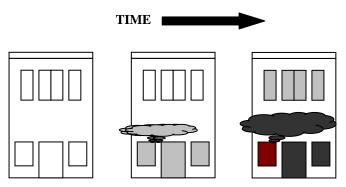
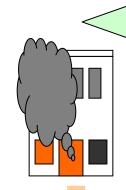
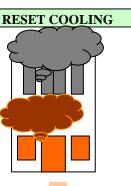
## BUILDING FIRE STAGES AND FIRE ATTACK STRATEGY AND TACTICS

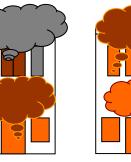
Larry L. Coble - Revised June 2014

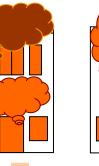
May be reproduced with inclusion of this credit.

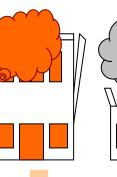


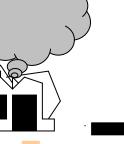














NOTHING SHOWING SMOKE SHOWING SMOKE & FIRE SHOWING

WORKING FIRE (<50% Involved)

DEEP-SEATED WORKING FIRE (50% Involved)

MARGINAL WORKING FIRE (> 50% Involved) F<mark>UL</mark>LY INV<mark>OL</mark>VED COMING DOWN DOWN

PARKING LOT

**VENTED** 

FIRE?

FIRE ATTACK

**STRATEGIES** 

**COMPARTMENT FIRE (UNVENTED) -**INCIPIENT PHASE, THEN A VENTILATION-

INCIPIENT PHASE, THEN A VENTILATION-CONTROLLED FIRE IN THE GROWTH AND INITIAL DECAY PHASES WITH RISKS OF BACKDRAFT AND SMOKE EXPLOSION.

STRUCTURAL FIRE (SIGNIFICANT VENTING) – OXYGEN INTRODUCTION CREATES A PROGRESSIVELY MORE FUEL-CONTROLLED FIRE IN THE GROWTH, FLASHOVER, FULLY DEVELOPED, AND VENTED DECAY PHASES. BEYOND THE DEEP-SEATED WORKING FIRE STAGE, CONDITIONS BECOME UNSURVIVABLE FOR VICTIMS, INTERIOR ATTACK METHODS ARE INEFFECTIVE, AND STRUCTURAL STABILITY WANES; DEFENSIVE STRATEGY WILL LIKELY BE REQUIRED. "RISK LITTLE TO SAVE LITTLE"

OFFENSIVE STRATEGY- MAIN BODY OF FIRE IS ATTACKED TO PROTECT LIFE & PROPERTY

OFFENSIVE-DEFENSIVE STRATEGY-"ALL HANDS" or 2<sup>nd</sup> ALARM
DEFENSIVE-OFFENSIVE STRATEGY- HOLDING ACTION

INDIRECT (FOG) ATTACK

**DEFENSIVE STRATEGY-** LIFE AND PROPERTY ARE PROTECTED PRIMARILY BY CONTROLLING FIRE EXTENSION.

## **INVESTIGATIVE MODE**

## **RESCUE MODE/ FIRE ATTACK MODE** OFFENSIVE STRATEGY TO PROTECT RESCUE.

**Transitional Fire Attack-** Cooling of the fire area prior to entry and during advance using one of these 3 tactics (to be determined by the phase and stage of fire). Direct Attack tactics extinguish the fire bed.

Pulse/3-D Transitional Attack- Short, medium, and long bursts of water fog and penciling cool gaseous layer during door entry and the advance on the seat of the fire. Dry steam method for fighting ventilation-controlled fires in compartments.

"Fast Water" Structural Transitional Attack- Handheld waterline cools and "resets" the fire to an earlier heat level before entry. Blitz Attack Master stream is used to cool and "reset" fire before entry.

### YOUR GENERAL PLAN OF ATTACK SHOULD BE...

- 1. The initial line placement heads off the fire spread.
- 2. Then, the sprinkler system should be supplied.
- 3. Place additional lines so as to surround the entire fire area.
- 4. Back-up those hose lines in heavily involved areas or where men may be in danger.
- 5. Fill in the supply to elevating platforms, ladder pipes, standpipe and sprinkler connections.
- 6. Assign a spark and brand patrol if needed.
  - -Emanuel Fried. Fireground Tactics. 1972.

S.L.I.C.E.R.S. MODE AND FIRE ATTACK TACTICS

> For more on S.L.I.C.E.R.S. visit ISFSI at www.isfsi.org

## **DEFENSIVE MODE-**UNOCCUPIED COMPARTMENT

## **<u>DEFENSIVE MODE</u>** NO RESCUE IN MAIN FIRE AREA. DEFENSIVE STRATEGY TO CONTROL EXTENSION.

Indirect (Fog) Fire Attack- Wet steam method. Exterior Fire Attack- Waterlines are positioned to protect exposures, contain extension, and to darken the fire if practical.

## **OFFENSIVE STRATEGY**

Companies operate to promptly contain and extinguish the fire to protect search and rescue. Fire attack is directed at the main body of fire, typically inside the building (compartment and structural fires), but possibly on the exterior threatening a structure/occupants. Resources, including water flow and supply, are sufficient to control the fire. Interior fires are cooled prior to advance using one of the Transitional Fire Attack tactics: Pulse/3-D (Compartments), "Fast Water" Structural, or Blitz. Direct Attack tactics extinguish the fire. Often a single alarm strategy.

