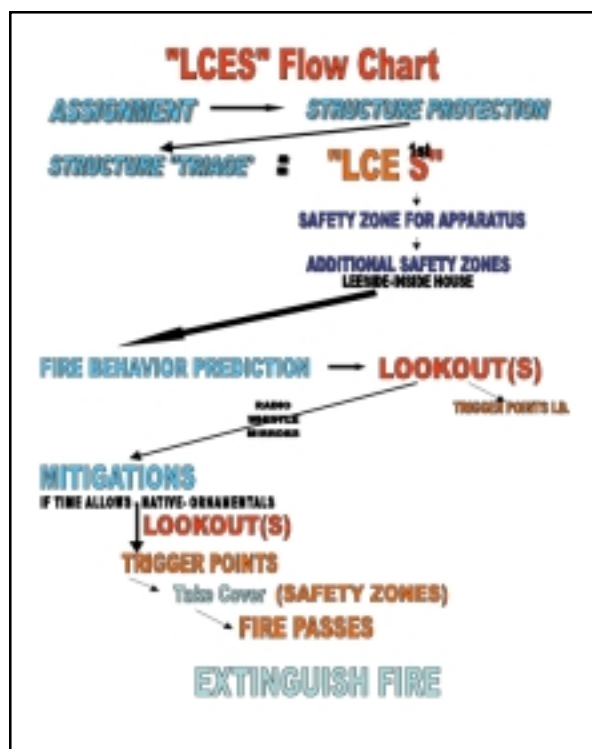
This is a much more complicated assignment as it will be difficult to have the fire engine in a safety zone. However firefighters may have two good options for safety zones; again, the backside of the structure (away from the flaming front), and in the structure.

Options for your apparatus might include placing the apparatus at the side or rear of the structure. If these aren’t available can the hazard be mitigated? Perhaps by clearing unburned fuel, or this assignment may require the laying of a supply lay to a safety zone for the engine. This would entail a separate safety zone for the apparatus engineer.

If you have no other options, then you obviously cannot provide LCES . Inform your supervisor. If there is no time for discussion or alternatives, leave the unsafe area immediately.

If the supervisor has no other assignment, consider finding the closest safety zone and wait for the flame front to pass. When safe, re-enter the area and extinguish the fire, if still an option.

Continued on page 4



L.C.E.S - Continued from page 3

3. Structures that are located on a slope or canyon bottoms.

We commonly refer to structures on a slope as “midslope structures” even if they are near the ridge or near the bottom of the canyon. We will also include structures located in canyon bottoms in this category.

Generally, midslope structures are defensible if the fire is coming from above the structure, provided you have LCES available and in place.

A midslope structure that has fire coming from below the structure is a difficult assignment and extra attention must be used in assessing your safety zones for the engine and firefighters. Remember the FIRE ON FIRE EFFECT.

I CANNOT OVERSTATE THE HAZARDS OF MIDSLOPE STRUCTURES WITH FIRE ADVANCING FROM BELOW. TI-11S HAZARD IS DRASTICALLY INCREASED WHEN THE FIRE FORCES ARE IN FULL ALIGNMENT.

“Alignment” and “full alignment” are Doug Campbell’s terms utilized in the Campbell Fire Prediction System that describe when canyons are in alignment with the prevailing wind and the fuel (brush) is at its highest temperature of the day. An example would be 1300 hours (highest fuel temperature) on a Southwest aspect with wind coming from the southwest.

Canyon bottom structures will also be extremely hazardous if the fire is approaching from below. In fact without a tremendous brush clearance, LCES may not exist on canyon bottom structures.

4. Structures located on rolling hills, gentle slopes, and flat areas.

These are less challenging than the first three. However, tremendous flame length can be generated with a 15 to 20 MPH wind with light fuel approaching these exposures. The same guidelines still apply.

If there is any doubt regarding the predicted fire behavior, take cover in your safety zone, let the fire pass, then attack the structure fire. This concept should receive serious consideration whenever we are working on a midslope structure or little or no additional water available or erratic winds.

