



Missouri Division of Fire Safety
FIRE FIGHTER I & II



**RESCUE
AND EXTRICATION**



UNIT OBJECTIVES

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

1. Explain primary and secondary search procedures for victims in fire conditions with and without a rope or hoseline.
2. Demonstrate search and rescue operations for victims in a hostile environment.
3. Describe and demonstrate how to remove injured persons using carries, drags, and stretchers.
4. Describe extrication operations for victims of motor vehicle accidents.
5. Explain rescue and safety techniques for the following:
 - a. Structural collapses
 - b. Trench rescues
 - c. Caves and tunnels
 - d. Water and ice emergencies
 - e. Elevators and escalators
 - f. Energized electrical lines
 - g. Industrial accidents
6. Identify the following rescue tools:
 - a. Cribbing and shoring materials
 - b. Block and tackle
 - c. Hydraulic equipment
 - d. Pneumatic equipment
 - e. Ratchet device
7. Demonstrate extrication operations for victims of motor vehicle accidents.



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

5.3.5* Exit a hazardous area as a team, given vision-obscured conditions, so that a safe haven is found before exhausting the air supply, others are not endangered, and the team integrity is maintained.

(A) Requisite Knowledge. Personnel accountability systems, communication procedures, emergency evacuation methods, what constitutes a safe haven, elements that create or indicate a hazard, and emergency procedures for loss of air supply.

(B) Requisite Skills. The ability to operate as a team member in vision-obscured conditions, locate and follow a guideline, conserve air supply, and evaluate areas for hazards and identify a safe haven.

5.3.9* Conduct a search and rescue in a structure operating as a member of a team, given an assignment, obscured vision conditions, personal protective equipment, a flashlight, forcible entry tools, hose lines, and ladders when necessary, so that ladders are correctly placed when used, all assigned areas are searched, all victims are located and removed, team integrity is maintained, and team members' safety - including respiratory protection - is not compromised.

(A) Requisite Knowledge. Use of forcible entry tools during rescue operations, ladder operations for rescue, psychological effects of operating in obscured conditions and ways to manage them, methods to determine if an area is tenable, primary and secondary search techniques, team members' roles and goals, methods to use and indicators of finding victims, victim removal methods (including various carries), and considerations related to respiratory protection.

(B)* Requisite Skills. The ability to use SCBA to exit through restricted passages, set up and use different types of ladders for various types of rescue operations, rescue a fire fighter with functioning respiratory protection, rescue a fire fighter whose respiratory protection is not functioning, rescue a person who has no respiratory protection, and assess areas to determine tenability.

5.3.17 Illuminate the emergency scene, given fire service electrical equipment and an assignment, so that designated areas are illuminated and all equipment is operated within the manufacturer's listed safety precautions.

(A) Requisite Knowledge. Safety principles and practices, power supply capacity and limitations, and light deployment methods.

(B) Requisite Skills. The ability to operate department power supply and lighting equipment, deploy cords and connectors, reset ground-fault interrupter (GFI) devices, and locate lights for best effect.



NFPA STANDARDS

Fire Fighter II Standard

6.4.1* Extricate a victim entrapped in a motor vehicle as part of a team, given stabilization and extrication tools, so that the vehicle is stabilized, the victim is disentangled without further injury, and hazards are managed.

(A) Requisite Knowledge. The fire department's role at a vehicle accident, points of strength and weakness in auto body construction, dangers associated with vehicle components and systems, the uses and limitations of hand and power extrication equipment, and safety procedures when using various types of extrication equipment.

(B) Requisite Skills. The ability to operate hand and power tools used for forcible entry and rescue as designed; use cribbing and shoring material; and choose and apply appropriate techniques for moving or removing vehicle roofs, doors, windshields, windows, steering wheels or columns, and the dashboard.

6.4.2* Assist rescue operation teams, given standard operating procedures, necessary rescue equipment, and an assignment, so that procedures are followed, rescue items are recognized and retrieved in the time as prescribed by the AHJ, and the assignment is completed.

(A) Requisite Knowledge. The fire fighter's role at a technical rescue operation, the hazards associated with technical rescue operations, types and uses for rescue tools, and rescue practices and goals.

(B) Requisite Skills. The ability to identify and retrieve various types of rescue tools, establish public barriers, and assist rescue teams as a member of the team when assigned.

6.5.4 Maintain power plants, power tools, and lighting equipment, given tools and manufacturers' instructions, so that equipment is clean and maintained according to manufacturer and departmental guidelines, maintenance is recorded, and equipment is placed in a ready state or reported otherwise.

(A) Requisite Knowledge. Types of cleaning methods, correct use of cleaning solvents, manufacturer and departmental guidelines for maintaining equipment and its documentation, and problem-reporting practices.

(B) Requisite Skills. The ability to select correct tools; follow guidelines; complete recording and reporting procedures; and operate power plants, power tools, and lighting equipment.

RESCUE AND EXTRICATION



MISSOURI DIVISION OF FIRE SAFETY FIRE FIGHTER I & II

NOTES	STUDENT GUIDE
	<p>I. Rescue</p> <p>A. With life safety as the first and most important tactical priority, rescue is the primary responsibility of any fire department</p> <p>B. The very term "rescue" implies that the victims cannot remove themselves from danger</p> <ol style="list-style-type: none">1. Fire fighters must be prepared for any rescue or extrication situation to which they might respond2. Rescue incidents involve removing victims from:<ol style="list-style-type: none">a.b.c.d.3. Extrication incidents involve disentangling and removing victims from vehicles or machinery <p>C. Fire fighters must always remember the difference between a "rescue" and a "recovery"</p> <ol style="list-style-type: none">1. Rescues can put fire fighters at extreme risk to save a life2. Risks should be minimized to recover a body because there is no chance of saving a life3. Too many fire fighters have been killed or injured while trying to recover a dead victim



