EL CAMINO COLLEGE

FIRE ACADEMY

WILDLAND "I-ZONE" FIREFIGHTING

STUDENT WORKBOOK

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(M) WILDLAND I-ZONE W
by NELSON

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CHAPTER 1 OBJECTIVES

At the conclusion of this chapter the student will:

- Identify the format in which the course will be completed.
- Describe the materials necessary to complete the course.
- Describe the requirements for successful course completion.

CHAPTER 1

INTRODUCTION AND OVERVIEW

This course is designed to provide essential information for firefighters who do not routinely respond to incidents in the wildland urban interface (I-Zone). It is especially geared to address common issues for urban/municipal firefighters that provide mutual aid to state and/or federal agencies during major fire incidents. The materials offer basic information regarding the preparation, knowledge and awareness necessary to operate safely and effectively in the I-Zone.

This program introduces terminology that may be uncommon or unfamiliar. At the beginning of each chapter is a glossary of terms used in that chapter. There is also a complete glossary located in Appendix A. In addition to the reading materials and exercises your department facilitator/ instructor will schedule a shelter deployment drill before the course is complete.

The program may be completed using either, or a combination, of the formats described below. Students may fulfill course requirements by directed (self-paced) study, in small groups at the station level or in a traditional classroom setting. The method for course completion will be determined by each department.

- **DIRECTED STUDY (SELF-PACED)**

  The entire course can be completed by an individual student. It is designed to be interactive with the accompanying videotape. In some exercises you will watch the videotape and then complete the appropriate page(s) in the Workbook. For others you will read information and complete exercises at the end of the chapter.

- **SMALL GROUP/CLASSROOM**

  Much of the material in the workbook can be used for classroom discussion. The individual exercises and interactive video segments also lend themselves to small group interaction.

COURSE INSTRUCTION AND VIDEO INTERACTIONS

This is a video-based training program, which means it has both video and workbook segments. Throughout the course you will be instructed to read material, complete exercise and watch segments of the videotape that accompany this workbook.

There is an icon on the lower outside corner of the pages in your workbook and a matching video icon on the lower right-hand corner of your television screen. Each segment has a different icon. These icons will help you locate the correct segment of the videotape for the Chapter you are completing. As an example, this is Chapter One, the Workbook Introduction. Note the icon in the corner. The same icon will be on the screen when you start the first video segment.

Should you have any questions about the format or the content of the course, ask your department facilitator or contact the person listed on the Student Information Sheet in your workbook.

Begin Video Tape

CHAPTER 2 OBJECTIVES

At the conclusion of this chapter the student will:

- Describe the roles and responsibilities of firefighters responding to mutual aid incidents in the Wildland urban interface (I-Zone)
- Define common terminology used in the I-Zone
- Describe both typical and non typical assignments and lengths of stay for companies and/ or strike teams
- Identify the common types and capabilities of ICS apparatus.
- List recommended equipment to prepare municipal apparatus for I-Zone response
- List necessary PPE
- Describe appropriate readiness at staging
- List necessary personal clothing, equipment and supplies

CHAPTER GLOSSARY

Back-Pump (Backpack pump)—A portable sprayer with hand pump, fitted with straps.

Class A Foam—Foam intended for use on Class A or woody fuels; made from hydrocarbon-based surfactant, therefore lacking the strong filming properties of Class B foam, but possessing excellent wetting properties.

Drip Torch—Hand-held apparatus for igniting fires by dripping flaming liquid fuel at an adjustable rate on the materials to be burned; consists of a fuel fount, burner arm, and igniter.

Fire Service and Rescue Emergency Mutual Aid Plan—A Statewide plan that provides for orderly development and operation of mutual aid between local and state government departments and agencies.

Incident Action Plan (IAP)—Contains objectives reflecting the overall incident strategy and specific control actions for the next operational period. The plan may be oral or written.

Initial Attack—The control efforts taken by resources that are first to arrive at a wildfire.

Interface—Occurs where city boundaries and suburbs press against wildland vegetation - as in a subdivision on the outskirts of town.

Intermix—Occurs where homes and other structures are intermixed with wildland vegetation - as in a mountain community in a conifer forest.

I-Zone—Occurs where wildland fuels threaten, or are threatened by, structural fuels. A generic term that includes both interface and intermix situations.

McLeod—A combination hoe or cutting tool and rake, with or without removable blades.

Operational Period—The period of time scheduled for execution of a given set of suppression and rescue actions as specified in the Incident Action Plan.

Overhead Personnel—Personnel who are assigned to supervisory positions which include incident commander, command staff, general staff, directors, supervisors, and unit leaders.

Portable Pump—Small fuel driven pump that can be hand carried or conveyed to a water source over difficult terrain

Progressive Hose Lay—A hose lay in which double shutoff (gates) (Y's) are inserted in the main line at intervals and lateral lines are run from the wyes to the fire edge, thus permitting continuous application of water during extension of the lay.

Pulaski—A combination chopping and trenching tool widely used in fireline construction, which combines a single-bitted axe blade with a narrow adz-like trenching blade fitted to a straight handle.

Spot Fire—Fire set outside the perimeter of the main fire by flying or rolling sparks or embers.

Values (Values-at-Risk)—Natural resources, improvements, or other values that may be jeopardized if a fire occurs; estimated damages and benefits that may result from fires in a particular pre suppression or suppression situation.

CHAPTER 2
PREPARING FOR THE RESPONSE

With increasing frequency, people and structures are threatened by wildfires. More and more people are building houses in what used to be wildland. Many of these formerly wild areas are interlaced with structures and the road systems serving them. As these areas grow in size and number, there will likely be more fires and greater losses. Many structures have been constructed in ways that leave them vulnerable to wildfire. The roads leading in and out of these areas can become deadly fire traps. When fire threatens these structures, it also threatens the people in them. It doesn't take a huge wildfire to cause fatalities in this intermix of people, structures and combustible vegetation. The Baldwin Hills Fire (Los Angeles, 1985) was an 8 acre fire that killed three people. The deadly East Bay Hills Fire (Oakland, 1991) took 25 lives in a relatively small 1600 acre fire.

