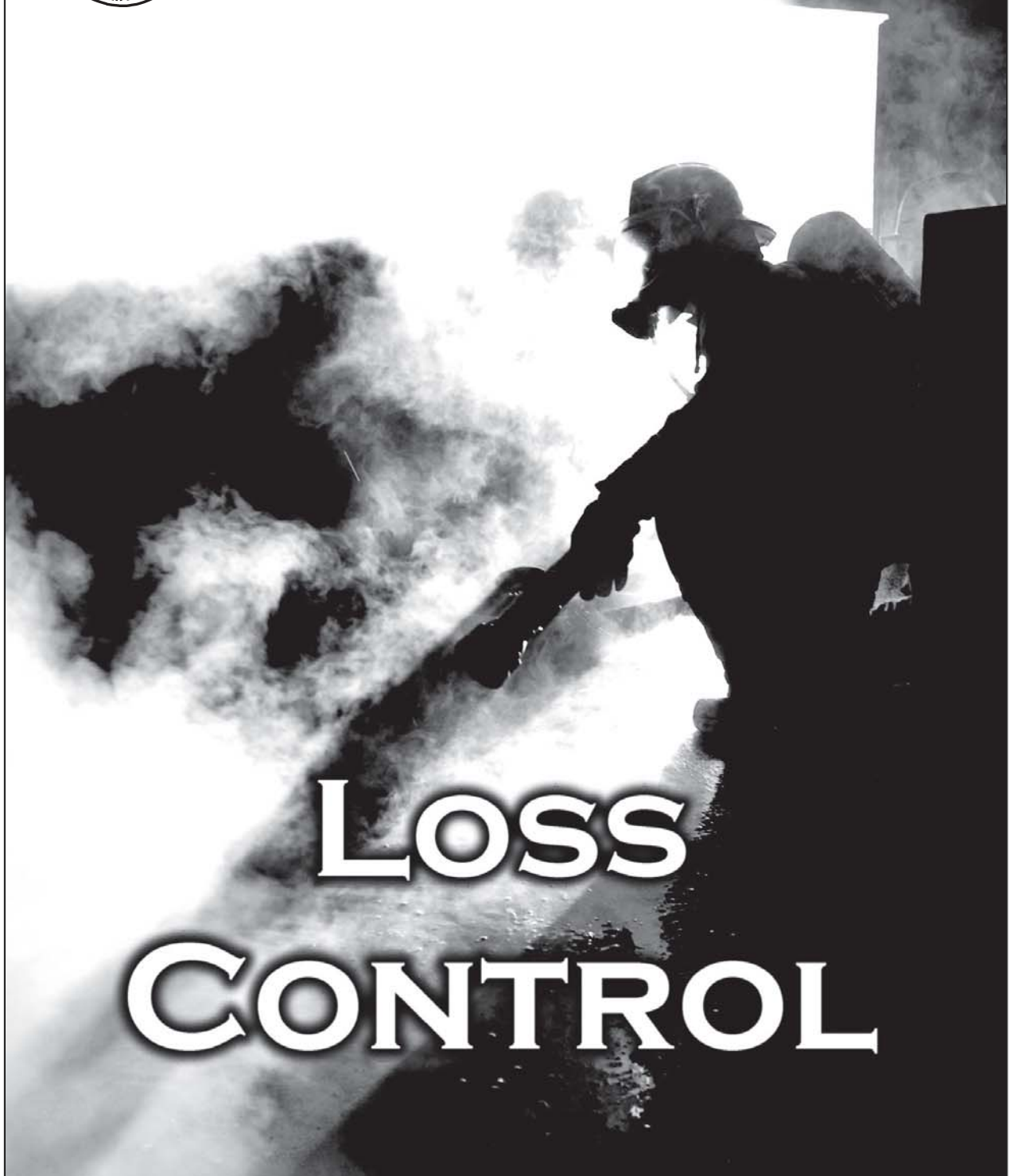




Missouri Division of Fire Safety
FIRE FIGHTER I & II



**LOSS
CONTROL**



UNIT OBJECTIVES

Upon completion of this unit of study, the student should be able to:

1. Define the purpose of salvage and its value to the public and the fire department.
2. Identify the types of equipment and tools used for salvage.
3. Demonstrate folds and rolls of salvage covers.
4. Demonstrate deploying salvage covers.
5. Describe and demonstrate techniques of inspecting, cleaning, and maintaining salvage equipment.
6. Demonstrate the construction and use of a water catchall.
7. Demonstrate the ability to protect stationary and movable property from damage.
8. Identify the purposes of overhaul and the hazards associated with overhaul operations and the appropriate safety equipment and clothing for performing overhaul activities.
9. Describe the indicators of hidden fires.
10. Demonstrate techniques for opening walls, ceilings, and floors, and pulling apart burned materials.
11. Identify duties of fire fighters left at the fire scene for fire and security surveillance.