Now, let us get back to the general discussion of a “Defensible Space”. Let’s consider using the 20’ flame length for discussion. Three times flame length requirement is 60 feet of clearance. Many structures in the interface have 60 feet of clearance for our firefighters/apparatus. On the other-hand, if you were assigned to a wind driven fire that had 40 to 50 foot flame lengths, using this rule, you would need 100 to 150 feet of clearance. As you know there just aren’t many structures with over 100-foot clearance. Each company officer and/or strike team leader is going to have to make a judgment call. Is there adequate room for apparatus placement to be safe and effective? This judgment will require the company officer utilizing all available information, such as slope, time of day, shaded or not, weather components, fuel types, in his/her size up to make a fire behavior prediction. Then the final determination, is LCES available?

I have listed the following positives and negatives to assist in making judgements in STRUCTURE TRIAGE (LCES) to determine safety zones for apparatus and Firefighters.

Negatives

- Any structure on a slope with the fire approaching from a lower elevation.

Continued on page 5

L.C.E.S - *Continued from page 4*

- A structure that is in a draw (the terrain in an in-tum).
- A structure that is in a chimney, or box canyon.
- A structure that will require locating your engine between the structure and the fire.
- A structure that has considerable vegetation impinging on the structure (ornamental or native).
- A structure that has a LPG tank that is impacted or exposed with brush.
- A structure or road that has trees surrounding it, or the branches are from tree to tree, entwined so as to give the appearance the structure or road is in a tunnel or cave.
- The steeper the slope below the structure, the greater the hazard.
- The heavier the fuel below your location the greater the hazard.
- A structure that has the appearance of being a junkyard with considerable flammable, easily ignitable material, such as old construction wood, piles of brush, or leaves.
- ASPECT (the direction the slope faces). South, southwest, and west, aspect 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 Fire Prediction System class to further your size up or TRIAGE (LCES) ability.
- FUEL TYPE & HEIGHT. We know that all Southern California fuel types will bum. However, company officers should know the basics. Sages, buckwheat, and chemise will bum 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 bum at a much slower rate of spread.
- No water source, or limited water source. Remember, don't bet crewmember lives, or apparatus, 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 might have to evaluate. Do the tactics still match current conditions? Reevaluate your position, and reaffirm location of safety zones, distance, and time to reach safety for all members.

Welcome to Your Future - Career Guidance Unit

Time is getting short for members preparing for the Captains Examination. No change on the tentative examination date has been received. The Captains Study Program (CSP) marches forward without losing a beat. For members who are diligently studying, keep up the good work. Senior Officers continue to provide program participants with invaluable handouts, study materials and support. There is no shortage of encouragement among the Captains Study Program (CSP) participants.

A major area of concentration highlighted in the CSP is essay writing under a time deadline. Learning to respond to essay questions in a logical, factual and convincing manner is no simple task. Scoring high marks on essay questions takes, practice, practice and more practice. No doubt answering multiple choice and fill-in questions can measure a member's level of familiar-

ity; however, correctly responding to written essay questions will put the member right on the money when it really counts.

On June 16, the Career Guidance Unit (CGU) hosted a lunch-hour seminar featuring retired City Senior Personnel Analyst Bob Cutler. Bob retired a few years ago and still remains active in the Human Resource/Career Development field working as a consultant and educator. Bob's presentation for the civilian staff members "Preparing for Your next Job Interview" was very timely. A diverse group representing a cross section of LAFD civilian members attended Bob's seminar. The Career Guidance Unit continues to seek out speakers to lend their expertise and insight in the upward mobility and career development of all LAFD members.

Tips of the Trade - The Zoll 1600 AED - Upcoming Training and Information
by Chris Carpenter, FF/PM

The Quality Improvement Section is providing Zoll 1600, Automatic External Defibrillator (AED), training to field members. The training lasts approximately 3 hours, depending on the number attending the class. Some members may already be familiar with the Zoll AED, while others may not. However, by completing this class, members will meet their re-certification requirements for the AED. The AEDs currently used in the field are similar to the Zoll 1600. The major difference is that the Zoll 1600 has a reusable memory card (PCM Card) in place of an audiocassette tape. The data from each incident is downloaded to the Quality Improvement Section (QIS) via the fire station computer terminal and the Wide Area Network (WAN). State law mandates the Quality Improvement Section to maintain all AED records for cardiac arrest incident information. This information is then reviewed and evaluated for possible policy or procedural revisions. These records may be utilized for research, i.e. Dr. Eckstein's Cardiac Arrest Study, and as a legal document, they may be subpoenaed into court.