This increasing threat to life and property is creating a huge demand on fire agencies. What used to be a relatively simple job of containing and controlling a wildfire can now be a very complex and challenging combat situation. Hundreds and even thousands of homes may be in the path of a fire; roads and water systems may be inadequate; the exposures can be extreme; and people may be threatened in their homes or cars. This can be a very demanding problem, and in most cases, the attack must be started with insufficient resources. The responsible fire agency must recognize the deadly potential early and mobilize large numbers of fire and law enforcement resources to attack the fire and protect the people and structures simultaneously.

Responsible State and Federal agencies have reacted to this increasing threat by calling for assistance from local government fire departments on interface or intermix (I-Zone) fires. Local government engines are an increasingly important part of successful I-Zone fire operations. No agency has sufficient resources to handle both fire control and structure protection needs on large wind-driven wildfires that threaten structures. Moreover, it is often better to request mutual aid engines on medium size fires if it will enhance the closest forces concept. Since 1985 we have seen a upward trend in the mobilization of local government engines on large I-Zone fires. Also, many local government fire chiefs have recognized this wildfire potential in their jurisdictions, and they too are calling on the mutual aid system with increasing frequency.

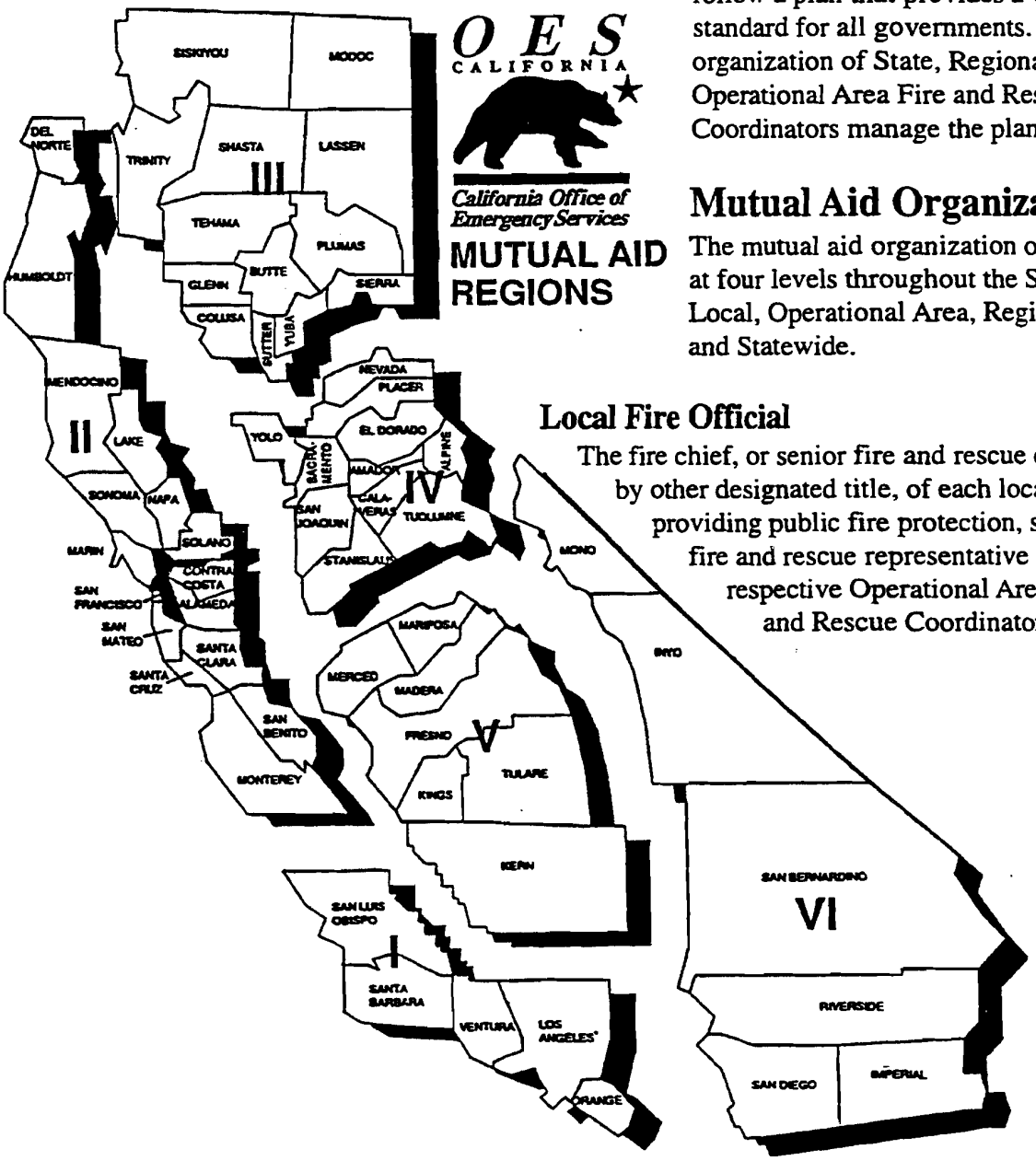
MUTUAL AID RESOURCE REQUESTS

YEAR	INCIDENT	ENGINES
1985	Lexington (first major use of local government resources)	295
1987	Stanislaus/Klamath—1987 Fire Siege	1100
1991	Oakland	*410
1992	Humbolt Earthquake, Landers/Big Bear Earthquake, Los Angeles Civil Distrubance, Moccasin, Old Gulch, and Fountain	1800
1992	Los Angeles Civil Distrubance	*445
1993	Southern California Fire Siege Week 1: Kinneloa (Altadena), Ventura Fires, Laguna Fires; Week 2: Malibu (Topanga Canyon)	 715 *810
1994	41 Mutual Aid Fires	1220
1995	37 Mutual Aid Fires	375
1996	22 Mutual Aid Fires	465