NOTES	STUDENT GUIDE
	<p data-bbox="570 411 1292 443">II. Fireground Search and Rescue (<i>Essentials p. 306</i>)</p> <p data-bbox="618 489 1377 558">A. Rescuers must always consider their own safety when searching for fire victims</p> <ol data-bbox="667 604 1386 825" style="list-style-type: none"><li data-bbox="667 604 1321 674">1. Unsafe search and rescue operations endanger personnel and can further endanger victims<li data-bbox="667 720 1386 825">2. Incident commanders must consider the hazards involved in any rescue attempt and continually size up the situation for changing conditions <p data-bbox="618 871 987 903">B. Search safety guidelines</p> <ol data-bbox="667 949 1403 1892" style="list-style-type: none"><li data-bbox="667 949 691 980">1.<li data-bbox="667 1062 1377 1167">2. Do not enter a building where the fire has progressed to the point where there are no survivable victims<li data-bbox="667 1213 1321 1283">3. If backdraft conditions exist, do not enter until ventilation has been done<li data-bbox="667 1329 691 1360">4.<li data-bbox="667 1407 1365 1438">5. Maintain radio contact with the sector supervisor<li data-bbox="667 1484 1052 1516">6. Be alert to fire conditions<li data-bbox="667 1562 1344 1593">7. Always use the personnel accountability system<li data-bbox="667 1640 1403 1671">8. Have backup and rapid intervention teams available<li data-bbox="667 1717 691 1749">9.<li data-bbox="667 1795 1214 1827">10. Always work in teams of two or more<li data-bbox="667 1873 1105 1904">11. Stay low and move cautiously



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">12. Feel doors for heat before entering13. Fire fighters should stay to one side of a door before opening it14. An inward-opening door may be difficult to open if a victim has collapsed just on the other side15. Maintain contact with the walls16.17. Coordinate with ventilation teams before opening windows18. Inform the sector supervisor if any areas cannot be searched19. Report to the sector supervisor when the search is completedC. A thorough search should be conducted at any structure fire if it is reasonable and safe to do so<ul style="list-style-type: none">1. The consequences of failing to locate a victim can be devastating2. Before beginning a search, the entire building and its surroundings should be observed by all personnel to help determine:<ul style="list-style-type: none">a. Structure integrityb. Size of the firec. The probability of any occupants insided. Estimate of search time required



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">e. Possible emergency escape routes <ol style="list-style-type: none">3. Any occupants who have escaped must be questioned about the possibility of anyone else inside and where they might be<ul style="list-style-type: none">a. Regardless of this information, the building must still be searched to determine there are any victims trappedb. Victims will not always be located where others thought they would be4. Fire fighters should report the fire extent and location while searching for victims5. If possible fire attack should be started with interior search operations<ul style="list-style-type: none">a. Increasing the safety of searchers and victimsb. Fire control may be needed to begin a search <p>D. Primary search</p> <ol style="list-style-type: none">1.2. Conducted as soon as possible if there is a chance a structure is occupied so it maybe carried out in severe conditions3. Performed before or during suppression4. Search areas where victims are most likely to be5. Always work in teams of two or more - buddy system

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MISSOURI DIVISION OF FIRE SAFETY FIRE FIGHTER I & II

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	<ol style="list-style-type: none">6. Full protective clothing including SCBA required7. Take a forcible entry tool and flashlight along on search8. If available, take a thermal imaging camera on the search9. Some departments require the search team to take a rope or tagline along in the hazard zone10. Search closest to the fire first because victims further away are in less immediate danger11.12. Move up and down stairs on hands and knees<ol style="list-style-type: none">a. When climbing stairs, proceed head firstb. When descending, proceed feet first13. Call out from several locations as moving through the area14.15. People may try to hide or seek shelter from a fire and may be found in bathrooms, closets, under beds, or behind furniture16. Maintain radio contact with the supervisor and report progress17. Report fire locations and extension found during search



NOTES	STUDENT GUIDE
	<p>E. For large areas, some departments use a dedicated search line system for use during a primary search</p> <ol style="list-style-type: none">1. This assists with thorough search techniques and prevents personnel from becoming disoriented and lost2. The search line is typically 200 feet of $\frac{3}{8}$-inch rope with a Kevlar sheath<ol style="list-style-type: none">a. Every 20 feet along the line, a two-inch steel ring is tied onto the lineb. After each ring, one or more knots are tied to indicate distancec. After the first ring, one knot is tied to indicate the ring is 20 feet from the beginning of the lined. After the second ring, two knots are tied to indicate the ring is 40 feet from the beginning of the linee. After the third ring, three knots are tied and so on down the linef. The knots are always after the ring so they provide directional indications - knots are away from the exit, rings are toward the exit3. Prior to entry, the search line is tied to a fixed point about 10-feet from the entrance<ol style="list-style-type: none">a. The first searcher, called the "Lead," picks up the rope bag and enters the area with each team member closely behind



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">b. As they move into the building, the search line pays out behind them and everyone maintains contact with the line <p>4. Each member of the search team carries a lateral tether</p> <ul style="list-style-type: none">a. Tethers are 20 foot lengths of rope with a carabiner or snap hook on one end and a $\frac{3}{4}$-inch steel ring tied on the other endb. If necessary to search perpendicular to the search line, a searcher snaps the tether onto one of the steel rings on the search line and can then search laterally from the main linec. If there is more area to be searched beyond 20-feet, a second searcher can attached his or her tether to the ring on the end of the first searchers line <p>F. Secondary search</p> <ul style="list-style-type: none">1. Slower and more systematic search in an attempt to find any occupants not located during the primary search2.3. The secondary search should be conducted by personnel who did not do the primary search4. The secondary search deals more with thoroughness than speed



NOTES	STUDENT GUIDE
	<p>G. Searching multistory buildings</p> <ol style="list-style-type: none">1. The fire floor, floor directly above the fire, and top floor should be searched first2. Close doors of areas not involved in fire3. Exits, halls, and stairs should be kept as clear as possible of equipment and hoses <p>H. Search methods</p> <ol style="list-style-type: none">1. When entering a room, fire fighters should turn right or left and follow the walls around the room<ol style="list-style-type: none">a. Following one wall will lead rescuers back to the starting pointb. As a room is left, fire fighters must continue following the right or left lead they used into the next areac. If a victim is located, fire fighters need to turn around, place their opposite hand on the wall and follow it back to the entranced. Moving forward with a victim may take fire fighters deeper into the structure or into other hazardse. Search perimeter of room and work to insidef.<ol style="list-style-type: none">(1) Probe under furniture with handle of tool(2) Sweep area with arm or leg



