STP 5-21M1-SM

MOS 21M, Firefighter, Skill Level 1, Soldier's Manual

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MOS 21M, Firefighter, Skill Level 1, Soldier's Manual

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PREFACE

This soldier training publication (STP) contains standardized training objectives (in the form of task summaries) to train and evaluate soldiers on critical tasks that support unit missions during wartime. Trainers and leaders should actively plan for soldiers holding this military occupational specialty (MOS) to have access to this publication.

All tasks in this manual are applicable to active Army and reserve component (RC) soldiers, which include the Army National Guard (ARNG) and the Army Reserve. However, some tasks are only for active duty soldiers due to the differences of equipment and missions. Tasks unique to RC soldiers are identified by RC following the task title and grouped into RC-unique subject areas.

The proponent for this publication is HQ TRADOC. Send comments and recommendations on Department of the Army (DA) Form 2028 (Recommended Changes to Publications and Blank Forms). directly to Commandant, US Army Engineer School, ATTN: ATSE-DT-WR-E, 320 MANSCEN Loop, Fort Leonard Wood, MO 65473-8929. Comments should be keyed to a specific page, paragraph, and line of text in which the change is recommended. Provide reasons for each comment to ensure understanding and complete evaluation.

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

CHAPTER 1

Introduction

1-1. General. This manual identifies the individual MOS training requirements for soldiers. It is designed to be used by commanders, trainers, and soldiers to plan, conduct, and evaluate individual training in units. This manual is the primary reference for supporting self-development, evaluating MOS proficiency, and training soldiers. Commanders employ two primary methods to evaluate soldier proficiency:

- **Commander's evaluation.** Commander's evaluations are local tests or assessments of soldier performance of MOS-specific and common tasks critical to the unit mission. They may be conducted year-round.

- **Common task test (CTT).** CTTs are hands-on tests used to evaluate proficiency on common tasks. Alternate written tests are provided if equipment is not available for hands-on testing.

1-2. Integration of Individual and Collective Tasks. This manual should be used along with STPs 21-1-SMCT and 21-24-SMCT; Army Training and Evaluation Programs (ARTEPs); and Field Manuals (FMs) 7-0, 7-1, 25-4, and 25-5 to establish effective training plans and programs that integrate individual and collective tasks.

1-3. Task Summaries. Task summaries contain information necessary to conduct training and evaluate soldier proficiency on tasks critical to the MOS. A separate task summary is provided for each critical task. These task summaries are, in effect, standardized training objectives which ensure that the soldiers do not have to relearn a task on reassignment to a new unit. The format for the task summaries included in this manual is as follows:

- **Task title.** The task title identifies the action to be performed.

- **Task number.** A 10-digit number identifies each task or skill. Include this task number, along with the task title, in any correspondence relating to the task.

- **Conditions.** The task conditions identify all the equipment, tools, references, job aids, and supporting personnel that the soldier needs to perform the task in wartime. This section identifies any environmental conditions that could alter task performance, such as visibility, temperature, and wind. This section also identifies any specific cues or events (a chemical attack or identification of a threat vehicle) that trigger task performance.

- **Standards.** The task standards describe how well and to what level a task must be performed under wartime conditions. Standards are typically described in terms of accuracy, completeness, and speed.

- **Training and evaluation.** This section may contain a training information outline, an evaluation preparation subsection, and/or an evaluation guide. The training information outline includes detailed training information. The evaluation preparation subsection indicates the necessary modifications to the task performance in order to train and evaluate a task that cannot be trained to the wartime standard under wartime conditions. The evaluation preparation may also include special training and evaluation preparation instructions to accommodate these modifications and any instruction that should be given to the soldier before evaluation. The evaluation guide identifies the specific actions, known as performance measures, that the soldier must do to successfully complete the task. These actions are listed in a *pass/fail* format for easy evaluation. Each evaluation guide contains a feedback statement that indicates the requirements for receiving a GO on the evaluation.

- **References.** This section identifies references that provide more detailed and thorough explanations of task performance requirements than that given in the task summary description.

1-4. Safety. Additionally, some task summaries include safety statements and notes. Safety statements (danger, warning, and caution) alert users to the possibility of immediate death, personal injury, or damage to equipment. Notes provide an explanation or hint relative to the performance measures.

1-5. Soldier's Responsibilities. Each soldier is responsible for performing individual tasks that the first-line supervisor identifies based on the unit mission-essential task list (METL). The soldier must perform the task to the standards listed in the soldier's manual (SM). If a soldier has a question about how to do a task or which tasks in this manual he must perform, it is the soldier's responsibility to ask the first-line supervisor for clarification. The first-line supervisor knows how to perform each task or can direct the soldier to the appropriate training materials.

1-6. Noncommissioned Officer Self-Development and the Soldier's Manual. Self-development is one of the key components of the leader development program. It is a planned, progressive, and sequential program followed by leaders to enhance and sustain their military competency. It consists of individual study, research, professional reading, practice, and self-assessment. Under the self-development concept, the noncommissioned officer (NCO), as an Army professional, has the responsibility to remain current in all phases of the MOS. The SM is the primary source for the NCO to use in maintaining MOS proficiency.

1-7. Army Correspondence Course Program. Another important resource for NCO self-development is the Army Correspondence Course Program (ACCP). See DA Pamphlet 350-59 for information on enrolling in this program and for a list of courses, or write to: Army Institute for Professional Development, US Army Training Support Center, ATTN: ATIC-IPS, Newport News, Virginia 23628-0001.

1-8. Unit Learning Centers. Unit learning centers are valuable resources for planning self-development programs. They can help access enlisted career maps, training support products, and extension training materials.

1-9. Training Support.

a. This manual includes the following appendixes and information that provide additional training support information:

- **Appendix A, Metric Conversion Chart (United States [US] and Metric Units).** This appendix provides an English-to-metric measurement conversion chart.

- **Glossary.** The glossary is a comprehensive list of acronyms, abbreviations, definitions, and letter symbols.

- **References.** This section contains two lists of references, required and related, that support the training of all tasks in this SM. Required references are listed in the conditions statement and are required for the soldier to do the task. Related references are materials that provide more detailed information and a more thorough explanation of task performance.

b. The NCO trainer can use DA Form 5164-R (Hands-On Evaluation). to set up the leader book as described in FM 7-1. The use of this form may help preclude writing the soldier tasks associated with the unit METL and can become a part of the leader book. The use of this form is optional, but highly encouraged. This evaluation allows you to maintain and track the soldier's proficiency at the performance level. This form can be obtained electronically and may be reproduced locally on 8 1/2- by 11-inch paper. Follow these instructions when completing this form:

- Enter the title and number of the task to be evaluated at the top of the form.
- Enter in column a the number of each performance step from the evaluation guide.
- Enter in column b each performance step from the evaluation guide that corresponds to the number in column a. Abbreviate the information, if necessary.
- Locally reproduce the partially completed form if more than one soldier will be evaluated on the specific task or the same soldier will be evaluated more than once.
- Enter the date, the evaluator's name, and the soldier's name and unit before starting the evaluation.
- Enter a check in column c or column d for each performance step evaluated, as appropriate.
- Check the status block GO or NO-GO.

c. The NCO trainer can use DA Form 5165-R (Field Expedient Squad Book [LRA]) to set up the leader book as described in FM 7-1. The use of this form may help preclude writing the soldier tasks associated with the unit METL and can become a part of the leader book. This form can be obtained electronically and may be reproduced locally on 8 1/2- by 11-inch paper. Follow these instructions when completing this form:

- Make all entries in pencil.
- Enter the task number and a short title in the appropriate column.
- Record the date in the GO block if the soldier demonstrates task proficiency to the SM standards. Keep this form current by always recording the most recent date that the soldier demonstrated task proficiency.
- Record the date in the NO-GO block if the soldier failed to demonstrate task proficiency to the SM standards. Soldiers who fail to perform the task should be retrained and evaluated until they can do the task. Once the soldier performs the task correctly, enter the date in the GO block and erase the previous entry from the NO-GO block.
- Read down each column (GO/NO-GO) to determine the training status of that individual. This will give the trainer a quick indication of the tasks that the soldier needs to be trained or evaluated on.
- Read across the rows for each task to determine the training status of all the soldiers. The trainer can readily see on which tasks training should be focused.
- Add the names of newly assigned soldiers to one of the blank columns.
- Line through the training status column of any soldier who departs from the unit.