NFPA STANDARDS

Successful completion of the information in this section is necessary to fulfill the requirements of the following sections of NFPA 1001-2008:

Fire Fighter I Standard

5.3.10* Attack an interior structure fire operating as a member of a team, given an attack line, ladders when needed, personal protective equipment, tools, and an assignment, so that team integrity is maintained, the attack line is deployed for advancement, ladders are correctly placed when used, access is gained into the fire area, effective water application practices are used, the fire is approached correctly, attack techniques facilitate suppression given the level of the fire, hidden fires are located and controlled, the correct body posture is maintained, hazards are recognized and managed, and the fire is brought under control.

(A) Requisite Knowledge. Principles of fire streams; types, design, operation, nozzle pressure effects, and flow capabilities of nozzles; precautions to be followed when advancing hose lines to a fire; observable results that a fire stream has been properly applied; dangerous building conditions created by fire; principles of exposure protection; potential long-term consequences of exposure to products of combustion; physical states of matter in which fuels are found; common types of accidents or injuries and their causes; and the application of each size and type of attack line, the role of the backup team in fire attack situations, attack and control techniques for grade level and above and below grade levels, and exposing hidden fires.

(B) Requisite Skills. The ability to prevent water hammers when shutting down nozzles; open, close, and adjust nozzle flow and patterns; apply water using direct, indirect, and combination attacks; advance charged and uncharged 38 mm (1½ in.) diameter or larger hose lines up ladders and up and down interior and exterior stairways; extend hose lines; replace burst hose sections; operate charged hose lines of 38 mm (1 in.) diameter or larger while secured to a ground ladder; couple and uncouple various handline connections; carry hose; attack fires at grade level and above and below grade levels; and locate and suppress interior wall and subfloor fires.

5.3.13 Overhaul a fire scene, given personal protective equipment, attack line, hand tools, a flashlight, and an assignment, so that structural integrity is not compromised, all hidden fires are discovered, fire cause evidence is preserved, and the fire is extinguished.

(A) Requisite Knowledge. Types of fire attack lines and water application devices most effective for overhaul, water application methods for extinguishment that limit water damage, types of tools and methods used to expose hidden fire, dangers associated with overhaul, obvious signs of area of origin or signs of arson, and reasons for protection of fire scene.



NFPA STANDARDS

(B) Requisite Skills. The ability to deploy and operate an attack line; remove flooring, ceiling, and wall components to expose void spaces without compromising structural integrity; apply water for maximum effectiveness; expose and extinguish hidden fires in walls, ceilings, and subfloor spaces; recognize and preserve obvious signs of area of origin and arson; and evaluate for complete extinguishment.

5.3.14 Conserve property as a member of a team, given salvage tools and equipment and an assignment, so that the building and its contents are protected from further damage.

(A) Requisite Knowledge. The purpose of property conservation and its value to the public, methods used to protect property, types of and uses for salvage covers, operations at properties protected with automatic sprinklers, how to stop the flow of water from an automatic sprinkler head, identification of the main control valve on an automatic sprinkler system, and forcible entry issues related to salvage.

(B) Requisite Skills. The ability to cluster furniture; deploy covering materials; roll and fold salvage covers for reuse; construct water chutes and catch-alls; remove water; cover building openings, including doors, windows, floor openings, and roof openings; separate, remove, and relocate charred material to a safe location while protecting the area of origin for cause determination; stop the flow of water from a sprinkler with sprinkler wedges or stoppers; and operate a main control valve on an automatic sprinkler system.

5.5.1 Clean and check ladders, ventilation equipment, SCBA, ropes, salvage equipment, and hand tools, given cleaning tools, cleaning supplies, and an assignment, so that equipment is clean and maintained according to manufacturer's or departmental guidelines, maintenance is recorded, and equipment is placed in a ready state or reported otherwise.

(A) Requisite Knowledge. Types of cleaning methods for various tools and equipment, correct use of cleaning solvents, and manufacturer's or departmental guidelines for cleaning equipment and tools.