* Largest Deployment to Single Incident to date

MUTUAL AID

What is mutual aid? Simply stated, it is two or more fire agencies who have an agreement with reciprocal plans for helping each other with the allocation of resources for emergency response. California communities have historically relied upon mutual aid resources in combating fire and responding to other emergency situations exceeding the capability of a single jurisdiction. Since 1950, the California Master Mutual Aid Agreement and the Fire Service and Rescue Emergency Mutual Aid Plan have provided the basis for development of the Statewide Fire and Rescue Mutual Aid System. Every segment of the fire service has contributed to the development and refinement of the system. In California the agreement and plan has been signed by all state agencies and virtually all of its cities, counties, and special districts. They agree to use and follow a plan that provides a working standard for all governments. An organization of State, Regional, and Operational Area Fire and Rescue Coordinators manage the plan.



Mutual Aid Organization

The mutual aid organization operates at four levels throughout the State: Local, Operational Area, Regional, and Statewide.

Local Fire Official

The fire chief, or senior fire and rescue official by other designated title, of each local entity providing public fire protection, serves as fire and rescue representative to their respective Operational Area Fire and Rescue Coordinator.

Operational Area Fire and Rescue Coordinator

Operational Fire and Rescue Coordinators are elected for a three year term by the fire chiefs of local fire and rescue entities within an operational area. They appoint one or more alternate fire and rescue coordinators. They, or their alternates, will serve on the staff of the Operational Area Fire and Rescue Coordinator in their respective area.

Regional Fire and Rescue Coordinator

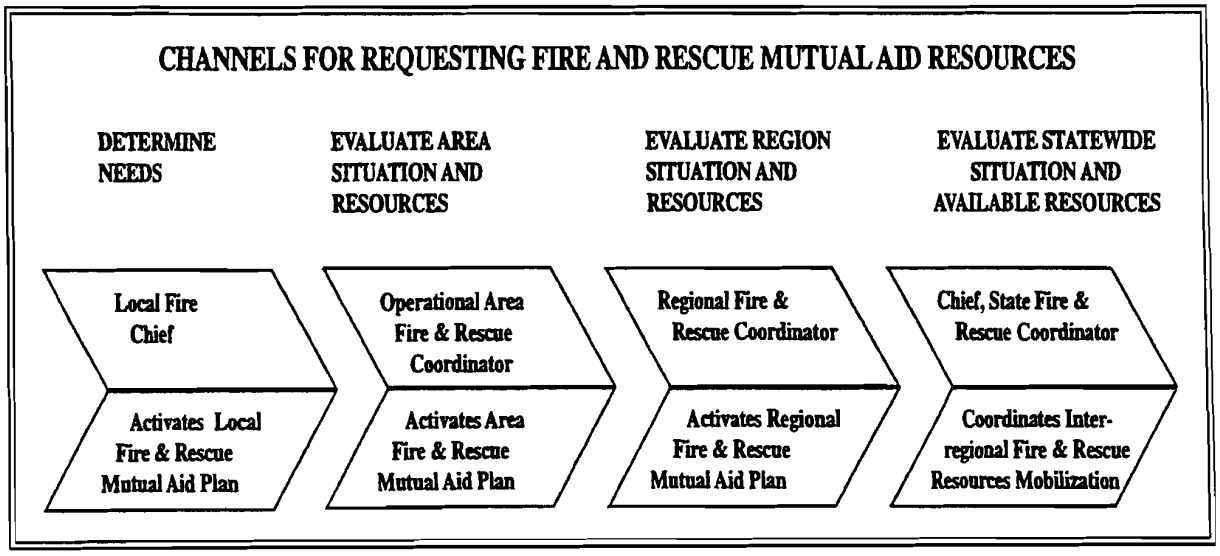
Regional Fire and Rescue Coordinators are elected for a three-year term by Operational Area Fire and Rescue Coordinators within their respective regions. They each appoint one or more alternate Regional Fire and Rescue Coordinators. They, or their alternates, serve on the staff of the OES Regional Coordinator during emergencies.

State Fire and Rescue Coordinator

The State Fire and Rescue Coordinator is the Chief of the Fire and Rescue Branch of the Governor's Office of Emergency Services and is a staff member of the Director of the Governor's Office of Emergency Services. The State Fire and Rescue Coordinator is responsible for taking appropriate action on requests for mutual aid received through Regional Fire and Rescue Coordinator channels.

Mutual Aid Mobilization

When an agency has an incident requiring a response beyond the agency's resource capability, mutual aid resources are requested. The plan is designed to mobilize the closest forces with the fewest number of requests. This simplest plan is done at the local level, with greater complexity and coordination requirements occurring as the mobilization requests move up the system to Operational and Regional and State levels.



FIREFIGHTER ROLES AND RESPONSIBILITIES

Mutual aid firefighters provide valuable assistance to another fire agency in carrying out that agency's mission. These firefighters use their training, skills, and available equipment to:

- Protect lives
- Protect property, other values, and the environment
- Contain and extinguish the fire
- Assist the responsible agency with tasks required to assist the public or restore order to the incident scene.