NOTE TO THE TRAINING MANAGER: The training status of groups (such as teams, squads, or platoons) can be maintained in key critical MOSs at any level by entering the level (such as 1st platoon, 2d platoon, or 3d platoon) in the column headings. Simply have the trainers report the percentage of their soldiers who have (GO blocks) and have not (NO-GO blocks) demonstrated proficiency on each task, and record this information for each level.

1-10. Enlisted Personnel Management System. The Enlisted Personnel Management System (EPMS) (AR 614-200) is the Army's overall system to improve the professionalism of the enlisted force. It integrates policies relating to training, evaluation, classification, and promotion into an overall system. It provides the soldier with a means to look to the future and see a realistic, clear, and viable career progression path from private to sergeant major (SGM). However, the EPMS is useless if the soldier does not understand and use it. Part of the trainer's job is to ensure that the soldier understands and uses the EPMS. As an aid, Figure 1-1 provides the trainer with a career management field (CMF) map for the soldier. Along with information contained in AR 614-200, the soldier can use the career map to develop goals early in his career and plan accordingly.

NCOES	PLDC	BNCOC	ANCOC	USASMA
Civilian schools	High school, GED diploma	College*		
		1 year	2 years	3 years
		A goal: Off-duty education.		
Other schools	Drill sergeant school Recruiting school Battle staff course 1SG course			
Encouraged assignments	Retention, recruiter Drill sergeant Instructor Ops/NCO SR writer/developer Fire inspector AC/RC advisor CMF 21 staff assignments			

Key leadership assignments	Firefighter driver/ operator	Firefighter crash rescue sergeant	Station chief	Chief	First sergeant 21X	Command sergeant major 21Z
Ranks	Private, private first class	Sergeant	Staff sergeant	Sergeant first class	First sergeant/ master sergeant	Sergeant major/ command sergeant major
Years of service	1-4	3-8	6-14	10-18	16-22	20+

Figure 1-1. CMF Map

1-11. Skill Progression Chart. Similar or related education, training, and experience are grouped into CMFs. The career progression path for MOS 21M, CMF 21, firefighter, is shown in Figure 1-2.

E9	21Z Command sergeant major
SL 5 E8 and E9	21X First sergeant
SL 4 (E7)	21M40 Fire chief
SL 3 (E6)	21M30 Assistant chief Station chief Fire inspector
SL 2 (E5)	21M20 Firefighter crash rescue sergeant
SL 1 (E1 through E4)	21M10 Firefighter

Figure 1-2. Career Progression Sequence for Firefighter CMF 21)

CHAPTER 2

Trainer's Guide

2-1. General. The MOS Training Plan (MTP) identifies the essential components of a unit training plan for individual training. Units have different training needs and requirements based on differences in environment, location, equipment, dispersion, and similar factors. Therefore, the MTP should be used as a guide for conducting unit training and not a rigid standard. The MTP consists of two parts. Each part is designed to assist the commander in preparing a unit training plan which satisfies integration, cross training, training up, and sustainment training requirements for soldiers in this MOS.

Part One of the MTP shows the relationship of an MOS skill level between duty position and critical tasks. These critical tasks are grouped by task commonality into subject areas.

Section I lists subject area numbers and titles used throughout the MTP. These subject areas are used to define the training requirements for each duty position within an MOS.

Section II identifies the total training requirement for each duty position within an MOS and provides a recommendation for cross training and train-up/merger training.

- **Duty Position Column**. This column lists the duty positions of the MOS, by skill level, which have different training requirements.
- **Subject Area Column**. This column lists, by numerical key (see Section I), the subject areas a soldier must be proficient in to perform in that duty position.
- **Cross Train Column**. This column lists the recommended duty position for which soldiers should be cross trained.
- **Train-up/Merger Column**. This column lists the corresponding duty position for the next higher skill level or MOSC the soldier will merge into on promotion.

Part Two lists, by general subject areas, the critical tasks to be trained in an MOS and the type of training required (resident, integration, or sustainment).

- **Subject Area Column**. This column lists the subject area number and title in the same order as Section I, Part One of the MTP.
- **Task Number Column**. This column lists the task numbers for all tasks included in the subject area.
- **Title Column**. This column lists the task title for each task in the subject area.
- **Training Location Column**. This column identifies the training location where the task is first trained to soldier training publications standards. If the task is first trained to standard in the unit, the word “Unit” will be in this column. If the task is first trained to standard in the training base, it will identify, by brevity code (ANCOC, BNCOC, etc.), the resident course where the task was taught. Figure 2-1 contains a list of training locations and their corresponding brevity codes.

AIT	Advanced Individual Training
UNIT	Trained in the Unit
OJT	On the Job Training

Figure 2-1. Training Locations

- **Sustainment Training Frequency Column**. This column indicates the recommended frequency at which the tasks should be trained to ensure soldiers maintain task proficiency. Figure 2-2 identifies the frequency codes used in this column.

BA	- Biannually
AN	- Annually
SA	- Semiannually
QT	- Quarterly
MO	- Monthly
BW	- Biweekly
WK	- Weekly

Figure 2-2. Sustainment Training Frequency Codes

- **Sustainment Training Skill Level Column**. This column lists the skill levels of the MOS for which soldiers must receive sustainment training to ensure they maintain proficiency to soldier's manual standards.

2-2. Subject Area Codes.

Skill Level 1

1 Perform Maintenance
2 Perform Common Firefighting Tasks
3 Perform Structural Firefighting
4 Perform Wild Land Firefighting
5 Perform Vehicle Firefighting
6 Perform Hazardous Materials Firefighting
7 Perform Aircraft Firefighting

2-4. Critical Tasks List.

MOS TRAINING PLAN
21M1

CRITICAL TASKS

Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
Skill Level 1				
Subject Area 1. Perform Maintenance				
052-249-1132	Maintain Protective Clothing	AIT	QT	1-4
052-249-1133	Maintain Firefighting Tools and Equipment	AIT	QT	1-4
052-249-1134	Maintain Ladders	AIT	QT	1-4
052-249-1135	Service Fire Extinguishers	AIT	QT	1-4
052-249-1141	Maintain Rescue Power Equipment	AIT	QT	1-4
052-249-1143	Perform Operator Preventive Maintenance Checks and Services on a Firefighting Apparatus	OJT	QT	1-4
052-249-1150	Perform Preventative Maintenance Checks and Services on Fire Hydrants	AIT	SA	1-4
052-249-1163	Maintain a Self-Contained Breathing Apparatus	AIT	QT	1-4
Subject Area 2. Perform Common Firefighting Tasks				
052-249-1102	Perform Fire Pump Operations	UNIT	QT	1-4
052-249-1103	Don Protective Clothing	AIT	QT	1-4
052-249-1111	Load a Hose	AIT	QT	1-4