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	<ul style="list-style-type: none">2. Search closets and cupboards and shower stalls - children may attempt to hide from the fire3. With small rooms, one fire fighter can remain at the door while the other searches4.<ul style="list-style-type: none">a. The lead fire fighter should keep the other informed of what is encountered during the searchb. If contact is lost, the lead should stop and wait until contact is regained5. Marking systems<ul style="list-style-type: none">a. Searched rooms should be marked to indicate a search has been completed of the areab. Latch straps<ul style="list-style-type: none">(1) Placed over door knobs(2) Also can prevent a door from locking behind rescuersc. Two-part marking system<ul style="list-style-type: none">(1) Half of an "X" is placed on a room's door with chalk or tape when the area is entered(2) The "X" is completed when the room is exited(3) Can help others find a lost rescue team



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">I. Search safety<ul style="list-style-type: none">1. Fire fighters must always be alert to weakened or hazardous structural conditions<ul style="list-style-type: none">a.b. They must watch for stairways, elevator shafts, and holes in floorsc. Any signs of sagging floors or hazardous conditions must be immediately reported to Command2.<ul style="list-style-type: none">a. Stay low and to one side when opening doorsb. With outward swinging doors, stay on the hinge side so the door can provide some protectionJ. Trapped fire fighters<ul style="list-style-type: none">1. Fire fighters may become trapped or disoriented<ul style="list-style-type: none">a. Structural collapseb. Leaving a hose or search ropec. Doors closing behind them2. Proper accountability, backup teams, and rapid intervention teams must be in place3. If trapped or disoriented<ul style="list-style-type: none">a.



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">b.c. Try to retrace your steps to the original locationd. Try to find an exit from the area on firee. Activate the PASS devicef. Radio a "MAYDAY" report if trapped or lostg. If a hose can be located, try to find a set of couplings<ul style="list-style-type: none">(1) The female coupling is toward the nozzle and the male toward the water supply(2) The male coupling has lugs, the female does not(3) Moving in the direction from the male coupling will lead to the outsideh.i.j. If unable to retreat downward, go to a room with an exterior window and close the room's door<ul style="list-style-type: none">(1) Open the window and straddle the window-sill and call for help(2) Drop articles of furnishings such as lamps, chairs, etc. to draw attention(3) Do not remove any protective clothing or SCBA to drop for attention



NOTES	STUDENT GUIDE
	<p>k. If conditions on an upper level will not allow a fire fighter to wait for help:</p> <ol style="list-style-type: none">(1) If you have a rescue rope, tie it around a heavy piece of furniture or solid object before lowering yourself(2) From a second story window, remove SCBA and hang from the windowsill by your hands to minimize the distance to drop <p>l.</p> <ol style="list-style-type: none">(1) First feel the wall for heat and if cool, continue(2) The sheetrock will have to be removed on both sides of a wall stud and the stud removed to create an opening large enough to pass through <p>K. Rapid intervention</p> <ol style="list-style-type: none">1. A rapid intervention crew (RIC) is composed of at least two fire fighters fully equipped to rescue a fire fighter in distress<ol style="list-style-type: none">a.b. Those other duties must be relatively close to the hazard zone2. Locating a downed fire fighter<ol style="list-style-type: none">a. Rescuers should first try to establish radio contact with a downed fire fighter



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">b. Rescuers should first attempt to determine a downed fire fighter's last location and start their search from that areac. Rescuers should stop during their search and quietly listen for a PASS device or calls for helpd. A thermal imaging camera should be used for the search if availablee. If rescuing a fire fighter with a functioning breathing apparatus, use caution not to dislodge mask or compromise the victim's breathingf. If rescuing a fire fighter without a functioning breathing apparatus, connect his or her mask to rescuer's SCBA or remove the victim as quickly as possibleg.h. Report when the downed fire fighter has been located and is being removedi.j. Check the downed fire fighter's vital signsk. If the fire fighter is trapped or injured call for assistancel. Attempt to control any safety threats while waiting for helpm. Help an uninjured fire fighter to safety



NOTES	STUDENT GUIDE
	<p>II. Removing Victims (<i>Essentials p. 327</i>)</p> <p>A. If a victim has no injuries or minor injuries, he or she may only need help to walk to safety</p> <p>B.</p> <p>C. The need to exit quickly with a victim may override the need to stabilize injuries:</p> <ol style="list-style-type: none">1. Fire progression2. Hazardous materials3. Victim's medical condition4. To gain access to other victims5. It is not possible to protect the accident scene <p>D.</p> <ol style="list-style-type: none">1. If on the floor, pull the victim's clothing in the neck/shoulder area2. If possible, put the victim on a blanket and drag the blanket <p>E. Try to have two or more fire fighters lift or carry any adult victims</p> <ol style="list-style-type: none">1. Guard against losing your balance2.



NOTES	STUDENT GUIDE
	<p>3. Lifting incorrectly is one of the most common causes of injuries to rescuers</p> <p>F. Cradle-in-arms lift and carry</p> <ol style="list-style-type: none">1.2. Place one arm under the victim's arms and across the back3. Place the other arm under the victim's knees4. Keep the back straight5. Lift the victim to about waist high <p>G.</p> <ol style="list-style-type: none">1.2. Raise the victim to a sitting position3. Link arms across the victim's back4. Reach under the victim's knee to form a seat5. Stand and lift the victim <p>H. Two fire fighter extremities carry</p> <ol style="list-style-type: none">1. Rescuer #1 rescuer kneels at victim's head, Rescuer #2 stands between the victim's knees2. Rescuer #1 uses one hand to support the victim's head and neck, with the other hand under the victim's shoulders3. Rescuer #2 grabs the victim's wrists and pull the victim to a sitting position



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	<ol style="list-style-type: none">4. Rescuer #1 slips his or her arms under victim's arms and around chest, grabbing victim's wrists5. Rescuer #2 turns around, kneels, and grabs just under victim's knees6. Both rescuers stand and carry victim <p>I. Chair lift and carry</p> <ol style="list-style-type: none">1. One fire fighter lifts the victim until his or her buttocks and lower back is high enough for a second fire fighter to slip a chair under the victim2. The victim and chair are raised to a 45° angle3. The seated victim is lifted with one fire fighter carrying the chair's legs and the other carrying the chair back <p>J. Incline drag: to move a victim down stairs</p> <ol style="list-style-type: none">1. With the victim face up, kneel at the victim's head2. Supporting the victim's head, lift the victim's upper body into a sitting position3. Reach under the victim's arms and grasp the victim's wrists4. Stand while lifting the victim <p>K. Blanket drag</p> <ol style="list-style-type: none">1. Lay the victim face up2. Place a blanket next to victim and roll victim onto blanket or coat