The firefighters primary responsibilities include:

- Being alert for any hazard that could injure you or any other responder
- Being responsible for one's own safety
- Knowing the chain of command and appropriate radio nets for chain of command communication
- Reporting any hazard or potential hazard to supervisors and/or appropriate overhead
- Reporting any situation that appears to jeopardize incident or tactical objectives
- Operating within the plan as outlined in the Incident Action Plan (IAP)
- Carrying out any assigned task to the best of one's ability
- Ensuring that all public contacts are handled in a positive manner
- Establishing and maintaining positive contacts with responders from different agencies
- Keeping physically and mentally fit for the duration of the incident

Carrying out tasks on another agency's incident requires an open perspective to the way other agencies do business. First, many land management agencies have a primary mission to protect or preserve the environment and archeological sites. In many cases, the correct decision for their mission is to allow an area to burn rather than cause damage to the environment. It is appropriate to ask questions about the reasons for these kind of decisions, but once the reason has been explained, the responsibility is to carry out the plan to the best of your ability. Moreover, it is never appropriate to make negative comments about these issues to the public or the media.

Secondly, fire agencies often have different tactical perspectives. Generally, the tactics are determined by the strike team leader; however, some overhead personnel may request specific tactics that differ from the way you do it "at home". Occasionally, a discussion about your "better way" might help everyone do a better job. However, your job is to do it their way unless that way jeopardizes your safety. Again never make any negative comments about this kind of situation. Remember, you are assisting them on their fire!

Typical Assignments

Typical assignments for local government engines on an I-Zone fire include structure protection, patrolling and overhaul, and holding the fire along a road.

Structural Protection

Structure protection assignments are slightly different for interface or intermix structural density. The classic interface situation will have high density housing adjacent to the wildland. In this situation, the fire will sweep against ("bump" is the jargon term you will hear on the radio) multiple structures on the perimeter of a housing development.

In the intermix, the structures are spread out with no clearly defined boundary where the fire will hit the structures. Some structures will be exposed and others will be by-passed depending on fire behavior. In this situation, the engines will be operating as single units under the control of the strike team leader, but usually not in close proximity or line of sight. The engines generally deploy on a structure and quickly protect it or determine it is beyond the capability of the single engine, and then move on to another structure.

Patrolling

Patrolling is a tactic designed to have resources close to any area where new ignitions could cause an escape fire or greater losses to structures. These new ignitions can come from damaged structures that were not completely overhauled, embers that have caused a delayed ignition on combustible roofs, in hidden spaces, and in domestic vegetation or outside of the perimeter control line. Engines are assigned an area of responsibility and directed to provide a continuous observation of the area to find and extinguish any new ignitions. While the engines are in this patrol mode, they may find structures or storage combustibles that require additional overhaul.

Holding Along a Road

Some roads are effective barriers to fire spread, so a typical plan is to allow the fire to burn to the road and have resources placed along the road to control any spot fires across the road. Engines alone or engines with hand crews are deployed on the road to watch for and extinguish spot fires. In some situations engines or engine strike teams will be given a dual responsibility of protecting structures and controlling spot fires along a road.

Less Common Assignments

In addition to the typical assignments, mutual aid engine companies are also used to deploy hose lines for fire control, mop up the perimeter, and in some situations may be required to protect or rescue trapped victims or assist law enforcement in evacuation. Still other assignments might result in the engine being assigned for one or more operational period at staging areas or mobilization centers.

Firefighters must be prepared to participate in rescue and evacuation strategies. Few I-Zone fires require total evacuation, and in some situations the residents refuse to leave. This means engine companies may find residents remaining in the operational area and in the structures needing protection. This creates the potential for people to become trapped in untenable structures or in vehicles located in untenable positions. This could result in engine companies being assigned to rescue or shelter in place those threatened. Firefighters who are not peace officers do not have the authority to order evacuation; however, there is

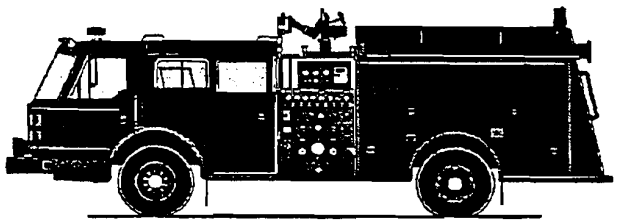
an obligation to inform people of the dangers and provide them with directions on safe guidelines for an orderly evacuation.

The staging assignment may be the least favorite and may seem like an unnecessary "hurry up and wait" exercise. However, reserve resources are necessary for the relief of fatigued firefighters and good resource management requires a certain percentage of resources be in reserve for an immediate response to tactical opportunities or for contingencies.

APPARATUS AND EQUIPMENT

Apparatus

Under ICS guidelines, resources are described by kind and type. The different kinds of resources used in wildfire combat include engines, dozers, crews, helicopters, etc. Within each kind of resource there are several types, which further describes the capabilities of a specific kind of resource.



ENGINE TYPES & MINIMUM STANDARDS

	TYPE1	TYPE 2	TYPE 3	TYPE 4
Pump Capacity	1000 GPM	500 GPM	120 GPM	50 GPM
Water Capacity	400 Gal.	400 Gal.	300 Gal.	200 Gal.
2 1/2" Hose	1200 FT.	1000 FT.	N/A	N/A
1 1/2" Hose	400 FT.	500 FT.	1000 FT.	300 FT.
1" Hose	200 FT.	300 FT.	800 FT.	800 FT.
Ladder	20 FT.	20 FT.	N/A	N/A
Heavy Stream	500 GPM	N/A	N/A	N/A
Personnel	4	3	3	3

Type 1 and 2 engines are normally utilized in cities, suburbs, and small towns because of their emphasis on volume pump capacity and supply hose. Type 3 and 4 engines are most commonly referred to as brush or wildland engines with their emphasis on lightweight smaller diameter hose and maneuverability. It is important to remember that ICS typing deals with minimums. Many engines of all types significantly exceed the minimum requirements, particularly in the areas of personnel, hose, pump capacity, and tank size. Most municipal fire departments respond with Type 1 or Type 2 engines, but it is useful to understand the capabilities of each type. Note that Type 1 engines have a greater pumping capacity, but do not have the recommended supply of one and one/half inch hose for wildland incidents. This means Type 1 engines are generally better suited for protecting structures, but Type 3 engines are generally better suited for deploying progressive hose lays. A key point to remember is that, deployed properly, any type engine can save lives and property in the I-Zone.