CRITICAL TASKS

Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
052-249-1112	Conduct Hose Lays	UNIT	QT	1-4
052-249-1113	Advance a Hose Line	AIT	QT	1-4
052-249-1114	Operate a Nozzle	AIT	QT	1-4
052-249-1118	Conduct Ventilation Procedures	AIT	QT	1-4
052-249-1120	Protect and Preserve Evidence at a Fire Scene	AIT	QT	1-4
052-249-1121	Conduct Salvage Operations	AIT	QT	1-4
052-249-1122	Conduct Overhaul Operations	AIT	QT	1-4
052-249-1123	Communicate With Hand Signals	UNIT	QT	1-4
052-249-1124	Calculate Pump Operating Pressure	UNIT	QT	1-4
052-249-1125	Perform Alarm Duties	AIT	QT	1-4
052-249-1131	Perform Rescue Carries	AIT	QT	1-4
052-249-1136	Operate a Fire Extinguisher	AIT	QT	1-4
052-249-1137	Operate a Self-Contained Breathing Apparatus	AIT	QT	1-4
052-249-1138	Use Firefighting Tools and Equipment	AIT	QT	1-4
052-249-1139	Employ an Extension Ladder	AIT	QT	1-4
052-249-1144	Operate the Turret(s) of a Firefighting Apparatus	AIT	QT	1-4
052-249-1149	React to Various Fire Behaviors	AIT	QT	1-4
052-249-1154	Utilize Air-Lifting Bags and Cribbing	AIT	QT	1-4
052-249-1156	Perform Hoisting Operations With Ropes	AIT	QT	1-4
052-249-1159	Perform a Fire Prevention Education Brief	AIT	QT	1-4
052-249-1161	Load and Deploy Attack Lines	AIT	QT	1-4
052-249-1162	Perform Hose Load Finishes	AIT	QT	1-4
Subject Area 3. Perform Structural Firefighting				
052-249-1119	Search for Victims in a Structure	AIT	QT	1-4
052-249-1140	Rescue a Victim from a High-Rise Structure	AIT	QT	1-4
052-249-1151	Gain Access to a Structure Using Forcible-Entry Techniques	AIT	QT	1-4
052-249-1153	Perform Sprinkler System Applications	AIT	QT	1-4
052-249-1158	Perform Fire Prevention Inspection	AIT	QT	1-4
Subject Area 4. Perform Wild Land Firefighting				
052-249-1155	Perform Wildland Firefighting	AIT	QT	1-4
Subject Area 5. Perform Vehicle Firefighting				
052-249-1145	Perform Forcible-Entry Techniques on an Automobile	AIT	QT	1-4
052-249-1166	Control a Vehicle Fire	AIT	QT	1-4
Subject Area 6. Perform Hazardous Materials Firefighting				
052-249-1147	Perform Hazardous -Material Operations at the Hazardous Materials Operational Level	AIT	QT	1-4
052-249-1164	Control a Flammable Gas Cylinder Fire	AIT	QT	1-4
052-249-1165	Extinguish an Ignitable Liquid Fire	AIT	QT	1-4
Subject Area 7. Perform Aircraft Firefighting				

CRITICAL TASKS

Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
052-249-1128	Gain Access to an Aircraft Using Forcible-Entry Techniques	AIT	QT	1-4
052-249-1129	Perform Aircraft Emergency Shutdown Procedures	AIT	QT	1-4
052-249-1130	Rescue Survivors from an Aircraft	AIT	QT	1-4

CHAPTER 3

MOS/Skill Level Tasks

Skill Level 1

Subject Area 1: Perform Maintenance

Maintain Protective Clothing
052-249-1132

Conditions: Given protective clothing, clean water, soapy water, a soft-bristle brush, and rags.

Standards: Maintain protective clothing.

Performance Steps
NOTE: Inspect your gear at the start of your shift and after each use.

1. Maintain structural protective clothing.
    a. Maintain a structural protective coat.
        (1) Look for holes, tears, or abrasions on the outer area.

NOTE: If you find any holes, tears, or abrasions, turn in the item for an exchange.

        (2) Operate all snaps or buckles to ensure that they work.

NOTE: If they do not work or are broken, turn in the item for an exchange.

        (3) Check the outer area for discoloration, foreign matter, mildew, and dirt.
        (4) Wash the outer area with warm, soapy water if you find any dirt or foreign materials, and rinse it with clean, running water.

NOTE: If the outer area is discolored, the item may have come in contact with a chemical substance or a direct flame. Clean the area with warm, soapy water, and rinse the item thoroughly. If you cannot remove the discoloration and the item has no tears, holes, or abrasions, continue to use the item, but watch for deterioration.

CAUTION: DO NOT USE ABRASIVE DETERGENT OR A HARD-BRISTLE BRUSH TO CLEAN THE OUTER AREA. YOU MAY DAMAGE THE MATERIAL OR NEUTRALIZE THE FIRE-RETARDANT COATING.

        (5) Dry the gear completely.
    b. Maintain structural protective pants.
        (1) Look for holes, tears, or abrasions on the outer area.

NOTE: If you find any holes, tears, or abrasions turn in the item for an exchange.

        (2) Operate all snaps or buckles to ensure that they work.

NOTE: If they do not work or are broken, turn in the item for an exchange.

        (3) Check the outer area for discoloration, foreign matter, mildew, and dirt.
        (4) Wash the outer area with warm, soapy water if you find any dirt or foreign materials, and rinse it with clean, running water.

NOTE: If the outer area is discolored, the item may have come in contact with a chemical substance or a direct flame. Clean the area with warm, soapy water, and rinse the item thoroughly. If you cannot remove the discoloration and the item has no tears, holes, or abrasions, continue to use the item, but watch for deterioration.

CAUTION: DO NOT USE ABRASIVE DETERGENT OR A HARD-BRISTLE BRUSH TO CLEAN THE OUTER AREA. YOU MAY DAMAGE THE MATERIAL OR NEUTRALIZE THE FIRE-RETARDANT COATING.

        (5) Dry the gear completely.
    c. Maintain structural protective gloves.

Performance Steps

(1) Look for holes, tears, or abrasions on the outer area.

NOTE: If you find any holes, tears, or abrasions turn in the item for an exchange.

(2) Check the outer area for discoloration, foreign matter, mildew, and dirt.

(3) Wash the outer area with warm, soapy water if you find any dirt or foreign materials, and rinse it with clean, running water.

NOTE: If the outer area is discolored, the item may have come in contact with a chemical substance or a direct flame. Clean the area with warm, soapy water, and rinse the item thoroughly. If you cannot remove the discoloration and the item has no tears, holes, or abrasions, continue to use the item, but watch for deterioration.

CAUTION: DO NOT USE ABRASIVE DETERGENT OR A HARD-BRISTLE BRUSH TO CLEAN THE OUTER AREA. YOU MAY DAMAGE THE MATERIAL OR NEUTRALIZE THE FIRE-RETARDANT COATING.

(4) Dry the gear completely.

d. Maintain a structural helmet.

(1) Lower the face shield; and check for cracks, holes, or other damage that could obscure your vision.

(2) Fasten the chin strap to ensure that the buckle works properly.

(3) Check the outer area of the helmet for cracks, holes, or other damage.

(4) Look for dirt, foreign material, or chemicals.

CAUTION: DO NOT USE ABRASIVE DETERGENT OR BRUSHES ON THE FACE SHIELD. YOU MAY DAMAGE IT AND REDUCE YOUR VISION.

e. Maintain rubber firefighting boots.

(1) Make sure that you have the right size boots.

(2) Inspect the boots for holes, dry rot, and mildew.

(3) Clean the surface of the boots with warm, soapy water and a soft-bristle brush to remove all foreign material and dirt.

(4) Rinse the boots with clean water, and dry them completely.

2. Maintain crash protective clothing.

a. Maintain a crash protective coat.

(1) Look for holes, tears, or abrasions on the outer area.

NOTE: If you find any holes, tears, or abrasions turn in the item for an exchange.

(2) Operate all snaps or buckles to ensure that they work.

NOTE: If they do not work or are broken, turn in the item for an exchange.

(3) Check the outer area for discoloration, foreign matter, mildew, and dirt.

(4) Wash the outer area with warm, soapy water if you find any dirt or foreign materials, and rinse it with clean, running water.

NOTE: If the outer area is discolored, the item may have come in contact with a chemical substance or a direct flame. Clean the area with warm, soapy water, and rinse the item thoroughly. If you cannot remove the discoloration and the item has no tears, holes, or abrasions, continue to use the item, but watch for deterioration.

CAUTION: DO NOT USE ABRASIVE DETERGENT OR A HARD-BRISTLE BRUSH TO CLEAN THE OUTER AREA. YOU MAY DAMAGE THE MATERIAL OR NEUTRALIZE THE FIRE-RETARDANT COATING.

(5) Dry the gear completely.

b. Maintain crash protective pants.