The F-901 (Cardiac Arrest Outcome Data Sheet) shall be completed for every cardiac arrest where resuscitation was attempted, excluding Ref. No. 814 (*Determined To Be Dead*) and Ref. No. 815 (*Do Not Resuscitate*). Follow the correct F-901 routing procedures, provided for your convenience, on the back of the F-901.

EMTs shall be responsible for handling the primary defibrillation of the cardiac arrest patient when they arrive prior to or simultaneously with the paramedics, thus enabling the Paramedics to initiate Advanced Life Support (ALS) procedures.

Members are reminded that the indications for application of the AED are that:

- the patient be 8 years of age or older and at least 25 kgs (55 lbs)
- the arrest was not caused by trauma.

EMTs shall only apply AED pads to patients who are: **(N.U.P.U.)**

- **Non-breathing**
- **Unresponsive**
- **Pulseless**
- **Unconscious**

After the patient has met the criteria for use, fully seat the Zoll 1600 PCM Card into the machine and apply the defibrillation pads. It is important not to have the Zoll 1600 PCM Card fully seated into the machine during morning checks or routine patient monitoring (with the lead cables), because this

Continued on page 7

LOCAL COMPANIES BREAK NEW GROUND WITH
CARDIAC ARREST RESPONSE PROGRAMS

Progressive companies all over Southern California are purchasing portable, state-of-the-art automatic external defibrillators (AED's) and training their security staff, emergency response teams and other employees to use them.

Sudden cardiac arrest is a leading cause of death in adults today. Nationwide, more than 1000 people per day suffer cardiac arrest. Time is the greatest enemy of a person in cardiac arrest. According to the American Heart Association, "For every minute that a person remains in cardiac arrest they will lose 10% chance of survival".

It is the recommendation of the American Heart Association that every person who is trained in CPR should be trained in the use of an AED. The average response time for first responders nationally is 12 – 16 minutes. This equates into a 10% survival rate. It has been estimated that 30% of people in cardiac arrest who are given defibrillation within four minutes of onset will survive. It is possible that as you arrive on-scene of a cardiac arrest, the victim will have already been defibrillated. It is important to remember that these private programs have received training in the proper use of these AED's. These programs fall under the California Code of Regulations, Title 22 and have medical oversight from a medical director.

Currently the following are known to provide AED programs:

City of San Fernando Police Department
The medical service providers at the Los Angeles Convention Center
St. Jude Medical, Cardiac Rhythm Management Division, Sylmar Ca.

All Department companies that have programs in their districts are encouraged to contact the companies that have private programs, so that they members can become more familiar with them.

A.E.D - Continued from page 6

creates inappropriate files on the card.

Paramedics shall continue use of the Zoll 1600 (manual mode) while transporting the patient to the receiving facility. Members are reminded to keep the Zoll 1600 batteries plugged into their charger when not in use. Maintain charged batteries until use and then rotate them as instructed by the trainer.

All BLS and ALS resources are encouraged to review Training Bulletin Nos. 98-14, 99-11, and 99-14. Paramedics are advised to familiarize themselves with the Zoll 1600 AED manual to ensure a smooth transition of patient care when preceded by BLS unit utilizing the machine.

Please direct any questions to the Quality Improvement Section. Captain Krupnik will be answering questions regarding scheduling. For all other questions relating to the operation and application of the AEDs, contact FF/LP Haney or FF/PM Carpenter at (213) 485-7153.

AUTISM AWARENESS

Your engine responds to an 6 year old child with a complaint of difficulty breathing. The child is very upset and “acting out”. He does not seem to respond in an age appropriate manner and is becoming more agitated, although remaining alert and oriented. Specific instruction and eye contact have no effect. You are beginning to form the opinion that this child is simply “a spoiled brat”. The paramedic rescue arrives and they also attempt to gain control. The child seems fascinated by the lights and activity. His eyes dart from object to object as he asks numerous questions. Instead of answering the child, you physically attempt to corral the child onto the gurney. The child becomes totally hysterical and uncontrollable.