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	<ol style="list-style-type: none">3. Knee at the victim's side opposite the blanket4. Extend the victim's arms above his or her head5. Pull the blanket against the victim, gathering it against his or her back6. Roll the victim onto the blanket7. Wrap the blanket around the victim8. Grab the blanket on both sides of victim's head, raise enough to clear head and shoulders9. Drag victim to safety <p>L. Clothes drag</p> <ol style="list-style-type: none">1. Crouch behind the victim's head and grab the shirt or jacket around the collar and shoulder area2. <p>M. Webbing drag</p> <ol style="list-style-type: none">1. Place the victim on his or her back2. Slide a large webbing loop under the victim's head and chest so the loop is even with the victim's armpits3. Position the victim's arms outside of the webbing4. Pull the top of the loop over victim's head so it is just past their head5. Reach down through the large loop and under the victim's back and grab the webbing



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	<ol style="list-style-type: none">6. Pull the webbing up through the loop so each webbing loop is drawn snugly around the victim's shoulders7. Adjust hand placement on the webbing to support the victim's head8. Drag the victim by pulling the webbing loop <p>IV. Rescue and Extrication Equipment (<i>Essentials p. 330</i>)</p> <p>A. Fire service electrical equipment</p> <ol style="list-style-type: none">1. Auxiliary lighting used at a fire scene can provide an extra measure of safety to all fire fighters<ol style="list-style-type: none">a.b.2. Power plants<ol style="list-style-type: none">a. Inverters<ol style="list-style-type: none">(1)(2) Converts vehicle's current to 110-volt or 220-volt AC current(3)



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	<ul style="list-style-type: none">b. Generators<ul style="list-style-type: none">(1)(2) Powered by small gasoline or diesel engines and usually provide 110-volt and/or 220-volts3. Lighting equipment<ul style="list-style-type: none">a. Lighting equipment may be fixed on apparatus or portableb. Portable lights range from 300-watts to 1,000-watts and may be on telescoping standsc. Unless specially designed lighting equipment is used, lighting equipment must not be used in a flammable or explosive atmosphered.e.f. The power of the lighting equipment should not exceed the output of the power plant4. Cords and connectors<ul style="list-style-type: none">a. Cords and connectors are necessary to supply power to lighting equipment from the power plant



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	<ul style="list-style-type: none">b. Cords should be stored in coils or reels and cleaned after usec. Cords must be insulated, waterproof and have no exposed wiresd. Damaged cords should be repaired or replacede. Junction boxes may be used when it is necessary to connect multiple lights or tools to a cordf. <p>5. Maintenance and servicing of portable power plants (these procedures are not meant to overrule the manufacturer's guidelines)</p> <ul style="list-style-type: none">a.b. Check fluid levels weekly - drain and replace fuel if the fuel is more than 3 weeks oldc. Inspect the spark plug and spark plug wire for any visible damage, carbon buildup or cracked porcelaind. Check the carburetor for any signs of leakse. Start the generator and run any tests outlined in the operator manualf.



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	<ul style="list-style-type: none"><li data-bbox="716 411 1403 558">g. Gasoline should not be added to a generator while it is in operation or if exhaust and engine are hot due to possibility of spilled gasoline and fumes contacting hot parts <li data-bbox="618 600 873 632">B. Hydraulic tools<ul style="list-style-type: none"><li data-bbox="667 678 1386 783">1. The number of uses, speed, and power has made hydraulic tools indispensable in many rescue situation <li data-bbox="667 831 1036 863">2. Powered hydraulic tools<ul style="list-style-type: none"><li data-bbox="716 911 737 942">a.<ul style="list-style-type: none"><li data-bbox="764 1020 1365 1087">(1) Most are powered by gasoline engines or electric motors <li data-bbox="764 1136 1360 1203">(2) May be portable or mounted to apparatus with hose reels for high-pressure hoses <li data-bbox="716 1251 1013 1283">b. Spreaders - "Jaws"<ul style="list-style-type: none"><li data-bbox="764 1329 1393 1396">(1) First type of powered hydraulic tools in the fire service <li data-bbox="764 1444 802 1476">(2) <li data-bbox="764 1524 1398 1591">(3) Some can produce up to 22,000 psi of force at the tips <li data-bbox="764 1640 1321 1707">(4) Tips may spread up to 32-inches apart depending on the tool <li data-bbox="716 1755 980 1787">c. Shears or cutters<ul style="list-style-type: none"><li data-bbox="764 1833 802 1864">(1)



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	<ul style="list-style-type: none">(2) Some can produce up to 30,000 psi of force at the tips(3) May have an opening spread of about 7-inchesd. Combination spreader/shears<ul style="list-style-type: none">(1)(2) Typically have less capabilities than the individual units(3)e. Extension rams<ul style="list-style-type: none">(1)(2) Useful when pushing objects farther than the maximum opening of hydraulic spreaders(3) Come in a variety of lengths<ul style="list-style-type: none">(a) The size to be used depends on the opening on which it is to be placed(b) Some of the larger rams can extend up to over 60-inches3. Manual hydraulic tools<ul style="list-style-type: none">a. Hydraulic fluid is pumped manually through hoses



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	<ul style="list-style-type: none">b. Slower and have limited range compared to powered hydraulic toolsc. Porta-power tool system<ul style="list-style-type: none">(1) Has several tool accessories for a variety of applications(2) Can be used in places too narrow for a hydraulic jackd.<ul style="list-style-type: none">(1)(2) Can be used in shoring or stabilization operations(3) Must be used on a flat, level surface(4) May have capacities of up to 20 tons <p>C. Non-hydraulic jacks</p> <ul style="list-style-type: none">1. Can be effective for certain purposes but are not as powerful as hydraulic jacks2. Screw jacks<ul style="list-style-type: none">a. Can be extended or retracted by turning a threaded shaftb. Bar screw jacks: not used for lifting, primarily used to hold an object in placec. Trench screw jacks: used to replace wooden cross braces in trench rescues



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	<ul style="list-style-type: none">3. Ratchet-lever jacks<ul style="list-style-type: none">a. Also known as "high-lift" jacksb. Consist of a rigid I-beam with perforations on the web and a jacking cartridge with two ratchets on the geared sidec. Can be dangerous because they are the least stable of jacksd.4. Rescuers must never work under a load supported only by jacks, the area under a raised load should be entered only when proper cribbing is in place <p>D. Cribbing</p> <ul style="list-style-type: none">1. Commonly used to:<ul style="list-style-type: none">a.b.2. Wooden cribbing<ul style="list-style-type: none">a. Must be solid, straight, and free of flawsb. Normally made out of 6" x 6", 4" x 4", and 2" x 4" blocks about 16" to 24" longc. Other than the ends, wooden cribbing should not be painted to avoid slips when wet3. Commercially manufactured synthetic or plastic cribbing is becoming more common