(1) Look for holes, tears, or abrasions on the outer area.

NOTE: If you find any holes, tears, or abrasions turn in the item for an exchange.

(2) Operate all snaps or buckles to ensure that they work.

NOTE: If they do not work, or are broken, turn in the item for an exchange.

(3) Check the outer area for discoloration, foreign matter, mildew, and dirt.

(4) Wash the outer area with warm, soapy water if you find any dirt or foreign materials, and rinse it with clean, running water.

Performance Steps

NOTE: If the outer area is discolored, the item may have come in contact with a chemical substance or a direct flame. Clean the area with warm, soapy water, and rinse the item thoroughly. If you cannot remove the discoloration and the item has no tears, holes, or abrasions, continue to use the item, but watch for deterioration.

CAUTION: DO NOT USE ABRASIVE DETERGENT OR A HARD-BRISTLE BRUSH TO CLEAN THE OUTER AREA. YOU MAY DAMAGE THE MATERIAL OR NEUTRALIZE THE FIRE-RETARDANT COATING.

(5) Dry the gear completely.

c. Maintain crash protective gloves.

(1) Look for holes, tears, or abrasions on the outer area.

NOTE: If you find any holes, tears, or abrasions turn in the item for an exchange.

(2) Check the outer area for discoloration, foreign matter, mildew and dirt.

(3) Wash the outer area with warm, soapy water if you find any dirt or foreign materials, and rinse it with clean, running water.

NOTE: If the outer area is discolored, the item may have come in contact with a chemical substance or a direct flame. Clean the area with warm, soapy water, and rinse the item thoroughly. If you cannot remove the discoloration and the item has no tears, holes, or abrasions, continue to use the item, but watch for deterioration.

CAUTION: DO NOT USE ABRASIVE DETERGENT OR A HARD-BRISTLE BRUSH TO CLEAN THE OUTER AREA. YOU MAY DAMAGE THE MATERIAL OR NEUTRALIZE THE FIRE-RETARDANT COATING.

(4) Dry the gear completely.

d. Maintain a crash hood.

(1) Look through the face shield, and check for cracks, holes, or other damage that could obscure your vision.

(2) Fasten the chin strap to ensure that the buckle works properly.

(3) Check the outer area of the hood for cracks, holes, or other damage.

(4) Look for dirt, foreign material, or chemicals.

CAUTION: DO NOT USE ABRASIVE DETERGENT OR BRUSHES ON THE FACE SHIELD. YOU MAY DAMAGE IT AND REDUCE YOUR VISION.

e. Maintain rubber firefighting boots.

(1) Make sure you have the right size boots.

(2) Inspect the boots for holes, dry rot, and mildew.

(3) Clean the surface of the boots with warm, soapy water and a soft-bristle brush to remove all foreign material and dirt.

(4) Rinse the boots with clean water, and dry them completely.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to maintain protective clothing.

Performance Measures	**GO**	**NO GO**
1. Maintained structural protective clothing.	____	____
2. Maintained crash protective clothing.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	**Related**
	IFSTA MANUALS

References

Required

Related

LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Maintain Firefighting Tools and Equipment

052-249-1133

Conditions: Given clean water, soapy water, steel wool, rags, oil, sandpaper, a file, and a firefighting apparatus.

Standards: Maintain firefighting tools and equipment.

Performance Steps

1. Maintain wooden-handle tools.
   a. Check for serviceability.
      (1) Look for unevenness, cracks, holes, or depressions.
      (2) Check that the head is securely fixed to the handle.
      (3) Look for oil, fuel, or chemicals on the surface.
      (4) Look for dry rot or mildew.
   b. Take action if deficiencies are found.
      (1) Wash the tool with warm, soapy water, rinse it thoroughly with clean water, and let it air dry.
      (2) Sand the handle until the surface is smooth.
      (3) Apply a light coat of boiled linseed oil to prevent roughness and warping.
      (4) Replace the tool if it cannot be fixed at user level.
2. Maintain cutting-edge tools.
   a. Check for serviceability.
      (1) Check for rust on the blade surface.
      (2) Check for nicks or burrs on the blade tip.
      (3) Check for a dull edge on the blade.
   b. Take action if deficiencies are found.
      (1) Wash the tool with warm, soapy water, and rinse it thoroughly with clean water.
      (2) Dry the blade completely.
      (3) Use steel wool to remove any rust.
      (4) File the blade tip until you get a dull edge.
      (5) Apply a light coat of linseed oil.
      (6) Replace the tool if it cannot be fixed at user level.
3. Maintain power tools.
   a. Check for serviceability.
      (1) Check the cleanliness.
      (2) Check for the correct fluid levels.
      (3) Check whether all the components of the tool are accounted for and serviceable.
      (4) Check whether all connections are functional.
      (5) Check the cutting edges, as applicable.
   b. Take action if deficiencies are found.
      (1) Wash the tool with warm, soapy water.
      (2) Rinse the tool, and dry it thoroughly.
      (3) Refill fluid levels.
      (4) Resharpen the cutting edge, or replace the blade, as applicable.
      (5) Replace all missing or unserviceable components.
      (6) Replace the tool if it cannot be fixed at user level.
4. Maintain water delivery devices.
   a. Check for serviceability.
      (1) Check for bent or damaged threads.
      (2) Check for cleanliness.
      (3) Check whether all the moveable parts are functioning properly.

Performance Steps

(4) Check for cracks, rust, or other damage.

b. Take action if deficiencies are found.
   (1) Wash the surface with warm, soapy water.
   (2) Rinse the device, and dry it completely.
   (3) Replace all the missing or unserviceable components.
   (4) Use steel wool to remove all rust.
   (5) Replace the tool if it cannot be fixed at user level.

5. Maintain noncutting tools and equipment.
   a. Check for serviceability.
      (1) Check for rust.
      (2) Check for cleanliness.
      (3) Check for cracks, rounded tips, burrs, sharp metal edges, or other damage that would reduce the effectiveness of the tool or equipment.
   b. Take action if deficiencies are found.
      (1) Wash the surface with warm, soapy water.
      (2) Rinse the item, and dry it completely.
      (3) Replace all missing or unserviceable components.
      (4) Use steel wool to remove rust and burrs.
      (5) Sharpen tips to a dull finish.
      (6) Apply a light coat of linseed oil.
      (7) Replace the tool if it cannot be fixed at user level.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to maintain firefighting tools and equipment.

Performance Measures	**GO**	**NO GO**
1. Maintained wooden-handled tools.	____	____
2. Maintained cutting-edge tools.	____	____
3. Maintained power tools.	____	____
4. Maintained water delivery devices.	____	____
5. Maintained noncutting tools and equipment.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Maintain Ladders

052-249-1134

Conditions: Given a firefighting apparatus, a brush, rags, clean water, soapy water, steel wool, SAE 10 oil, necessary tools, an extension ladder, a roof ladder, extra rope, one assistant firefighter to help remove and extend the ladder, and an open area to extend the ladders.

Standards: Maintain ladders.

Performance Steps

1. Remove the ladder from the firefighting apparatus.
2. Check the heat sensor label indication eye on the ladder for any color change.

NOTE: If eye on the label is dark, the ladder has been exposed to heat. It will be placed out of service until a ladder performance test is completed on that ladder.

3. Extend the ladder, and place it on the ground.
4. Identify any deficiencies, including—
   a. Bent, cracked, or loose rungs.
   b. Bent, cracked, or compressed beams or truss blocks.

NOTE: Compression failure of the beam will appear as a slight or exaggerated deformity in the metal.

   c. Loose bolts, nuts, and weld joints.
   d. Cut or frayed pulley rope.
   e. Damaged or nonmoving pulleys.
   f. Bent or loose hooks.
   g. Damaged, loose, or missing guides.
   h. Bent, damaged or missing butt spurs.
   i. Damaged and nonmoving pawls.