(B) Requisite Skills. The ability to select correct tools for various parts and pieces of equipment, follow guidelines, and complete recording and reporting procedures.



NOTES	STUDENT GUIDE
	<p data-bbox="570 411 797 443">I. Loss Control</p> <p data-bbox="618 489 1373 558">A. Loss control is a necessary part of a fire department's customer service</p> <ol data-bbox="667 604 1395 936" style="list-style-type: none"><li data-bbox="667 604 1395 747">1. Customer service involves the quality of an organization's relationship with internal and external individuals who have contact with the organization<li data-bbox="667 793 1395 936">2. Positive loss control actions, such as covering furniture and vent holes and securing property, enhance both the image of the fire fighters and the fire service <p data-bbox="618 982 1398 1125">B. Loss control is the practice of minimizing damage and providing customer service through effective mitigation and recovery efforts before, during, and after an incident</p> <ol data-bbox="667 1171 1365 1398" style="list-style-type: none"><li data-bbox="667 1171 691 1203">1.<li data-bbox="667 1325 1365 1398">2. Loss control speeds the restoration of property to use <p data-bbox="570 1482 984 1514">II. Salvage (<i>Essentials p. 869</i>)</p> <p data-bbox="618 1560 781 1591">A. Salvage:</p> <ol data-bbox="667 1713 1365 1892" style="list-style-type: none"><li data-bbox="667 1713 1284 1745">1. Reduces the primary damage done by a fire<li data-bbox="667 1791 1365 1892">2. Reduces the secondary damage done by fire suppression operations, such as forcible entry, water application, and ventilation



NOTES	STUDENT GUIDE
	<p data-bbox="618 411 646 443">B.</p> <ol data-bbox="667 527 1398 1052" style="list-style-type: none"><li data-bbox="667 527 1398 600">1. Salvage operations should be planned for early and coordinated with other operations<ol data-bbox="716 642 1398 936" style="list-style-type: none"><li data-bbox="716 642 1398 789">a. In residential occupancies, plans should include protecting photographs, important papers, computer equipment, and other water-absorbent property<li data-bbox="716 831 1398 936">b. In commercial occupancies, preincident plans should include determining the value of contents to the operations of a business<li data-bbox="667 978 1398 1052">2. The value of the contents can exceed the value of the structure in some occupancies <p data-bbox="618 1094 1036 1125">C. General salvage procedures</p> <ol data-bbox="667 1167 1398 1850" style="list-style-type: none"><li data-bbox="667 1167 1398 1241">1. Salvage operations may be started at the same time as the fire attack<ol data-bbox="716 1283 1398 1430" style="list-style-type: none"><li data-bbox="716 1283 1398 1325">a. Covering contents of rooms below the fire floor<li data-bbox="716 1367 1398 1430">b. Gathering and covering contents before a ceiling is pulled<li data-bbox="667 1472 1398 1514">2. Arranging the contents to be covered<ol data-bbox="716 1556 1398 1703" style="list-style-type: none"><li data-bbox="716 1556 1398 1598">a.<li data-bbox="716 1661 1398 1703">b. Group furnishing away from walls<li data-bbox="667 1745 1398 1787">3. Residential occupancies<ol data-bbox="716 1829 1398 1850" style="list-style-type: none"><li data-bbox="716 1829 1398 1850">a.



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">b. Group furniture in center of roomc. Place objects on bedsd. If the carpet is removable, slip it from under furniture<ul style="list-style-type: none">(1) Roll for convenience(2) <p>4. Commercial occupancies</p> <ul style="list-style-type: none">a.<ul style="list-style-type: none">(1) Water follows walls collecting on each shelf(2) Shelf can be completely coveredb.<ul style="list-style-type: none">(1) Difficult to throw salvage cover(2) Potential of falling on fire fightersc.<ul style="list-style-type: none">(1) Elevate at least five inches off floor in basement(2) Lesser height on other floors above basementd. Remove water by:<ul style="list-style-type: none">(1) Opening clogged drains



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">(2) Removing toilets(3) Using existing piping(4) Using salvage covers as chutes <p>D. Salvage equipment</p> <ul style="list-style-type: none">1. Salvage covers<ul style="list-style-type: none">a.<ul style="list-style-type: none">(1) Waterproofed(2) Reinforced corners and edge hems(3) Grommets attached for hanging or drapingb.<ul style="list-style-type: none">(1) Waterproof(2) Lighter than canvas duck(3) Reinforced corners and edge hems(4) Inert to most chemicals(5) Will melt or spot burnc. Polyethylene film<ul style="list-style-type: none">(1) Lightweight (1/10th the weight of canvas duck)(2) Inexpensive(3) Not affected by chemicals