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	<ul style="list-style-type: none">a. May include wedges, step chocks, struts, and pads for pneumatic lifting bagsb. Although more expensive, plastic cribbing does not become contaminated by fuel, oil, or other substances <p>E.</p> <ul style="list-style-type: none">1. A series of timbers or jacks2. <p>F. Pneumatic (air-powered) tools</p> <ul style="list-style-type: none">1. Use compressed air for power2. Can be supplied by SCBA cylinders, compressors, or apparatus air brake system compressors3. Air chisels<ul style="list-style-type: none">a. Also called air hammers or impact hammersb. Operate at pressures of 90 to 250 psic. Used for cutting sheet metal and popping rivets and boltsd. Have a variety of tool bits4. Air knife<ul style="list-style-type: none">a. Used to blast away dirtb. Operate at 90 to 100 psi



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	<ul style="list-style-type: none">5. Air vacuum<ul style="list-style-type: none">a. Operate like an air knife but at less pressureb. Can be used to vacuum loose soil from around a buried victim in a trench collapse6. Pneumatic cut-off tool: "whizzer saw"<ul style="list-style-type: none">a. Much more maneuverable than larger circular sawsb. Operates at around 20,000 rpmc. Carbon blades can cut case-hardened locks and steeld. Often used in delicate cutting operations, such as removing rings or cutting pipes to remove trapped fingersG. Lifting and pulling tools<ul style="list-style-type: none">1.<ul style="list-style-type: none">a.b. Allow rescuers to be safely lowered into confined spaces and victims to be raised out of them2. Winches<ul style="list-style-type: none">a. Usually mounted on vehicles for quick deploymentb. Winch drives maybe electric, hydraulic, or power take-off



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	<ul style="list-style-type: none">c. Should have a handheld remote control to allow the operator to stand away from the winch in case the cable breaksd. Whenever possible, personnel should be farther away from the winch than the length of cable being used <p>3. Ratchet device - "come-along"</p> <ul style="list-style-type: none">a.b. The come-along is attached to a secure anchor point and the cable attached to the object to be movedc. As the lever is moved to rewind the cable, the object moves toward the anchor pointd. Winches and come-alongs typically use chains as part of the lifting and pulling system <p>4. Pneumatic lifting air bags</p> <ul style="list-style-type: none">a. Help lift or displace objects that cannot be lifted with other equipmentb. High-pressure bags<ul style="list-style-type: none">(1) Neoprene rubber exterior reinforced with steel wire or Kevlar fiber(2) About 1-inch thick when deflated(3) Depending on the size, can inflate to 20-inches(4) Typically filled using SCBA cylinders



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	<ul style="list-style-type: none">c. Low- and medium-pressure bags<ul style="list-style-type: none">(1) Larger than high-pressure bags and used to lift or stabilize large vehicles or objects(2) Have greater lifting distance than high-pressure bagsd. Air bag guidelines<ul style="list-style-type: none">(1) Plan any lifting operation before starting(2) Operators must be familiar with the equipment and its limitations(3) Have an adequate air supply and adequate cribbing before beginning(4) Position bags against a solid surface(5)(6) Inflate slowly and watch for any shifting(7)(8) Continually place cribbing under the load in case of bag failure(9) Never stack bags more than two high with the smaller bag on top(10)



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	<p>5. Block and tackle systems</p> <ul style="list-style-type: none">a. Useful for lifting heavy loads because of the mechanical advantage of converting pull into greater working forceb. Consists of two or more parts<ul style="list-style-type: none">(1) Block - wood or metal frame containing one or more pulleys(2) Tackle - assembly of ropes and blocks that the line passes through to multiply the pulling forcec. Safety procedures<ul style="list-style-type: none">(1) Be sure rope is right size for the weight being lifted(2) Use a steady pull on the rope(3) Pull in a direct line, not to an angle(4) Be sure the supports holding the block will support the load(5) Stand in a safe position in case the tackle or support fails <p>V. Vehicle Extrication (<i>Essentials p. 346</i>)</p> <ul style="list-style-type: none">A. The majority of rescue incidents involve vehicle extrications<ul style="list-style-type: none">1.



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	<ul style="list-style-type: none">2. Any extrication should be coordinated with emergency medical personnel who are providing care to the victim B. Scene size-up<ul style="list-style-type: none">1. Scene safety must be the first consideration before starting any operations 2. Size-up begins with the dispatch and continues throughout the incident<ul style="list-style-type: none">a. Proper apparatus positioning<ul style="list-style-type: none">(1) (2) In a location which does not interfere with on-scene activities (3) (4) If possible, at least one traffic lane should be closed to nonemergency traffic in addition to the lanes where the vehicles involved are located b. Scene safety considerations<ul style="list-style-type: none">(1) Traffic hazards (2) How many and what type of vehicles are involved<ul style="list-style-type: none">(a) Hybrids or alternative fuels (b) Where are they are positioned (3) Is there a potential for fire

RESCUE AND EXTRICATION



MISSOURI DIVISION OF FIRE SAFETY FIRE FIGHTER I & II

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	<ul style="list-style-type: none">(4) Are hazardous materials involved(5) Potential for utility involvement(6) Additional resources needed <p>3. Evaluate the need for extrication</p> <ul style="list-style-type: none">a. The area around each vehicle involved and the entire scene must be assessed in detailb. Rescuers should circle each involved vehicle to determine:<ul style="list-style-type: none">(1) The vehicle's condition(2) Any required extrication(3) Any hazardous conditions(4) The number of victimsc. Vehicle conditions should be reported to the incident commanderd. The area around the scene must be examined to determine:<ul style="list-style-type: none">(1) Any vehicles not readily apparent (over an embankment)(2)(3) Damage to utility services