DANGER: NEVER MAKE MAKESHIFT REPAIRS ON LADDERS BECAUSE SUCH REPAIRS CAN CAUSE SERIOUS INJURY TO THE FIREFIGHTERS. EXCHANGE ANY LADDERS THAT HAVE DEFECTS OTHER THAN UNSERVICEABLE ROPES.

5. Lubricate the pulleys with SAE 10 oil.
6. Clean the ladder with steel wool, a brush, soap, and water.

NOTE: You may need a solvent to remove any grease or oil deposits from the ladder. Never allow dirt, oil, or grease to accumulate on the ladder. Such items may harden and prevent you from operating the ladder properly. Always clean the ladder after each use.

7. Rinse the ladder with clean water.
8. Dry the ladder, and place it on the firefighting apparatus.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to maintain ladders.

Performance Measures	**GO**	**NO GO**
1. Removed the ladder from the firefighting apparatus.	____	____
2. Checked the heat sensor label indication eye on the ladder for any color change.	____	____
3. Extended the ladder and placed it on the ground.	____	____
4. Identified any deficiencies.	____	____

Performance Measures	GO	NO GO
5. Lubricated the pulleys with SAE 10 oil.	____	____
6. Cleaned the ladder with steel wool, a brush, soap and water.	____	____
7. Rinsed the ladder with clean water.	____	____
8. Dried the ladder, and placed it on the firefighting apparatus.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Service Fire Extinguishers

052-249-1135

Conditions: Given the necessary tools; rags; spare parts; a replenishing agent; a weight scale; seals; an air hose with an air supply; spare cartridges; an area to service the fire extinguishers; a pressurized-water fire extinguisher; a carbon dioxide fire extinguisher; a pressurized dry-chemical fire extinguisher; a cartridge-operated, dry-chemical fire extinguisher; a cartridge-operated, dry-powder fire extinguisher; and a bucket or pail of dry powder.

Standards: Service fire extinguishers.

Performance Steps

NOTE: Fire extinguishers should be service-tested annually. However, your ability or the fire department's ability to place a fire extinguisher back in service after the test must be considered. If you question the fire extinguisher operational readiness or service test, remove the extinguisher from service and replace it.

1. Preinspect a fire extinguisher for servicing.
    a. Examine the shell for corrosion or damage.
    b. Check the pressure gauge to ensure that the pressure is within the prescribed limits for fire extinguishers that have exterior pressure gauges.

NOTE: Dry-chemical fire extinguishers must be recharged if the pressure gauge shows a 10 percent loss of the extinguishing agent.

    c. Weigh the fire extinguisher must be recharged to ensure that its weight is within the prescribed limits for that type of fire extinguisher.

NOTE: Carbon dioxide fire extinguishers must be recharged if the weight loss is greater than 10 percent of the weight listed on the faceplate or stamped on the fire extinguisher shell. On a cartridge-operated fire extinguisher, the gas cartridge must be removed, weighed, and replaced if the loss is equal to or greater than 10 percent.

    d. Ensure that the seal is fastened to the fire extinguisher.

CAUTION: THE SEAL SHOULD BE FASTENED TO THE FIRE EXTINGUISHER TO AVOID ACCIDENTAL OPERATION OF THE FIRE EXTINGUISHER. THE SEAL IS NORMALLY LOCATED IN AN AREA SO THAT THE DISCHARGE HANDLE (OR THE PUNCTURE HANDLE FOR CARTRIDGE-OPERATED FIRE EXTINGUISHERS) CANNOT BE DEPRESSED.

    e. Check the horn and nozzle for cracks, dirt, and/or blockage.
    f. Check the hydrostatic test date.

NOTE: Perform a hydrostatic test on those fire extinguishers that do not have a hydrostatic test date. If the fire extinguisher is relatively new, you can determine when the last hydrostatic test was conducted based on the issue date listed on the fire extinguisher. However, it is safer and more reliable to perform the hydrostatic test.

        (1) Check for a 5-year test date on the following fire extinguishers:
            (a) Cartridge-operated water.
            (b) Pressurized water.
            (c) Dry-chemical with soldered brass or stainless steel shells.
            (d) Carbon dioxide.

NOTE: Carbon dioxide fire extinguishers with a cylinder made to Department of Transportation (DOT) specifications will be tested according to DOT requirements.

        (2) Check for a 12-year test date on the following fire extinguishers:
            (a) Cartridge-operated, dry-powder.
            (b) Pressurized dry-chemical with aluminum, brazed-brass, or mild-steel shells.
            (c) Cartridge-operated, dry-chemical with a mild-steel shell.

WARNING: IF A FIRE EXTINGUISHER FAILS THE HYDROSTATIC TEST OR IF THE SHELL OR CYLINDER THREADS ARE DAMAGED, THE FIRE EXTINGUISHER HAS BEEN BURNED IN A FIRE OR PITTING EXISTS FROM CORROSION. YOU MUST DESTROY THE FIRE EXTINGUISHER.

2. Service a pressurized-water fire extinguisher.

Performance Steps

a. Perform a service test.
   (1) Operate the fire extinguisher according to the manufacturer's instructions listed on the faceplate.
   (2) Operate the fire extinguisher, and discharge the agent.
   (3) Ensure that the fire extinguisher operates properly, and note any operating deficiencies.
   (4) Stop and start discharging the agent to ensure that the nozzle and nozzle shutoff work properly.

b. Perform maintenance.
   (1) Expel any remaining water, and bleed off any residual pressure.
   (2) Unscrew the nut, and remove the siphon tube assembly.
   (3) Examine the interior of the shell for foreign material.
   (4) Check the siphon tube for cracks or obstructions.
   (5) Disengage the siphon tube from the neck (handle), and inspect the gasket (in the neck) for cracks or brittleness.
   (6) Clean the exterior of the shell, and refill the shell with the specified amount of water.

NOTE: Hydrostatically test the fire extinguisher if it shows signs of physical damage or light surface corrosion, or if it has not been tested in the last 5 years. Conduct these tests only if you have the available facilities and equipment. If you do not have the available facilities or equipment to test the fire extinguisher, replace it.

   (7) Perform a hydrostatic test.

DANGER: DO NOT USE COMPRESSED GAS OR COMPRESSED AIR TO PERFORM THE HYDROSTATIC TEST BECAUSE THE FIRE EXTINGUISHER COULD EXPLODE.

NOTE: Destroy the fire extinguisher if it fails the hydrostatic test. You may have to turn in the fire extinguisher to supply or clear a hand receipt. If so, drill a hole through the shell and stencil "Destroy" on the fire extinguisher. Conditions warranting the destruction of a fire extinguisher include the following: large dents or creases in the shell, damaged cylinder threads, fire exposure, or pits due to corrosion.

      (a) Refill the fire extinguisher with water.
      (b) Increase the liquid pressure in the shell using a pump.
   (8) Add any additive required.

NOTE: If the fire extinguisher is subjected to freezing temperatures, add antifreeze. Also, you can add wet water to increase the penetrating ability of the water.

   (9) Reassemble the siphon tube assembly, and reattach it to the fire extinguisher.
   (10) Attach a seal through the hole in the handle to prevent accidental discharging of the fire extinguisher.
   (11) Pressurize the fire extinguisher until the pressure gauge registers within the prescribed limits.

3. Service a carbon dioxide fire extinguisher.

a. Perform a service test.
   (1) Operate the extinguisher according to the manufacturer's instructions listed on the face plate.
   (2) Operate the fire extinguisher, and discharge the agent.
   (3) Ensure that the fire extinguisher operates properly, and note any operating deficiencies.
   (4) Stop and start discharging the agent to ensure that the nozzle and nozzle shutoffs work properly.

b. Perform maintenance.
   (1) Expel any remaining carbon dioxide.
   (2) Unscrew the discharge horn, and inspect it for obstructions.

NOTE: Replace the horn and hose assembly if you find any cracks in the hose or discharge horn.

   (3) Examine the exterior of the shell for foreign material.

Performance Steps

NOTE: Hydrostatically test the fire extinguisher if it shows signs of physical damage or light surface corrosion, or if it has not been tested in the last five years. Conduct these tests only if you have the available facilities and equipment. If you do not have the available facilities or equipment to test the fire extinguisher, replace it.