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">(4) Will not mold or mildew(5) Will remain flexible below 0°(6) Has a tendency to slip off of salvaged items(7) Difficult to roll edges and to secure corners and edges <p>2. Care and maintenance of salvage covers</p> <ul style="list-style-type: none">a.b. Scrub with a broomc.d. Allowing to dry while dirty will cause rote. <p>3. Inspecting salvage covers</p> <ul style="list-style-type: none">a. Place salvage cover on ground and lift over headb.c. Check for damage and mark damaged areas<ul style="list-style-type: none">(1) Spot burns(2) Tears(3) Abrasions(4) Grommets missing



NOTES	STUDENT GUIDE
	<p>(5) Seams ripped</p> <p>4. Repairing covers</p> <ul style="list-style-type: none">a. Canvas duck covers: sew-on or iron-on patchesb. Plastic covers: repair with duct tape or vinyl repair tape <p>E. Suggested salvage equipment</p> <ul style="list-style-type: none">1. Should be located in one area on apparatus2. Typical salvage equipment<ul style="list-style-type: none">a. Electrician's pliersb. Sidecuttersc. Various chiselsd. Tin snipse. Adjustable and pipe wrenchesf. Hammersg. Sawsh. Staple guni. Linoleum knifej. Screwdriversk. Assorted power toolsl. Nails and screws



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">m. Roofing papern. Plastic sheetingo. Wood lathp. Mops and broomsq. Squeegeesr. Shovelss. Mop wringers and bucketst. Sprinkler stoppers, tongs, or wedgesu. Carryalls or debris bags<ul style="list-style-type: none">(1)(2) Can be constructed from old or damaged salvage covers(2) Six to eight feet square with handholdsv. Floor runners<ul style="list-style-type: none">(1)(2) Canvas duck or vinyl laminated nylonw. Portable trash pumps



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">x. Water vacuumy. J-hooks<ul style="list-style-type: none">(1) Designed to be driven into a wall or wood frame to hang items from(2) Can be used to hang salvage covers on walls to protect wall-mounted shelvingz. S-hooks: used to hang salvage covers from rails or furniture <p>F. Folding and spreading salvage covers</p> <ul style="list-style-type: none">1. One fire fighter roll and spread<ul style="list-style-type: none">a.b. Can be used as a floor runnerc. May be carried on the shoulder or under the armd. Folding procedure for two fire fighters<ul style="list-style-type: none">(1) Each fire fighter grasps the cover with the outside hand midway between the center and the edge to be folded(2) Each then places the other hand as a pivot point midway between the outside hand and the center and brings the fold over to the center(3) Each brings the outside edge over to the center and places it on top of and in line with the previously placed first fold



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">(4) The other half of the cover is folded in the same manner(5) Each end is folded over about 12 inches(6) The cover is then rolled from one end and to complete a tight compact roll <p>2. Spreading the one fire fighter roll</p> <ul style="list-style-type: none">a. Start at one end of the objects and unroll a sufficient amount to cover the endb. Lay the roll on the objects and continue to unroll toward the opposite endc. Stand at one end, grasp the open edges and open by snapping hands up and outd. Open the other end in the same manner and tuck all edges in <p>3. One fire fighter fold and spread</p> <ul style="list-style-type: none">a. Cannot be spread as quickly as the rollb. Folding procedure for two fire fighters<ul style="list-style-type: none">(1) Each fire fighter grasps the cover with the outside hand midway between the center and the edge to be folded(2) Each then places their other hand as a pivot point midway between the outside hand and the center and brings the fold over to the center



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">(3) Each brings the outside edge over to the center and places it on top of and in line with the previously placed first fold(4) The other half of the cover is folded in the same manner(5) One end of the cover is brought to a point just short of the center and the folded end is brought over on top of the previous fold(6) The two ends are folded on top of each other with the short space acting as a hingec. Spreading the one fire fighter fold is similar to the one fire fighter spread by unfolding the cover over the objects to be covered4. Large covers must be folded for use by two fire fighters5. Two fire fighter fold procedure<ul style="list-style-type: none">a. With the cover stretched lengthwise, both fire fighters grasp opposite ends of the cover at the center and then pull the cover tightlyb. The fire fighters raise the center fold high above the floor and shake out the wrinkles to form the first half-fold and spread the half-fold upon the floor and smooth out the wrinklesc. The open-edge corners are then folded on top of double edged. The cover is folded in half again so open-edge sides are on top