At this point the mother informs you that the child is autistic. WOW! If you had only known that from the beginning! Let’s be honest. Would it *really* have made a difference? Do you *really* know the implication of this to you, the care giver?

How you interact with them *will* make a difference!

AUTISM

In the 1940’s “autism” was first described by Dr. Kanner, John Hopkins University, as a child who is “self-absorbed with severe social, behavioral and communication problems”. In one research study, it was found to occur in 4.5 out of 10,000 live births. It has also been estimated that as many as 15-20 of every 10,000 live births may have some of the common characteristics. Autism is three times more likely to occur in males than females. Approximately 1/3 of these children develops normally until between the ages of 1 ½ to 3 years. It is a “syndrome” which can involve many different areas of a child’s development, and is most commonly referred to as either a psychiatric diagnosis or a developmental disability. Autism probably is best described as some type or combination of “social interaction, communication and/or behavioral delay or atypical development.”

Characteristics, which *may* be present, depending upon the age of the patient and the seriousness of their disease, include:

- Socially aloof, prefers solitary activity. May not respond to the command of “stop” or “sit still”
- Generally very poor listeners
- Behave as if people are objects
- Unusual patterns of eye contact (or totally absence of eye to eye contact)
- Major difficulty with any changes in routine; Insists on “sameness”
- Use of single word or “echolalia” = repeating the same word(s) over and over

Continued on page 8

Autism - Continued from page 7

- Fixates on colors or objects: possibly to the exclusion of everything else
- Hand flapping, rocking, spinning or possibly head banging.

Approaches which should be considered and may help:

- Talk calmly
- Allow time for a response to questions or directions
- Repeat the request or words
- Talk in short, direct phrases making one request at a time
 {"stand up"... "walk to the gurney"... "sit down on the gurney"}
- Use calm body language; Avoid abrupt moves or actions
- Do not "crowd"; allow as much room as possible
- Avoid waving your arms or using a lot of hand gestures
- Do not pat shoulders or touch face, unless necessary for exam
- Do not attempt to stop *their* repetitive motions, unless they are potentially harmful to them or others
- Be aware they may fixate on lights or objects

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BIOGRAPHY

Autism Awareness Video For Law Enforcement/Community Service Personnel;
Autism Society of America

"Avoiding Unfortunate Situations"1994; Website ddpi@flash.net; Dennis Debbaudt, law enforcement officer for 22 years with an autistic son, age 15

Autistic Spectrum Disorders I; Weigel and Gurnman; Diagnostic Center Southern California

WATER, WATER EVERYWHERE?

There are times when water will not be as readily accessible as normally expected. When there is no domestic water, or water pressure, is when the company will need to put an auxiliary water supply into operation.

Brush season is usually the time when auxiliary supply is in the forefront of one's mind, however, there will be other complex situations when the normal avenues for acquiring water are unavailable. Some of these situations are: earthquake, power failure in an area which requires water to be pumped, dry hydrants, shut down of a grid, new construction sites, homes located well back from a hydrant, and many others.

Considerations should include the use of the LAFD Water Shuttle Assembly, the Standard Basic Relay Operation, the siphon ejectors, the SPAWS, and the helicopters. The actual situation will more often than not dictate the most feasible method of acquiring water.

Since, as Californians, we live under the constant threat of earthquake, and the Y2K situation is as of yet unsure, we should all be current and prepared – individually and as a company – to deploy auxiliary water supply methods. A review of Chapter 3 in the Brush Fire Operations Manual, Book 99, "Basic Operations" will assist in reacquainting us with these methods.

ANSWER TO THE HYDRAULIC HOT SHOT

You have been asked to pump 500gpm at 110 psi. At a 15' lift, the SPAWS will supply a maximum of 400gpm. Inform the Leader that you must either reduce down to the 100gpm tips or flow three lines with the 125gpm tips.