(4) Perform a hydrostatic test.

DANGER: DO NOT USE COMPRESSED GAS OR COMPRESSED AIR TO PERFORM THE HYDROSTATIC TEST BECAUSE THE FIRE EXTINGUISHER COULD EXPLODE.

NOTE: Destroy the fire extinguisher if it fails the hydrostatic test. You may have to turn in the fire extinguisher to supply or clear a hand receipt. If so, drill a hole through the shell and stencil "Destroy" on the fire extinguisher. Conditions warranting the destruction of a fire extinguisher include the following: large dents or creases in the shell, damaged cylinder threads, fire exposure, or pits due to corrosion.

(a) Refill the fire extinguisher with water.
(b) Increase the liquid pressure in the shell using a pump.

(5) Drain the water from the fire extinguisher, and let the fire extinguisher dry completely.
(6) Refill the fire extinguisher with the correct amount of agent. (Follow the manufacturer's weight specifications listed on the face place.)
(7) Attach a seal through the hole in the handle to prevent accidental discharge of the fire extinguisher.
(8) Reattach the hose assembly and discharge horn.

4. Service pressurized dry-chemical and cartridge-operated, dry-chemical fire extinguishers.
   a. Perform a service test.
      (1) Operate the fire extinguisher according to the manufacturer's instructions listed on the face plate.
      (2) Operate the fire extinguisher, and discharge the agent.
      (3) Ensure that the fire extinguisher operates properly, and note any operating deficiencies.
      (4) Stop and start discharging the agent to ensure that the nozzle and nozzle shutoffs work properly.
   b. Perform maintenance.
      (1) Expel any remaining dry-chemical agent.
      (2) Bleed off any residual pressure.

WARNING: BEFORE YOU REMOVE THE CAP AND REFILL THE FIRE EXTINGUISHER WITH DRY-CHEMICAL AGENT, INVERT THE FIRE EXTINGUISHER AND BLEED OFF ANY REMAINING PRESSURE.

(3) Examine the exterior of the shell for foreign material.
(4) Unscrew the cap, and inspect the interior of the fire extinguisher for any hardened, caked, or packed dry chemical.
(5) Inspect the gasket for cracks and brittleness.
(6) Check the hose and nozzle for obstructions.

NOTE: Replace the nozzle and hose assembly if you find any cracks in the nozzle or hose assembly.

NOTE: Hydrostatically test the fire extinguisher if it shows signs of physical damage or light surface corrosion, or if it has not been tested in the last five years. Conduct these tests only if you have the available facilities and equipment. If you do not have the available facilities or equipment to test the fire extinguisher, replace it.

(7) Perform a hydrostatic test.

Performance Steps

DANGER: DO NOT USE COMPRESSED GAS OR COMPRESSED AIR TO PERFORM THE HYDROSTATIC TEST BECAUSE THE FIRE EXTINGUISHER COULD EXPLODE.

NOTE: Destroy the fire extinguisher if it fails the hydrostatic test. You may have to turn in a fire extinguisher to supply or clear a hand receipt. If so, drill a hole through the shell and stencil "Destroy" on the fire extinguisher. Conditions warranting the destruction of a fire extinguisher include the following: large dents or creases in the shell, damaged cylinder threads, fire exposure, or pits due to corrosion.

(a) Refill the fire extinguisher with water.

(b) Increase the liquid pressure in the shell using a pump.

(8) Drain the water from the fire extinguisher, and let the fire extinguisher dry completely.

DANGER: WHEN YOU REFILL THE FIRE EXTINGUISHER WITH THE DRY-CHEMICAL AGENT, MAKE SURE THAT WATER OR MOISTURE DOES NOT MIX WITH THE DRY-CHEMICAL AGENT. CAKING OR PACKING CAN OCCUR, CAUSING THE FIRE EXTINGUISHER TO FUNCTION IMPROPERLY OR NOT FUNCTION AT ALL.

(9) Refill the fire extinguisher with the correct amount of agent. (Follow the manufacturer's weight specifications listed on the face place.)

DANGER: MAKE SURE THAT YOU USE THE CORRECT DRY-CHEMICAL AGENT TO REFILL THE FIRE EXTINGUISHER. YOU MUST REFILL MULTIPURPOSE, DRY-CHEMICAL FIRE EXTINGUISHERS WITH A MULTIPURPOSE, AMMONIUM PHOSPHATE-BASED AGENT AND FILL NORMAL DRY-CHEMICAL FIRE EXTINGUISHERS WITH SODIUM BICARBONATE-BASED AGENTS. DO NOT MIX THE AGENTS. SERIOUS INJURY OR DEATH COULD OCCUR FROM THE INEFFECTIVE FIRE EXTINGUISHER.

DANGER: DO NOT REFILL OR MIX DRY-CHEMICAL FIRE EXTINGUISHERS WITH A DRY-POWDER AGENT. SERIOUS INJURY OR DEATH COULD OCCUR.

(10) Replace the cap, and seal the fire extinguisher.

(11) Attach a seal through the hole in the handle to prevent accidental discharge of the fire extinguisher.

(12) Replace the gas cartridge (if required).

NOTE: Freezing temperatures can affect the pressure of the carbon dioxide cartridge. Replace the carbon dioxide cartridge with a nitrogen cartridge for fire extinguishers that will be subjected to freezing temperatures.

(13) Attach the seal to the fire extinguisher puncture plate to prevent premature operation of the plate and subsequent charging of the fire extinguisher.

(14) Reattach the hose assembly and nozzle.

5. Service cartridge-operated, dry-powder and dry-powder fire extinguishers.
   a. Perform a service test.
      (1) Operate the fire extinguisher according to the manufacturer's instructions listed on the face plate.
      (2) Operate the fire extinguisher, and discharge the agent.
      (3) Ensure that the fire extinguisher operates properly, and note any operating deficiencies.
      (4) Stop and start discharging the agent to ensure that the nozzle and nozzle shutoffs work properly.
   b. Perform maintenance.

NOTE: Some types of dry-powder chemicals are stored in containers, such as sealed buckets or pails, and are scooped on a fire. Annual maintenance requires ensuring that the containers are airtight and free of holes. Open the container, and ensure that the dry-powder chemical flows freely and is not clumped or packed.

(1) Expel any remaining dry-powder agent.

(2) Bleed off any remaining pressure.

WARNING: BEFORE YOU REMOVE THE CAP AND REFILL THE FIRE EXTINGUISHER WITH DRY-CHEMICAL AGENT, INVERT THE FIRE EXTINGUISHER AND BLEED OFF ANY REMAINING PRESSURE.

Performance Steps

(3) Examine the exterior of the shell for foreign material.
(4) Unscrew the cap, and inspect the interior of the fire extinguisher for any hardened, caked, or packed dry chemical.
(5) Inspect the gasket for cracks and brittleness.
(6) Check the hose and nozzle for obstructions.

NOTE: Replace the nozzle and hose assembly if you find any cracks in the nozzle or hose assembly.

NOTE: Hydrostatically test the fire extinguisher if it shows signs of physical damage or light surface corrosion, or if it has not been tested in the last five years. Conduct these tests only if you have the available facilities and equipment. If you do not have the available facilities or equipment to test the fire extinguisher, replace it.

(7) Perform a hydrostatic test.

DANGER: DO NOT USE COMPRESSED GAS OR COMPRESSED AIR TO PERFORM THE HYDROSTATIC TEST BECAUSE THE FIRE EXTINGUISHER COULD EXPLODE.

NOTE: Destroy the fire extinguisher if it fails the hydrostatic test. You may have to turn in the fire extinguisher to supply or clear a hand receipt. If so, drill a hole through the shell and stencil "Destroy" on the fire extinguisher. Conditions warranting the destruction of a fire extinguisher include the following: large dents or creases in the shell, damaged cylinder threads, fire exposure, or pits due to corrosion.

(a) Refill the fire extinguisher with water.
(b) Increase the liquid pressure in the shell using a pump.