Engine Equipment

As with all fire operations, the engine is the tool chest for the company. I-Zone operations may require items that are not normally carried on municipal engines. OSHA lists some minimum requirements for safety. The OES guidelines for equipment are outlined below and departments will have their own policies for specific needs.

In addition to the recommended minimums, the following lists additional equipment that may prove useful in many I-Zone situations.

RECOMMENDED MINIMUM EQUIPMENT COMPLEMENT FOR LOCAL GOVERNMENT ENGINES ASSIGNED TO WILDLAND FIREFIGHTING AND STRUCTURE PROTECTION

1000 FEET OF 1 1/2" HOSE. (Preferably single jacket, but double jacket will certainly work. This 1000 ft. is a total, to be included with the normal engine complement.)

600 FEET OF 1" HOSE WITH N.P.S.H. THREADS.

3 ea. - 1 1/2" to 1" IN-LINE HOSE TEES WITH N.P.S.H. THREADS ON THE 1". (Also known as a water thief.)

1 ea. - FORESTERS HOSE CLAMP.

1 ea. - 1 1/2" STRAIGHT STREAM NOZZLE WITH SHUT-OFF. (Nozzle should have a 3/8" or 1/2" tip.)

3 ea. - 1" STRAIGHT STREAM NOZZLE WITH SHUT-OFF - N.P.S.H. THREADS. Nozzle should have low gallonage tips or spray heads of 10 GPM or less.)

1 ea. - ROUND POINT SHOVEL.

1 ea. - McLEOD.

2 ea. - SPARE FIRE SHELTERS. (To use in the event of an engine overrun by fire.)

1 ea. - CASE OF FUSEES/FLARES. (For firing operations.)

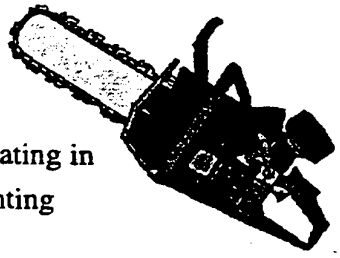
1 ea. - BURN INJURY KIT. (For crew/strike team use.)

FOOD, DRINKING WATER, PERSONAL PROVISIONS FOR THE ENTIRE CREW FOR A PERIOD OF AT LEAST 48 HOURS.

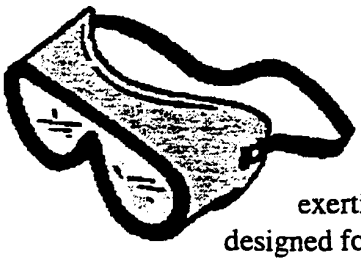
******A REQUIREMENT******
ALL ENGINE COMPANY PERSONNEL MUST HAVE FULL WILDLAND SAFETY CLOTHING, INCLUDING FIRE SHELTERS.

Useful Equipment

- Chain saw - For creating defensible space
- Portable pump - for accessing pools and natural water sources
- Lightweight hose packs - for quick deployment at threatened structures or for progressive hose lays
- Wildland handtools - a second McLeod, a round point shovel, and a Pulaski give the company greater ability to create defensible space or cut fire line
- Back pump - A collapsible back pump will allow quick attack on ember control and is more maneuverable than hose lines
- Bolt cutters - to provide access through fences and locked gates
- Water ejector - allows increased flow from minimal sources using the venturi principal
- Lighting equipment - wild fires often create power outages. Operating in dark, unfamiliar conditions is made much safer with adequate lighting
- Class A foam with eductor and air aspirating foam nozzle or tube



- Adapters - rural areas tend to have many threads and sizes which are not common in urban areas
- Gas shutoff tool - I-Zone safety is significantly enhanced if natural gas is shut off
- Drip Torch



PERSONAL PROTECTIVE EQUIPMENT (PPE)

Firefighters operating in the I-Zone should carry a full complement of both structural and wildland PPE. Structural and wildland protective clothing were designed for two different purposes. Structural clothing is designed for relatively short periods of high exertion in high thermal wet environments. Wildland safety clothing is designed for long term paced exertion in dry high ambient heat environments. Structural PPE will provide adequate protection if the only tactic is protecting structures, however, the weight and bulk of structural PPE will contribute to heat exhaustion and inordinate fatigue given the lengthy operational period of wild fire action plans.

Wildland protective gear must meet the requirements of General Industry Safety orders (Title 8 section 3410) and consist of the following as a minimum:

- Helmet
- Ear and neck protection
- Eye protection
- Fire resistive jacket
- Fire resistive pants
- High top, laced, non-slip boots
- Gloves
- Fire shelter

Length of Stay

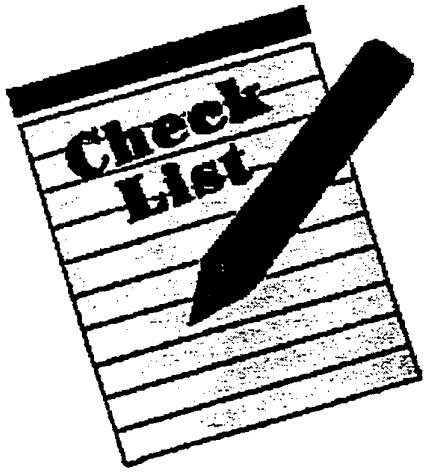
Engine company mutual aid assignments can range from two hours to two weeks. It is even possible to be dispatched from one fire to another. So, all personnel should prepare for some personal comfort needs. If mobilized during the first day of the fire, expect lag time (2 to 3 days or more) before the incident base is operating at full capability with showers and laundry facilities.