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">e. The open end of the cover is carried to the opposite end and the edges alignedf. The fire fighters grasp the open ends and place them just short of the folded center fold and continue this process by bringing the open ends over to just short of the folded end <p>6.</p> <ul style="list-style-type: none">a. Parachute effectb.c. Not good in confined spaces or in places with low ceilingsd. Procedure<ul style="list-style-type: none">(1) The fire fighters stretch the cover along one side of the furnishings and separate the last half fold(2) Each makes several accordion folds in their throwing hands(3) They pull the cover tight between them and prepare to swing folded part out(4) Each fire fighter reaches high with the folded end and pitches it up and over the furnishings(5) The cover is straightened and the edges tucked in



NOTES	STUDENT GUIDE
	<p data-bbox="618 411 1110 443">G. Improvising With Salvage Covers</p> <ol data-bbox="667 485 1403 1814" style="list-style-type: none"><li data-bbox="667 485 889 516">1. Water chutes:<ol data-bbox="667 600 1403 1587" style="list-style-type: none"><li data-bbox="667 600 1240 632">2. Preparing a water chute with pike poles<ol data-bbox="716 674 1403 1587" style="list-style-type: none"><li data-bbox="716 674 1403 747">a. Spread the cover out removing most creases and wrinkles<li data-bbox="716 789 1403 905">b. Place one pike pole on top of the cover at the outer edge with the point of the pike pole protruding past the cover's edge<li data-bbox="716 947 1403 1020">c. Roll the cover up, over, and around the pike pole<li data-bbox="716 1062 1403 1094">d. Roll the cover inward two to three feet<li data-bbox="716 1136 1403 1272">e. Place the second pike pole on top of the cover at the outer edge of the opposite side of the cover with the point of the pike pole protruding past the cover's edge<li data-bbox="716 1325 1403 1398">f. Roll the cover up, over, and around the pike pole<li data-bbox="716 1440 1403 1472">g. Roll the cover inward two to three feet<li data-bbox="716 1514 1403 1587">h. Hook the chute up using the pike pole hooks for elevation and drainage<li data-bbox="667 1629 1403 1703">3. Preparing a water chute with two salvage covers and a ladder<ol data-bbox="716 1745 1403 1814" style="list-style-type: none"><li data-bbox="716 1745 1403 1814">a. Spread the cover out removing most creases and wrinkles



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">b. Roll one long edge of one cover up to the center line of the coverc. Roll the other long edge of the same cover up to the center lined. Invert the cover and place it on the lower portion of the ladder, pulling each roll from underneath the chute to the nearest beam of the laddere. Roll one long edge of the second cover up to the center line of the coverf. Roll the other long edge of the second cover up to the center lineg. Invert the second cover and place it on the upper portion of the ladder, overlapping the first cover to prevent any leakage, pulling each roll from underneath the chute to the nearest beamh. Elevate the tip end of the ladder for elevation <p>4. Water catchalls</p> <ul style="list-style-type: none">a.b. Properly constructed can hold several hundred gallonsc. Procedure<ul style="list-style-type: none">(1) Fully spread the cover out removing most creases and wrinkles(2) Roll one long edge or side inwards about three feet



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">(3) Roll the opposite long edge or side inwards about three feet(4) Lay the ends (the four corners) of each side roll over on top of the cover at a 90° angle to form the basin corners(5) Roll one end into a tight roll down to and on top of the side rolls forming a projected ear at each corner(6) Tuck the projected ear under the side rolls, locking the corners(7) Roll the remaining end into a tight roll down to and on top of the side rolls forming a projected ear at each corner(8) Tuck the projected ear under the side rolls, locking the corners <p>H. Covering openings</p> <ul style="list-style-type: none">1.2. Doors and windows can be covered with plywood or heavy plastic3. Roof openings should be covered with plywood, heavy plastic, or tar paper4. Wooden lathing should be used along the edges to hold plastic or tar paper in place