(8) Drain the water from the fire extinguisher, and let the fire extinguisher dry completely.

DANGER: MAKE SURE THAT YOU USE THE CORRECT DRY-CHEMICAL AGENT TO REFILL THE FIRE EXTINGUISHER. YOU MUST REFILL MULTIPURPOSE, DRY-CHEMICAL FIRE EXTINGUISHERS WITH A MULTIPURPOSE, AMMONIUM PHOSPHATE-BASED AGENT AND FILL NORMAL DRY-CHEMICAL FIRE EXTINGUISHERS WITH SODIUM BICARBONATE-BASED AGENTS. DO NOT MIX THE AGENTS. SERIOUS INJURY OR DEATH COULD OCCUR FROM THE INEFFECTIVE FIRE EXTINGUISHER.

(9) Refill the fire extinguisher with the correct amount of agent. (Follow the manufacturer's weight specifications listed on the face place.)

DANGER: MAKE SURE THAT YOU USE THE CORRECT DRY-CHEMICAL AGENT TO REFILL THE FIRE EXTINGUISHER. YOU MUST REFILL MULTIPURPOSE, DRY-CHEMICAL FIRE EXTINGUISHERS WITH A MULTIPURPOSE, AMMONIUM PHOSPHATE-BASED AGENT AND FILL NORMAL DRY-CHEMICAL FIRE EXTINGUISHERS WITH SODIUM BICARBONATE-BASED AGENTS. DO NOT MIX THE AGENTS. SERIOUS INJURY OR DEATH COULD OCCUR FROM THE INEFFECTIVE FIRE EXTINGUISHER.

DANGER: DO NOT REFILL OR MIX DRY-CHEMICAL FIRE EXTINGUISHERS WITH A DRY-POWDER AGENT. SERIOUS INJURY OR DEATH COULD OCCUR.

(10) Replace the cap, and seal the fire extinguisher.
(11) Attach a seal through the hole in the handle to prevent accidental discharge of the fire extinguisher.
(12) Replace the gas cartridge (if required).

NOTE: Freezing temperatures can affect the pressure of the carbon dioxide cartridge. Replace the carbon dioxide cartridge with a nitrogen cartridge for fire extinguishers that will be subjected to freezing temperatures.

(13) Attach the seal to the fire extinguisher puncture plate to prevent premature operation of the plate and subsequent charging of the fire extinguisher.
(14) Reattach the hose assembly and nozzle.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to service the fire extinguishers.

Performance Measures	GO	NO GO
1. Preinspected a fire extinguisher for servicing.	____	____
2. Serviced a pressurized-water fire extinguisher.	____	____
3. Serviced a carbon dioxide fire extinguisher.	____	____
4. Serviced pressurized dry-chemical and cartridge-operated, dry-chemical fire extinguishers.	____	____
5. Serviced cartridge-operated, dry-powder and dry-powder fire extinguishers.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	Related
	IFSTA MANUALS LO 5-4210-220-12 TM 5-4210-220-12

Maintain Rescue Power Equipment

052-249-1141

Conditions: Given clean rags, soapy water, clean water, oil, necessary tools, a K-12 rescue saw (in the box), a firefighting apparatus, one assistant firefighter to help remove the saw from the firefighting apparatus, the manufacturer's recommendations data sheet, and Department of the Army (DA) Forms 2404 (Equipment Inspection and Maintenance Worksheet) and 5988-E (Equipment Inspection Maintenance Worksheet [EGA]).

Standards: Maintain rescue power equipment.

Performance Steps

1. Maintain a K-12 rescue saw.
2. Check the fuel and oil levels, and refill as needed.

NOTE: Most K-12 saws require that oil be added to the gasoline to lubricate the engine. Use the oil and proper ratio as outlined in the manufacturer's instructions.

CAUTION: IF YOU DO NOT USE THE PROPER MIXTURE OF OIL TO GASOLINE OR THE CORRECT TYPE OF OIL OR GASOLINE, THE ENGINE COULD OVERHEAT AND DAMAGE THE ENGINE PARTS.

3. Remove the air cleaner intake cover, and check the paper element or filter.

NOTE: Replace the cleaner according to the manufacturer's specifications if the element is torn or damaged.

4. Remove the spark plug wire from the spark plug.
5. Remove the spark plug, and look for carbon buildup on the tip.

NOTE: Replace the plug according to the manufacturer's specifications if it is fouled or has carbon deposits.

6. Check the exterior of the saw; and ensure that all the nuts, screws, and bolts are tight.
7. Check the saw blade for chips, cracks, and evidence of stress damage or overheating.
8. Use warm, soapy water to remove dirt, grease, gasoline, and oil from the exterior of the saw.
9. Check the K-12 storage box for the following items:
    a. Spare saw blades.

NOTE: The box should contain at least one blade of the three different types: metal, wood, and masonry.

    b. Spare gas can.
    c. Spark plug wrench.
    d. Manufacturer's operating instructions.
    e. One can of 2-cycle engine oil.
    f. Spare spark plug.
    g. Spare air filter.
    h. Safety goggles.
    i. DA Forms 2404 and 5988-E.
10. Keep the K-12 on the ground to start it.

NOTE: Follow the manufacturer's instructions for starting the saw.

DANGER: ENSURE THAT THE SAW BLADE IS NOT RESTING ON THE GROUND OR IN CONTACT WITH ANYTHING WHILE STARTING THE SAW. STARTING THE SAW WITH THE BLADE TOUCHING SOMETHING COULD DAMAGE THE SAW OR SERIOUSLY INJURE THE OPERATOR.

Performance Steps

11. Record all deficiencies on the proper form.
12. Put the saw in the storage box, and place the box back on the firefighting apparatus if the saw is operational and serviceable.

NOTE: Ensure that the saw is completely dry before returning it to the storage box.

13. Turn the saw in, and do not use it if deficiencies are above the user level.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to maintain rescue power equipment.

Performance Measures	**GO**	**NO GO**
1. Maintained a K-12 rescue saw.	____	____
2. Checked the fuel and oil levels, and refilled as needed.	____	____
3. Removed the air cleaner intake cover and checked the paper element or filter.	____	____
4. Removed the spark plug wire from the spark plug.	____	____
5. Removed the spark plug, and looked for carbon buildup on the tip.	____	____
6. Checked the exterior of the saw and ensured that all nuts, screws, and bolts were tight.	____	____
7. Checked the saw blade for chips, cracks, and evidence of stress damage or overheating.	____	____
8. Used warm, soapy water to remove dirt, grease, gasoline, and oil from the exterior of the saw.	____	____
9. Checked the K-12 storage box for proper items.	____	____
10. Kept the K-12 on the ground to start it.	____	____
11. Recorded all deficiencies on the proper form.	____	____
12. Put the saw in the storage box and placed the box back on the firefighting apparatus if the saw was operational and serviceable.	____	____
13. Turned the saw in, and did not use it if deficiencies were above the user level.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	**Related**
DA FORM 2404	DA PAM 738-750
DA FORM 5988-E	IFSTA MANUALS
	LO 5-4210-220-12
	TM 5-4210-220-12

Perform Operator Preventive Maintenance Checks and Services on a Firefighting Apparatus

052-249-1143

Conditions: Given a firefighting apparatus, tools, rags, water, oil, soap, brushes, spare parts (as required), a pencil or pen, Technical Manual (TM) 5-4210-220-12, Lubrication Order (LO) 5-4210-220-12, Department of the Army (DA) Pamphlet 738-750, DA Form 2408-14 (Uncorrected Fault Record), DA Form 5988-E (Equipment Inspection Maintenance Worksheet [EGA]), and the local standing operating procedure (SOP).

Standards: Perform operator preventive maintenance checks and services (PMCS) on a firefighting apparatus.

Performance Steps
NOTE: Use TM 5-4210-220-12, LO 5-4210-220-12, DA Form 2408-14, DA Form 5988-E, and DA PAM 738-750 to accomplish this task.