Personal Kit

All firefighters should prepare a kit for personal needs for a two week assignment. The strike team leader should have purchasing authority for fuel and feeding needs enroute; however some agencies do not arrange for this. In this case all personnel should take enough cash for food enroute and for personal needs for the anticipated length of stay. The personal kit should have items of clothing and personal hygiene for a four day assignment; after four days you will usually (not always) have access to laundry facilities.

Remember it may be some time before you have a chance to eat or sleep. You can get wet, cold and dirty. Be prepared to take care of your own personal needs. This standard check-list below should be appropriate for average needs:

- Money, including change or credit card for phone calls (don't forget important numbers) and food during travel to and from incident
- Three sets of clothing, including bandannas
- Comfortable footwear for unassigned hours
- Personal hygiene items to cover two weeks
- Personal first aid items: Eye wash, lip balm, aspirin, etc.
- Required medication
- Sleeping bag and pad
- Flashlight and extra batteries
- Coat



CODE OF CONDUCT

I-Zone fires usually generate a high level of media coverage. Media pictures of firefighters engaged in inappropriate activities can be an embarrassment to the individual, the department and the fire service as a whole. For this reason, and for the respect of your peers remember your actions are a reflection of the professionalism of your agency and of the fire service.

- Your agency's code of conduct should be followed during both on and off duty status.
- Establish and maintain positive interpersonal and interagency relationships.
- Maintain and wear all appropriate PPE
- Avoid "fire house humor". Do not refer to peoples homes as "winners or losers".
- Maintain a state of readiness even when not assigned: at staging you must stay together as a company and be able to respond out of staging within three minutes.
- When you are out of service at the incident base or a camp, ensure you can be contacted by your supervisor.
- Wear the proper uniform during out of service hours.
- Do not attempt to supplement your engine equipment list or your personal kit by stealing from the supply unit. All equipment must be returned before you are demobilized.
- Recreation is limited to unassigned hours. Do not use Frisbees, beach balls, etc., while at staging.
- NO drugs or alcohol
- Do not enter houses or use private facilities except as necessary to protect the structure or for immediate shelter from the fire.

EXERCISE 2—1

1. Describe the difference between interface and intermix wildfire situations.

_____

_____

2. List three typical assignments for mutual aid engines during an I-Zone incident.

a. _____

b. _____

c. _____

3. Name at least 3 responsibilities of mutual aid firefighters.

_____

_____

_____

_____

_____

_____

_____

4. List three pieces of equipment that can be carried by Type 1 or 2 engine to enhance I-Zone fire operations.

a. _____

b. _____

c. _____

5. List six items of required wildland PPE.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

6. List five items in a personal kit.

_____

_____

_____

_____

_____

7. What is the readiness requirement when assigned to the staging area?

_____

CHAPTER 3 OBJECTIVES

At the conclusion of this chapter the student will:

- Describe typical check-in and assignment procedures at an I-Zone mutual aid incident
- List important information to be obtained from an adequate briefing
- Describe common incident base layout and functions
- Identify common routines during operational periods

CHAPTER GLOSSARY

Assignments—Tasks to be performed within a given operational period, based on tactical objectives in the incident action plan.

Check-In—Location where assigned resources check-in at an incident.

Incident Base (Base)—The location at which primary logistics functions for an incident are coordinated and administered. There is only one base per incident.

Staging Area—An on-incident location, managed by the operations section, where incident personnel and equipment are assigned on a three (3) minute available basis.

Strategy—An overall plan of action for fighting a fire which gives regard to the most cost-efficient use of personnel and equipment in consideration of the values threatened, fire behavior, legal constraints, and objectives established for resource management. Leaves decisions on the tactical use of personnel and equipment to supervisors and leaders in the operations section.

Tactics—Deploying and directing resources on an incident to accomplish the objectives designated by the strategy.

Wildfire—A fire occurring on wildland that is not meeting management objectives and requires a suppression response.

CHAPTER 3
ARRIVING AT THE INCIDENT

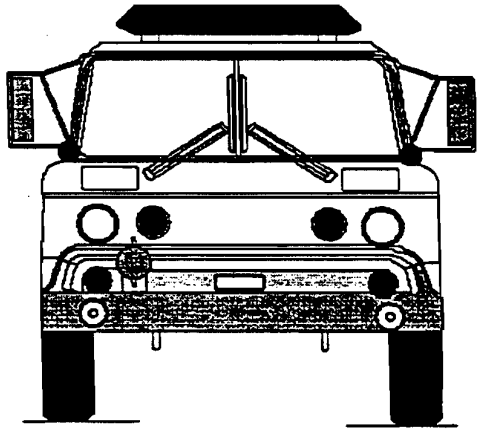
Once dispatched, the procedures for receiving an assignment will vary depending on the mode of response and the check-in process used for immediate need resources. If the engine is responding for an immediate need, instructions will likely be to report to a specified staging area or directly to the division or group. If the engine is responding for a planned need, it will normally report to the Incident Base to receive an assignment. Engines that have traveled a long distance will usually receive one operational period of rest prior to assignment.

Immediate Need

- Report to check-in at the Staging Area or Division/Group that was given as part of response information.
- Receive essential information for finding assigned area and the Division/Group Supervisor.
- Report to Division/Group Supervisor.
- Receive briefing that includes, goals and objectives for working period, safety information and communication links.
- Complete assignment.

Planned Need

- Report to check-in at the Incident Base. The Check-in Recorder will direct the engine or strike team to a new assignment if the assignment has been changed to an immediate need.
- The Resources Unit is where information can be found about operational periods and status for the engine or strike team during the next operational period.
- The Facilities Unit will have the information needed about sleeping areas and Incident Base layout.
- Logistical needs in preparation for the next operational period are a priority.
- Rest. Take advantage of rest periods to be ready and alert for next work period.