## OFFENSIVE-DEFENSIVE STRATEGY

Control being probable, companies conduct an offensive attack to extinguish the main body of fire. Additional companies are assigned to control extension. This is the strategy often employed to fight fires in row houses and other multi-unit dwellings. Key limiting factor:

 Without intervention, fire has an immediate route to extend quickly to new areas.

Offensive-Defensive Strategy overcomes this limiting factor and is frequently the framework of "All Hands" and second alarm fires.

## DEFENSIVE-OFFENSIVE STRATEGY

A "Holding Action" initiated to contain fire extension and protect life safety until adequate water flow, water supply, personnel, and other resources are available to conduct an offensive attack on the main body of fire. This is an effective strategy for evacuating sections of a building that may have poor egress during fire suppression; floors above a basement fire or above the fire floor in a highrise building for example.

# **DEFENSIVE STRATEGY**

Companies control fire extension and protect persons and property from the effects of the main body of fire. Exterior Fire Attack tactics flow water onto exposures, then contain and extinguish the fire, but without the advancing maneuvers of the offensive attacks. Searches and interior firefighting tactics are employed only within exposure buildings. Large flow rates and water supplies may be needed. Anticipate the worst: establish collapse zones and deny entry.

# INDIRECT (FOG) ATTACK (DEFENSIVE STRATEGY)

A water fog stream is introduced into an unoccupied compartment via a small opening using a circular motion of the nozzle for 30 seconds to produce steam. The opening is closed. After one minute the compartment is opened for ventilation and overhaul. An effective backdraft and smoke explosion prevention strategy during the initial decay (smoldering) phase of unventilated fires. Water fog is introduced at a rate of 1 G.P.M. per 100 cubic ft. (Iowa Formula)

FIRE STRATEGY- An operational framework within which suitable tactics and tasks are employed to mitigate a fire incident and achieve the objective of protecting life and property. Limiting (strategic) factors are evaluated and prioritized to determine the Fire Strategy. The five fundamental Fire Strategies are described above.

### SELECTING FIRE STRATEGY

LIMITING (STRATEGIC) FACTORS- Identify the one or two <u>most critical</u> conditions, the limiting factors, which need to be either:

- Overcome to reach a favorable outcome.
- Accepted as limits to the formulation of the operational plan. Select the Fire Strategy that best achieves the Strategic (Tactical) Priorities... 1. LIFE SAFETY/ RESCUE
  - 2. INCIDENT STABILIZATION/ FIRE CONTROL
  - 3. PROPERTY CONSERVATION/ SALVAGE

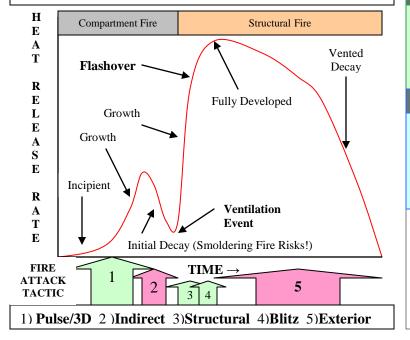
...while overcoming or operating within the limitations of the most critical conditions. Improve safety and effectiveness by assuring all personnel are assigned and operating within the strategic framework. Collect progress reports and amend strategic, tactical, and task assignments as necessary.

### NATIONAL FIRE ACADEMY FORMULA---NEEDED FIRE FLOW

N.F.F. in G.P.M. =  $(\{L' \ X \ W'\} \ \div 3) + 25\%$  for each exposed side and floor above. Flow estimate for the Direct Attack on the involved fire area using lead-off and back-up lines during all Transitional Fire Attacks. This estimate is most accurate for up to 50% involvement of a structure and flows not in excess of 1,000 GPM. Effective "Reset" cooling decreases interior heat and fire volume, which may reduce Needed Fire Flow.

TOTAL WATER SUPPLY- Minimum 2,000 gallons; 3,000 gallons with exposures. See NFPA 1142

### DETERMINE PHASE OF FIRE TO SELECT FIRE ATTACK



### TRANSITIONAL FIRE ATTACKS

### S.L.I.C.E.R.S. Tactical Guideline

Size-up fire ● Locate fire ● Identify and control ventilation flow path ● Cool heated space from safe location ● Extinguish fire ● Rescue ● Salvage

### FLOW RATES OF ATTACK WATERLINES

### ROUNDED FOR TACTICAL PLANNING PURPOSES

	Combi	nation Nozzle	Smooth Bore Nozzle	<u>e</u>
1 3/4"	up to	134 GPM	175 GPM	
2"	up to	200 GPM	200 GPM+	
2 ½"	up to	250 GPM (Bre	esnan also) 250 GPM+	
3" to multiv	ersal	300 GPM+	400 GPM+	

### Adapted from:

Brunacini, Alan V. and Sellers, Don. 1985. *Fire Command.* National Fire Protection Association. Quincy, MA.

Grimwood, Paul, et. al. 2005. 3D Fire Fighting, Training Techniques, and Tactics. Oklahoma State University, OK.

McAniff, Edward P. 1974. Strategic Concepts in Firefighting. Technical Publishing, NY.

Underwriter's Laboratories Firefighter Safety Research Institute reports at <a href="http://ulfirefightersafety.com">http://ulfirefightersafety.com</a> as accessed June, 2014.