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">e. Trained personnel should assess the conditions of victims and possible entrapments<ul style="list-style-type: none">(1) More seriously injured victims should be treated and removed first(2) Other victims may have to be removed before the more serious patients can be accessedf. Treatment should begin simultaneously with preparations for victim removal <p>C. Stabilizing the vehicle</p> <ul style="list-style-type: none">1.2. Proper support must be provided between the vehicle and the ground or other solid anchor points3. The purpose is to maximize the contact between the vehicle and the ground to prevent vehicle movement4. Rescuers must never push or shake a vehicle to test its stability5. Stabilization is required for upright vehicles to prevent horizontal movement<ul style="list-style-type: none">a. Chock the vehicle's wheels with wheel chocks or cribbingb. Shut off the vehicle's enginec. Set the vehicle's emergency brake and place the transmission in park



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	<ul style="list-style-type: none">d.6. Preventing vertical movement<ul style="list-style-type: none">a. Jacks<ul style="list-style-type: none">(1) Can be adjusted to the required height(2) Can be time-consumingb. Air bags can be positioned on each side of the vehiclec. Cribbing<ul style="list-style-type: none">(1) Built in a box formation with wedges for solid contact with the vehicle(2) Step blocks can be used for rapid stabilizationd. Rescuers must avoid placing any parts of their bodies under the vehicle when placing stabilization7. Combinations of cribbing, ropes, and chains may have to be used to stabilize vehicles on their sides or tops8. Stabilization also requires shutting down the vehicle's electrical system<ul style="list-style-type: none">a.b. Eliminates an ignition sourcec. Eliminates power to the restraint systems



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	<ul style="list-style-type: none">d. Turning off the vehicle eliminates the conventional and the high-voltage systemse. If the ignition is not accessible, power should be shut down by disconnecting the vehicle's negative cables to the battery<ul style="list-style-type: none">(1) Cut the negative cable first and then the positive(2) Remove about 2" of each cablef. Some departments use "terminal pullers" to remove the cables from the battery instead of cutting the cables to limit the damage <p>D. Gaining access to victims</p> <ul style="list-style-type: none">1.<ul style="list-style-type: none">a. Through an unlocked operating doorb. Through a window2. The more severe the vehicle damage, the more complicated and time-consuming gaining access and extrication will be3. Rescuers must stay aware of additional hazards with wrecked vehicles<ul style="list-style-type: none">a.b. Fuel and other flammable liquids or gasesc. High pressure tires



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	<p>d.</p> <p>E. Supplemental Restraint Systems (SRS) and Side-Impact Protection Systems (SIPS)</p> <ol style="list-style-type: none">1. Air bags systems can deploy at over 200 mph with tremendous force2. Accidental activation has injured rescuers during extrication operations3. Typically activate through electronic sensors and powered by the vehicle's battery <p>a.</p> <p>b. The duration of the reserve power supply varies by manufacturer</p> <ol style="list-style-type: none">4. Extrication activities can accidentally activate restraint systems<ol style="list-style-type: none">a. To prevent accidental activation on many vehicles:<ol style="list-style-type: none">(1) The ignition must be turned off and(2) The battery cables disconnected and(3) The reserve power supply allowed to drainb. Some vehicles have a key-operated switch to deactivate the passenger-side air bag5. Side Impact Protection Systems may be mechanically operated and can deploy without the vehicle's electrical system



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">6. There are no industry standards on the locations that these side airbag inflator cylinders can be mounted<ul style="list-style-type: none">a. These cylinders can be located in any of the posts or along any part of the vehicle's supporting roof railb. All the posts should be exposed by pulling as much of the plastics as possible prior to making any cuts and to operate out of the deployment zones of the airbagsc. If peeling the plastic is not possible, cutting high on the posts will give the best chance of avoiding any gas cylinders7. Personal protective equipment must be worn and extreme care used when performing extrication on vehicles equipped with SRS or SIPS <p>F. Patient management</p> <ul style="list-style-type: none">1. The easiest route to gain access to the patients should be used<ul style="list-style-type: none">a. Once access is gained, a rescuer with emergency medical training should enter the vehicle to stabilize and protect the patientb.2. The vehicle is removed from around the patient, not the patient from the vehicle3. Packaging patients includes bandaging wounds, splinting fractures, and immobilizing the patient's body



NOTES	STUDENT GUIDE
	<ul style="list-style-type: none">a. Packaging protects the patient and helps with removalb. Openings must be wide enough to remove the patient as smoothly as possible with a minimum of jostling <p>G. Removal of glass</p> <ul style="list-style-type: none">1. Vehicle glass may have to be removed for patient access and to prevent injuries<ul style="list-style-type: none">a. Rescuers must wear full protective equipment and eye protectionb.2. Safety (laminated) glass<ul style="list-style-type: none">a. Formed from two sheets of glass bonded to a sheet of plastic between themb. Found in windshields and some rear windowsc. When broken, the glass stays attached to the laminate and moves as a unitd. In some newer vehicles, the windshield serves as structural component and removal can weaken the vehicle<ul style="list-style-type: none">(1) Some departments are no longer removing windshields(2) If possible, leave the windshield intact



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	<ul style="list-style-type: none">e. Removing laminated glass<ul style="list-style-type: none">(1) Use an axe, hay hook, air chisel, reciprocating saw, handsaw, or glass saw(2) The people inside a vehicle must be covered before starting the operation(3) Windshield glass is cut down the short sides to the lower corners(4) Another cut is made across the bottom of the windshield(5) The windshield is then folded upward over the roof and removed entirely3. Tempered glass<ul style="list-style-type: none">a. Vehicle side windows and rear windows are typically tempered glassb. Use a sharp, pointed object to strike the glass in the lower corner of the window to shatter the glassc.d. Rescuers and victims should be properly protected from the shattering glasse. Self-adhering contact paper, duct tape, or spray adhesive can be used on the window before breaking to contain the broken glassf. Remember that some rear windows are laminated glass instead of tempered



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	<p>H. Removing a vehicle's roof</p> <ol style="list-style-type: none">1.2. Vehicle door post designations<ol style="list-style-type: none">a. A-post: front post where front door is connected to the bodyb. B-post: between the front and rear doors on a four-door vehicle or the door handle end post on a two-door vehiclec. C-post: post nearest the rear door handle on a four-door vehicle or the rear roof post on a two-door3. Posts can be cut using a hydraulic cutters, hacksaw, or reciprocating saw4. For total roof removal, the A-posts are cut first and then the B-posts and C-posts5. An alternative method is to cut the front posts and then fold the roof back onto itself or the trunk6. Caution must be used when working around the cut posts still attached to the vehicle's body7. Unibody vehicles may collapse when the roof is removed<ol style="list-style-type: none">a. A third step block should be placed under the B-post before compromising the vehicle's body