Check-In

Check-in is a vital process during the rapid, initial phases of wildfires. Many of the communication and resource tracking problems seen on large incidents can be traced to failure to properly check-in. The check-in process provides

vital resource status information to the planning section and the operations section chiefs. It is also a critical first step in ensuring a timely assignment for the engine or strike team. For immediate need assignments this is the first place the strike team leader can get current information about the incident. The Check-in Recorder or Staging Manager should be able to provide information about:

- Travel route to your assignment.
- Identity of the division/group supervisor, and
- The radio communication plan.

This information should be complete enough to get the strike team or engine company to the assignment quickly.

BRIEFINGS

Thorough briefings are essential for safe, effective incident operations. There are three types of briefings; an overhead briefing, a command level briefing and a company level briefing. All of the vital information for one operational period should be presented at each briefing Prior to each operational period, a large group of overhead personnel assemble for the briefing that provides direction for the entire operational period. All overhead personnel are given a copy of the Incident Action Plan(IAP), and key personnel present emphasis or clarification to the overhead that will be implementing the plan.

The second type of briefing is given at each level of command. This briefing covers information that will be necessary for tactical operations. This tactical briefing is less formal and should provide the opportunity for questions and discussion. An example that may be seen is the Strike Team Leader briefing the company officers. The third type is the briefing crew members receive from the company officer. Firefighters will receive information at company level briefings and should know what information to expect.

During some phases of I -Zone fires, a written IAP may not be available, so the briefings are based on an oral IAP. Often, the individuals responsible for giving briefings feel rushed and stressed. This can result in omission of vital information about fire behavior or safety. If there is an expectation of the information needed for assessing the safety of operations, omissions can be recognize and important questions asked.

The company briefing should provide all of the information needed to understand the general situation and the individual roles in completing the assignments safely. When the situation or assignment changes, an updated briefing should be received. The company officer should encourage questions and discussion of safety issues.

Expect thorough briefings and be prepared to ask specific questions if the briefing seems vague or incomplete. Get enough information to know what is expected of you, what your company will be doing, what hazards you may be facing, and how your LCES is supposed to work.

A standard briefing, that covers vital information about safety should include the following:

Situation

The briefing should include an overview of the situation relative to the assignment that covers:

- A description of current and predicted fire behavior: An example of a description could sound like"the fire is moving in a northerly direction pushed by a south wind of 10 to 15 MPH. We are seeing flame lengths of 20 feet in uphill runs in light brush. We are also seeing some spotting 100 feet ahead of the fire. If we don't see any change in the weather, we can expect the same fire behavior until sundown".

- Predicted weather: The weather discussion should explain normal daily patterns and any local anomalies from standard weather patterns and should include the forecast for the next 12 to 24 hours.

- Your position relative to the fire edge: This should include a rough estimate of when the fire will hit your position

Tactics

You should know whether you will be protecting structures or controlling the fire or both. Any planned high risk tactics should be discussed.

Safety

Information should be provided on any known hazards. Planned LCES and guidelines for any other relevant high risk tactics should be addressed.

- Known Hazards: This should include a statement about any known or potential hazards such as snags or the probability of firewhirls. This discussion should also include any planned high-risk tactics, all relevant watch-out situations, and the fire behavior factors that should be noted.

- Safety Guidelines: This discussion should cover plans for LCES and any of the other guidelines i.e. I-Zone Guidelines that are relevant to the planned tactics or anticipated fire behavior situation.

A written briefing outline that can be carried may help you ask the right questions to ensure you receive needed information. A general outline might include:

Weather
Fire Behavior
Tactics

Hazards
Safety Guidelines

The National Wildfire Coordinating Group (NWCG) makes a pocket sized" Fireline Safety Reference" (See Appendix B for more information) that condenses and provides ready reference to the fire behavior and safety guidelines covered in this text. It also has space for notes and would be an excellent place to keep briefing information.

Incident Base

The primary logistics functions are administered and coordinated at the Incident Base. During the early phase of an I-Zone fire, services may be very limited. A well developed base can provide all of the supplies and services necessary for supporting the operations of thousands of responders. This section will describe an average well developed base and the processes of the units used by members of strike teams.

The incident base layout is usually arranged in accordance with the ICS functions of Command, Plans, Logistics and Finance. Some units or functions may be separated from other units of the same section because of special requirements such as vehicular access. One example of this kind of exception is the ground support unit. Each command staff position and each operating unit should have a sign indicating the work station for contact with incident personnel. Functional areas such as sleeping, sanitation, feeding, fueling may not be posted because of the obvious nature of the process. These functional areas are laid out according to the logical flow of personnel in their daily routine. It is fairly easy to identify the quiet, shady area used for sleeping and the logical flow to sanitation and feeding areas. The other functional support units are usually grouped together as described below:

- **Command:** Command staff positions will usually have work stations located near the work station of the incident commander: The Information Officer will post current information that will be of interest to all members. This information board will usually be near the incident command post. On some incidents, there will be a duplicate information board that is more accessible for all members, usually near the briefing area or the food line.

- **Plans:** With the exception of check-in, all of the Plans units and processes are usually grouped together.

- **Logistics:** The Logistics units are usually grouped together, but some processes may be spread out because of functional needs. There should be a contact person at each activated unit. Some processes such as a fueling location or the place to get lunches may be separate from the unit leader. For example, if you are told to go to the fueling location to get chain saw fuel and you are uncertain of the location, go to the logistics part of base and ask the Ground Support Unit for the location of the fueling area.

- **Finance/Administration:** The Finance section units are usually grouped together.

The primary functions of support units relevant to engines and/or strike teams are described below:

Planning Section

- **Resources Unit:** Gathers, records and displays current resource status information. Strike team leaders may report their status and other information here. They also may need to gather information about their next assignment.

- **Situation Unit:** Gathers, records, and displays current situation status information. Strike team leaders may report debriefing information to this unit, get situation information or a map.