NOTES	STUDENT GUIDE
	<p>III. Overhaul (<i>Essentials p. 881</i>)</p> <p>A. Overhaul consists of:</p> <ol style="list-style-type: none">1.2. Placing the building, its contents, and the fire area in a safe condition from fire3. Recognizing and preserving any evidence of the fire's origin and cause <p>B. Purposes of overhaul</p> <ol style="list-style-type: none">1.2. Prevents fire extension3.4. Assists in determining the fire cause5.6. Places building in safe condition7. Improves public relations <p>C. Suggested tools for overhaul</p> <ol style="list-style-type: none">1. Axes: to open walls and floors2. Pike poles: to open ceilings to for fire extension3. Power saws4. Halligan/prying tools



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">5. Shovels and pitchforks: to move baled or loose materials6. Carryalls & buckets: to carry debris or provide a basin for immersing smoldering materials <p>D. Overhaul safety</p> <ul style="list-style-type: none">1.<ul style="list-style-type: none">a. Toxic gasses will linger in confined areas after fire extinguishmentb. Possibility of unburned flammable liquid or traps set by arsonist2. Adequate lighting is need during overhaul to prevent accidents3. Overhaul should directed by a supervisor not directly involved4.5. Continue to work in teams of two or more6. Maintain awareness of exit routes7. Monitor personnel for the need for rehab8. Continue using an accountability system until the incident is terminated



NOTES	STUDENT GUIDE
	<p>E.</p> <ol style="list-style-type: none">1. The intensity of the fire and the amount of water used affects the buildings condition2. Weakened structural members<ol style="list-style-type: none">a. Floor joistsb. Spalled concretec. Weakened steel roof membersd. Weakened roof trussese. Walls offset due to elongation of steel supportsf. Mortar in wall joints cracked or missingg. Heat damaged wall ties holding veneer walls3. Condition of utilities - disconnect utilities before opening walls, ceilings, etc.4. Burned and unknown hazardous materials <p>F. Locating hidden fires</p> <ol style="list-style-type: none">1. Indicators of hidden fires:<ol style="list-style-type: none">a. Smoke issuing from baseboards, cornices, outlets, and other openings and cracksb. Obvious smoke smell



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">c.<ul style="list-style-type: none">(1) Peeling paint(2) Cracked plaster(3) Dried wallpaperd. Cracking sounds in concealed spaces <p>2.</p> <ul style="list-style-type: none">3. Use electronic sensors to check for heat locations4. Possible locations<ul style="list-style-type: none">a. Concealed spaces: ceiling, walls, floorb. Check:<ul style="list-style-type: none">(1) Plumbing walls(2) Window and door frames(3) Baseboards(4) Under debris and around contents(5) Furniture and bedding <p>G. Overhaul procedures</p> <ul style="list-style-type: none">1. Overhaul should be planned to limit further damage and consider restoration of the area2. When conditions permit, fire fighters should make neat, planned openings to check for fire extension



NOTES	STUDENT GUIDE
	<ol style="list-style-type: none">3. If it is not appropriate to use small openings, ceilings and walls may have to be opened4. Opening ceilings<ol style="list-style-type: none">a.b. The pike pole is pushed through ceiling with hook pointed awayc. The pole is pulled down and away5.6. Remove large objects and thoroughly extinguish outside<ol style="list-style-type: none">a. Protect items removed from additional damageb. Burned stuffed furniture and mattresses should be moved to the exterior for extinguishmentc. Be prepared to relocate item in its original location7. Class A foam or wetting agents can aid in extinguishing smoldering and hidden fires8. Take precautions to protect potential fire cause evidence<ol style="list-style-type: none">a.b. Remove evidence only if it is in danger of being destroyed



NOTES	STUDENT GUIDE
	<p>H. Protect scene from unauthorized entry</p> <ol style="list-style-type: none">1. Keep unnecessary personnel and civilians out of the scene until it is released2. If an investigator has been dispatched to the scene, fire personnel must remain on the property until investigator arrives <p>I.</p> <p>IV. Loss Control Summary</p> <p>A. Loss control is designed to minimize damage to structures and their contents during and after fire fighting operations</p> <p>B. The most common and effective means of loss control are salvage and overhaul</p> <ol style="list-style-type: none">1. Salvage are those operations to reduce primary and secondary damage during fire suppression2. Overhaul is done after the main body of fire has been extinguished and consists of:<ol style="list-style-type: none">a. Searching for and extinguishing hidden firesb. Placing the building and contents in a safe conditionc. Recognizing and preserving any fire cause evidence