NOTES	STUDENT GUIDE
	<p>I. Removing doors</p> <ol style="list-style-type: none">1. Many extrications involve the removal of a vehicle's doors for patient access and removal2. Doors can be opened from the handle side or removed completely using a hydraulic spreader in the crack on the hinge side3.<ol style="list-style-type: none">a. A prying tool, such as a hooligan, is inserted into the crack at the handle side or hinge side of the doorb. The tool is used to widen the crack to a point where the spreader tips can be inserted4. On the handle side, the spreaders are inserted into the crack above the lock mechanism and operated to spread the door away from the locking pin5. On the hinge side, the spreaders are inserted above the top hinge and operated to break the hinge and then the bottom hinge6. Personnel must be ready for the door to spring violently away from the frame when opened <p>J. Displacing the dashboard</p> <ol style="list-style-type: none">1. A victim may be pinned by the steering wheel or dashboard in a front-end collision2. To displace the dash, the windshield must first be removed



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	<ol style="list-style-type: none">3. The front posts must then be cut and the roof folded back4. Relief notches are cut at the base of both A-posts as close to the rocker panels as possible5. Using hydraulic ram<ol style="list-style-type: none">a. The ram is placed in the door frame against the rocker panel with the extension post above the relief cutb. As the ram is extended, the dashboard is pushed up and away from the front seat area6. A hydraulic spreader can also be used to push the dashboard upward and away from the front seat7. Cribbing can be inserted into the cuts to keep the dash from settling8. Personnel must be aware that the bottom edge of the vehicle will be pushed downward during this operation and should remain out of this area <p>VI. Technical Rescue Situations (<i>Essentials p. 361</i>)</p> <ol style="list-style-type: none">A. Fire fighters should be able to identify technical rescue situations to determine the need for specially trained and equipped rescue teamsB. Personnel must also understand the operations of these teams and be able to assist them with their operationsC. Fire fighters assisting specialized rescue teams should:<ol style="list-style-type: none">1. First confirm the order and instructions to assist the rescue team



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	<ol style="list-style-type: none">2. Gather the required tools and equipment as directed3.4. Maintain situational awareness5.6. Report to their officer when the assignment is completed <p>D. Structural collapse rescue</p> <ol style="list-style-type: none">1. Building collapse may result from fire, weather, earthquake, or age of structure2. Rescuers should always consider the possibility of secondary collapse of a weakened structure3. Victims on the surface and lightly trapped should be rescued first4. Rescue of heavily trapped victims should be left to specially trained and equipped personnel5. Categories of collapse<ol style="list-style-type: none">a. Pancake collapse<ol style="list-style-type: none">(1) Can occur when opposing exterior walls fail causing the roof and floors to collapse on top of each other(2)



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	<ul style="list-style-type: none">b. V-type collapse<ul style="list-style-type: none">(1) Caused when the outer walls remain intact and the walls or roof fail in the middle(2) May create habitable voids on both sides of the collapsec. Lean-to collapse<ul style="list-style-type: none">(1)(2) The side of the roof or floor which was supported by the failed wall drops forming a triangular void underneathd. A-frame collapse<ul style="list-style-type: none">(1) Occurs when the floors or roof on both sides of a center wall collapse into opposing lean-to collapses(2)e. Cantilever collapse<ul style="list-style-type: none">(1) Happens when one side wall of a multistory building collapses and leaves the floors attached and supported by the remaining wall(2) Can create habitable voids under the supported ends(3) Most vulnerable to secondary collapse



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	<ul style="list-style-type: none">6. Locating hidden victims in a structural collapse:<ul style="list-style-type: none">a. Calling out and listening for a responseb. Using seismic or short-distance radar devices to detect vibrations from victimsc. Using enhanced acoustic listening devicesd. Using search camerase. Using thermal imaging devicesf. Using search dogs7. Hazards in collapses<ul style="list-style-type: none">a. Environmental hazards<ul style="list-style-type: none">(1) Damaged utilities(2) Hazardous materials contamination(3) Temperature extremes(4) Fireb. Physical hazards<ul style="list-style-type: none">(1) Secondary collapse(2) Working in unstable debris(3) Working in confined spaces(4) Working around wiring and rebar



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	<ul style="list-style-type: none">8. Fire officials should seek assistance from structural engineers or construction experts when planning and conducting operations to secure area from further collapse9. Remaining structure should be made as safe and secure as possible for rescuers and to prevent further collapse<ul style="list-style-type: none">a. Shoring<ul style="list-style-type: none">(1) Used to prevent sudden and unexpected movement of objects(2) Not intended to move heavy objects but to stabilize them(3) Uses a series of cribbing, timbers and jacks to prevent further collapse(4)b. Tunneling<ul style="list-style-type: none">(1) Involves moving smaller debris to create a path to victims(2) Should only be done when other methods of reaching victims are not possible(3) Tunnels must be large for rescuer and victim(4) Tunnels should go along walls whenever possible(5) Moving debris for tunneling can cause other debris to fall



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	<p>E. Trench collapse</p> <ol style="list-style-type: none">1. Can occur whenever excavation is going on in any jurisdiction<ol style="list-style-type: none">a. Rescuers can be killed in a trench collapse because they failed to stabilize the trench before enteringb.c. Some departments have a rule of thumb that if the victim is not visible, it is a body recovery operation2. Most common problem is victim's reduced ability to breathe and the first priority must be to uncover victim's head and chest and supply additional air<ol style="list-style-type: none">a. Air hose or smoke ejector may be used to introduce additional air into areab. Oxygen equipment may be used on the victim3. Personnel must not be sent into trench unless trained and their safety can be reasonably ensured4.5. Heavy equipment should not be used for digging unless the exact location of the victim is known6. A constant flow of air must be directed into the trench to avoid the rescuers being overcome



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	<ul style="list-style-type: none">7. Safety procedures<ul style="list-style-type: none">a. Only rescuers trained in trench rescue should enter a trenchb.c. Place exit ladders at each end of the trenchd. Proper protective equipment must be worn by all personnele. Tools must be used with caution to avoid injuring victim or rescuersf. Be alert to other possible hazards in the trench<ul style="list-style-type: none">(1) Electrical wiring(2) Water lines(3) Gas lines(4) Toxic or flammable gasesF. Confined space rescuers<ul style="list-style-type: none">1. Common confined spaces where rescues may be necessary:<ul style="list-style-type: none">a. Tanks/vesselsb. Silos/grain elevatorsc. Storage bins/hoppersd. Utility vaults/pits