Logistics Section:

- **Supply Unit:** Most strike team leaders will need to access the supply unit for expendable items such as flash light batteries and inventoried items such as sleeping bags, personal protective equipment (PPE), hose, etc.

- **Ground Support Unit:** This unit usually supplies fuel and mechanical service for apparatus.

- **Facilities Unit:** The facilities unit is responsible for establishing and maintaining all incident facilities. Crews need to know the location of feeding, sleeping, and sanitation/ shower areas. This information can be found at the facilities unit. Additionally, this unit tracks the sleeping location of strike teams for unplanned reassignment or early wake up for feeding.

- **Communications Unit:** This unit usually has replacement batteries for portable radios. There is a message center at this location where messages for the strike team may be found.

- **Medical Unit:** All members should know the location of the medical unit for first aid needs while they are in incident base. All injuries must be reported to this unit.

- **Food Unit:** Strike team leaders will access the food unit daily for food and water for the entire strike team. Meals may be boxed lunches on the line or hot meals while in camp. Enough food and water must be acquired for the full operational period.

COMMON ROUTINES

A daily routine is established around the operational periods selected by the Incident Commander. Operational periods may be of any length, but the most common for wildfire incidents are either 12 or 24 hours. Historically, 12 hour operational periods have been the standard, but there is a recent trend towards 24 hour operational periods. Engine personnel should be prepared for either 12 or 24 hour operational periods and be prepared mentally and physically for peak performance in either situation.

An operational period is the time allocated to complete a set of tactical operations. It is further planned by area of responsibility. This means that the operations section chief has concluded that several tactical objectives can be accomplished by a planned number of resources in a specific area during the operational period. These expectations are usually based on a planned effort to achieve containment or control of a given amount of fireline during the operational period. Over successive days, the percentage of contained line increases and is reported as 20% contained, 40% contained, etc., 100% containment is reported when there is a control line completely around the fire.

From a defensive perspective, the tactical objectives are based on predicted spread of the fire and the values that will be threatened during the operational period. The operations section chief plans resource allocation based on the number of structures and other values threatened during the next operational period. For slow moving fires, the same engines will be used at different locations in subsequent operational periods. For example, three engine strike teams will protect the community of Flat Rock on Thursday, and the same strike teams will protect the structures along Highway 50 on Saturday. For fast moving fires, increasing numbers of strike teams are mobilized and assigned to cover the new threats exposed in successive operational periods.

Working successive 12 hour operational periods requires mental preparation as well as some physical considerations. Studies have shown that firefighters can perform at peak performance over a three week period as long as they are well fed and given adequate rest between operational periods. Most wildfire agencies follow the two to one work/rest cycle. This formula dictates one hour of quality rest for each two hours of work. This means a firefighter who has worked 12 hours must have 6 hours of sleep. In the traditional 12 hour operational periods, this goal can be difficult to achieve because of the logistical challenges of long travel times and other delays at incident base. Firefighters must understand these logistical constraints and manage their out-of-service time wisely to ensure they plan for the best uninterrupted sleep.

Understanding the daily routine can assist firefighters in getting maximum rest during the 12 out-of-service cycle. First, the full 12 hours is not available for rest. Travel time to and from the base usually consumes one to two of the 12 hours. Secondly, logistics needs of refueling and re-supplying the strike team for the next operational period eats up more time.

Thirdly, the firefighters must allow time for clean-up and/or showers and two meals. Finally, some time will be used for briefing prior to reassignment. A sample daily schedule for 12 hour operational periods is presented below:

12 HOUR OPERATIONAL PERIODS

0600 - 1800	complete assignment
1900	arrive at base (or camp)
1900 - 2000	engines fueled and re-supplied
2000 - 2200	clean-up and eat
2200 - 2300	shower (when available)
2300 - 0400	sleep
0400 - 0530	clean-up and eat
0530	assemble for general briefing
0530 - 0600	travel to line
0600	receive specific assignment briefing

From this typical schedule, it is easy to understand why the six hours of sleep is often hard to get if there are any delays in travel or excessively long food or shower lines. Moreover, one can easily see that wasting time between these scheduled events can steal valuable sleep time.

Working successive 24 hour operational periods requires a different set of expectations and some different planning. Wildfire agencies have discovered that they can improve the quality of the rest cycle by using the 24 hour operational period. The primary advantage to the firefighter in this work/rest cycle is always having an adequate amount of night sleeping time. This system also allows adequate time to avoid the time constraints caused by the 12 hour out-of-service cycle. The challenge for firefighters and supervisors is being able to manage work and short rest periods during the working operational period. Supervisors must rotate resources to allow for cooling and hydration and must also be alert for lulls in activity to provide for extra rest so firefighters can conserve their energy for the entire 24 hours. Firefighters must learn their capabilities and pace themselves and take full advantage of all cooling and hydration breaks.

Regardless of the operational period length, firefighters must learn to pace themselves and take full advantage of all opportunities for rest and re-hydration to avoid becoming a casualty from fatigue and/or heat exhaustion. This is particularly important when working on the two to one work/rest cycle for several successive days. One important component to preventing these kind of casualties is to ensure you are physically fit at all times. Crew members will need to have strength, flexibility, and aerobic capacity in order to keep going and avoid injuries. Water intake that maintains body hydration is critical to avoid heat injuries. Firefighters should try to take in food as close to normal cycles as reasonably possible. It is important that each company member watch the other for signs of fatigue that would be contributing factors for sustaining injuries or impair good decision making.

EXERCISE 3-1

1. Describe the process when reporting to and incident under circumstances of immediate need.

2. List information necessary for a complete briefing.

3. Describe how you would find the engine fueling area at incident base.

4. Describe the four principal steps between wake-up and starting work in a typical 12 hour operational period.

5. At which Unit will information about feeding, sleeping and base layout be found?

Return to the video tape at the previous stopping point.