RESCUE AND EXTRICATION



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	<ul style="list-style-type: none">e. Sewersf. Cisterns/wellsg. Storage tanks <ol style="list-style-type: none">2. Fire fighters without specific confined space rescue training should perform only non-entry rescues and serve only in support functions3. Confined space hazards<ul style="list-style-type: none">a.b.c. Toxic gasesd. Extreme temperaturese. Explosive dustsf.g. Cave-ins or unstable supportsh. Standing wateri. Utility hazards4. The command post and staging must be located outside of the hot zone5. Air monitoring and accountability are vital to the operation6. Anyone entering a confined space must have a lifeline attached to his or her harness



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	<p>G. Tunnels and caves</p> <ol style="list-style-type: none">1.2. Unless specially trained, fire fighters must confine their activities to support functions aboveground3. Major problems in cave rescue<ol style="list-style-type: none">a. Darknessb. Water: cave water temperature is about 55°Fc. Irregular passagesd. Temperature: victims and rescuers may develop hypothermia <p>H. Electrical emergencies</p> <ol style="list-style-type: none">1.2. Victims in contact with electrical equipment should also be considered as energized3. The current must be shut off to electrical equipment and wires before any rescue can be done4.5. Rescuers must stay at least a distance equal to one span between the poles in all directions until the power is off



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	<ul style="list-style-type: none">6. 7. Downed energized wires can cause current to flow across the ground in all directions<ul style="list-style-type: none">a. As the current flows away, the voltage dropsb. Referred to as the "ground gradient"c. Depending on the voltage involved and ground moisture, the energized field can extend several feet from the downed wire I. Water emergencies<ul style="list-style-type: none">1. Personnel must always remember the difference between a rescue and a recovery<ul style="list-style-type: none">a. Rescue: where victim is stranded, floundering, or has been submerged for a short timeb. Recovery: 2. All personnel should wear appropriate protective equipment<ul style="list-style-type: none">a. Water rescue helmetb. Approved personal flotation device 3. Water rescue methods<ul style="list-style-type: none">a. REACH: extend a long pole to the victim



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	<ul style="list-style-type: none">b. THROW: throw a rope or flotation device with an attached rope to the victimc. ROW: use a boat to get the victimd. GO: as a last resort, swim to the victime. <p>J. Ice rescues</p> <ul style="list-style-type: none">1.2. Thermal protective suits and personal flotation devices are mandatory before attempting any rescue3. The victim's survival depends on how quickly he or she can get out of the water and get warm4. The victim may not be able to hold on to a flotation device or rope due to hypothermia5. Instruct the victim not to try to get out of the water until a rescuer says to do so6. REACH: if the victim is close enough to solid ground and is responsive and able to hold onto an aid7. THROW: throw a rope or flotation device with an attached rope to the victim if he or she is responsive and able to hold onto an aid8. Only trained personnel should attempt to go out to perform a rescue



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	<ul style="list-style-type: none">a. A ladder can be extended to distribute the rescuers weight on the iceb. A flat bottomed boat or raft can be pushed along the ice <p>K. Industrial accidents</p> <ul style="list-style-type: none">1. Entrapments in industrial machinery are some of the most challenging rescues2. Specific techniques cannot be listed because of the number of different types of industrial machinery in existence3. When surveying the incident, rescuers must consider:<ul style="list-style-type: none">a. The victim's medical condition and degree of entrapmentb. The number of rescuers requiredc. The equipment neededd. The need for specialized assistance - may be available on sitee. The presence of other hazards, such as hazardous materials, fire, utilities, etc.4. If a victim is seriously entrapped and in danger of bleeding to death, a tourniquet should be applied5. When it is necessary to extricate the victim:<ul style="list-style-type: none">a.



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	<ul style="list-style-type: none">b. The machine may be operated normally to release the victim, if further injury will not resultc. The machine may be disassembledd. If the machine cannot be disassembled, it may be necessary to force the machine, if this can be done without causing further injurye. Use caution when turning off power supplies - some machines such as punch presses operate in full cycle and may complete the cycle when power is shut off causing further injury <p>L. Elevator emergencies</p> <ul style="list-style-type: none">1. Most elevator incidents involve a car stuck between floors due to mechanical or power failure and are not true emergencies2.3. Unless there is a medical emergency in the car, always establish contact and reassure the occupants that help is coming and wait for elevator mechanic4.5. Elevator rescues require special rescue techniques and should not be attempted by untrained personnel6. If evacuation of the car is necessary:<ul style="list-style-type: none">a. Determine the car's location and go to the floor nearest the stalled elevator



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	<ul style="list-style-type: none">b.c. Secure the elevator by opening the main power circuit to the elevator drive motor and remove the fuses and station a fire fighter with a radio at the paneld. Open the elevator doors<ul style="list-style-type: none">(1) Usually done with a special key(2) Use forcible entry tools as a last resort <p>M. Escalator emergencies</p> <ul style="list-style-type: none">1. Escalators are chain-driven mechanical stairways<ul style="list-style-type: none">a. The steps are linked together and ride a trackb. The drive unit is usually at the upper landing and covered by a landing plate2. Most escalators have an emergency stop control on a nearby wall or at the base of the escalator<ul style="list-style-type: none">a. The switch stops the escalator and sets an emergency brakeb. The stairs should be stopped during rescues or if fire fighters are using the stairs to advance hose3.



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	<p>VII. Rescue and Extrication Summary</p> <p>A. All fire fighters must be competent in search and rescue techniques in a fire situation</p> <ol style="list-style-type: none">1. Fire fighters must be thoroughly trained to perform rescue under extreme conditions2. Fire fighters must consider their own safety first when conducting any search <p>B. Fire fighters must always remember the difference between a "rescue" and a "recovery"</p> <p>C. The majority of rescue incidents involve vehicle extrications</p> <ol style="list-style-type: none">1. Proper extrication is vital to prevent further injury and speed a victim's removal2. Scene safety must be the first consideration before starting any operations <p>D. Fire fighters must be able to identify technical rescue situations to determine the need for specially trained and equipped rescue teams</p> <ol style="list-style-type: none">1. Personnel must also understand the operations of these teams and be able to assist them with their operations