1. Perform the operator daily checks.
   a. Record the deficiencies.
   b. Report any deficiencies that deadline the vehicle to the crew chief.
2. Perform the operator after-mission checks.
   a. Record the deficiencies.
   b. Report any deficiencies that deadline the vehicle to the crew chief.
3. Perform the operator weekly checks.
   a. Record the deficiencies.
   b. Report any deficiencies that deadline the vehicle to the crew chief.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to perform operator PMCS on a firefighting apparatus.

Performance Measures	**GO**	**NO GO**
1. Performed the operator daily checks.	____	____
2. Performed the operator after-mission checks.	____	____
3. Performed the operator weekly checks.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	**Related**
DA FORM 2408-14	IFSTA MANUALS
DA FORM 5988-E	NFPA 1001
DA PAM 738-750	
LO 5-4210-220-12	
TM 5-4210-220-12	

Perform Preventative Maintenance Checks and Services on Fire Hydrants

052-249-1150

Conditions: Given a firefighting apparatus, protective clothing, the necessary firefighting tools, and fire hydrants.

Standards: Perform preventative maintenance checks and services (PMCS) on the fire hydrants.

Performance Steps

1. Identify the types of fire hydrant.
    a. Identify a dry-barrel fire hydrant. It is used in areas where freezing is expected.

NOTE: The valve holding water back is belowground, under the frost line. When the hydrant is closed, the barrel is drained through a drain valve at the bottom of the hydrant.

    b. Identify a wet-barrel fire hydrant. It is used in areas without freezing temperatures.

NOTE: The barrel is full of water near the discharge openings. It usually has a compression type valve at each outlet.

2. Flow water from the fire hydrants.
    a. Flow water from a dry-barrel fire hydrant.
        (1) Remove the discharge caps.
        (2) Open the hydrant.
        (3) Flow the water until it is clear.

NOTE: When a hydrant is first opened, the water may have a dirty or rusty color to it. Continue to flow water until it is clear in color.

        (4) Close the hydrant completely.

NOTE: Do not close the hydrant tightly. Close it down, and back the nut off three-fourths of a turn or until the wrench turns freely and no water is flowing.

        (5) Cap all the discharges except one.
        (6) Open and close the hydrant again.
        (7) Place your palm over an open 2 1/2-inch discharge as soon as the water stops flowing.

NOTE: There should be a slight suction.

        (8) Lubricate the threads of all the discharge caps.

NOTE: Use a lubricant that will not freeze.

        (9) Replace the discharge caps.
        (10) Lubricate the open-and-close nut on top of the hydrant.

NOTE: Use a lubricant that will not freeze.

    b. Flow water from a wet-barrel fire hydrant.
        (1) Remove the discharge caps.
        (2) Open the hydrant.
        (3) Flow water until it is clear.

NOTE: When a hydrant is first opened, the water may have a dirty or rusty color to it. Continue to flow water until it is clear in color.

        (4) Close the hydrant completely.

NOTE: Do not close the hydrant tightly. Close it down, and back the nut off three-fourths of a turn or until the wrench turns freely and no water is flowing.

        (5) Lubricate the threads of all the discharge caps.
        (6) Replace the discharge caps.
        (7) Lubricate the open-and-close nut on the side of the hydrant.

3. Maintain the fire hydrants.
    a. Check to see if the discharges are facing the proper direction.

NOTE: If a hydrant has been turned by a snowplow or has been struck by any vehicle, report the damage to the crew chief immediately. Ensure that the discharge has sufficient ground clearance for hose connections.

    b. Check for the following obstructions in the hydrant:

Performance Steps

(1) Bottles.
(2) Cans.
(3) Rocks.

c. Check for mechanical damage.
(1) Look for missing or frozen discharge caps.
(2) Look for open-and-close nuts that will not turn or that turn without opening the valve.
(3) Check the barrel to see if it is cracked or dented.
(4) Look for rust and corrosion.

d. Ensure that the ground around the hydrant is not eroded.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to perform PMCS on the fire hydrants.

Performance Measures	**GO**	**NO GO**
1. Identified the types of fire hydrants.	____	____
2. Flowed water from the fire hydrants.	____	____
3. Maintained the fire hydrants.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Maintain a Self-Contained Breathing Apparatus

052-249-1163

Conditions: Given a self-contained breathing apparatus (SCBA), a water supply, mild soap, soft rags, buckets, Department of the Army (DA) Form 5988-E (Equipment Inspection Maintenance Worksheet [EGA]), and a black pen.

Standards: Maintain a SCBA.

Performance Steps

1. Maintain an Interspiro© SCBA.
    a. Place the SCBA on a clean surface.
    b. Check the backplate harness assembly for damage.
    c. Check the regulator assembly for damage.
    d. Check the facepiece for damage.
        (1) Check the inner valve disks.
        (2) Check the speech cone.
        (3) Check the straps.
    e. Remove the speech cone, and inspect the speech diaphragm.
    f. Remove the breathing valve.
        (1) Inspect the valve disk.
        (2) Inspect the O-ring.
    g. Connect the breathing valve to the mask by replacing the speech cone.
    h. Connect the breathing hose quick coupling to the breathing valve.
    i. Close the bypass by turning the red knob fully counterclockwise.

CAUTION: DO NOT OVERTIGHTEN THIS KNOB. THE SCBA COULD BE DAMAGED AND UNSERVICEABLE IF OVERTIGHTENING OCCURS.

    j. Check the cylinder.
        (1) Look for damage.
        (2) Check the hydrostatic test date.
        (3) Ensure that the cylinder is at least 90 percent charged.
        (4) Ensure that no more than two threads are stripped.
    k. Slide the cylinder into the strap loop until the valve head snaps into the holder and locks.
    l. Close the cylinder toggle lock.
    m. Connect the regulator coupling to the cylinder head.
    n. Ensure that the regulator is parallel to the cylinder.
    o. Ensure that the coupling O-ring is in place and free of debris.
    p. Ensure that the positive pressure switch is in the OFF position.
    q. Open the cylinder valve.
    r. Read the cylinder gauge and regulator pressure gauge.

NOTE: Both gauges should be within 100 pounds per square inch of each other.

    s. Turn the positive pressure switch on by slowly lifting the switch to the ON position.

NOTE: A strong flow of air should be heard. Immediately turn the positive pressure switch to OFF.

    t. Read the remote and regulator pressure gauges.
    u. Fully close the cylinder valve.
    v. Watch for needle movement on the regulator pressure gauge for 1 minute.

NOTE: The needle should not move in the 1 minute time period. If the needle does move, take the unit out of service and documented the problem on a DA Form 5988-E.

    w. Slightly open the bypass valve until the low-pressure alarm sounds.
    x. Close the bypass valve as soon as the low-pressure alarm sounds.
    y. Read the pressure gauge.

NOTE: The pressure gauge should read one-fourth of a tank or 1,090 pounds per square inch.

    z. Turn on the positive pressure switch to bleed off the remaining pressure from the system.
    aa. Leave the positive pressure switch in the ON position.

Performance Steps

ab. Document all findings on a DA Form 5988-E.

2. Maintain a Scott® SCBA.
   a. Place the SCBA on a clean surface.
   b. Check the backplate harness assembly for damage.
   c. Check the regulator assembly for damage.
   d. Check the facepiece for damage.
      (1) Check the inner valve disks.
      (2) Check the straps.
   e. Connect the regulator to the mask.
   f. Connect the regulator quick coupling to the low-pressure line.
   g. Check the cylinder.
      (1) Look for damage.
      (2) Check the hydrostatic test date.
      (3) Ensure that the cylinder is at least 90 percent charged.
      (4) Ensure that no more than two threads are stripped.
   h. Slide the cylinder into the strap loop until the valve head snaps into the holder and locks.
   i. Close the cylinder toggle lock.
   j. Connect the regulator coupling to the cylinder head.
   k. Ensure that the coupling O-ring is in place and free of debris.
   l. Ensure that the purge valve is closed.
   m. Fully depress the air saver and/or donning switch on the top of the regulator.
   n. Open the cylinder valve.
   o. Read the cylinder gauge and regulator pressure gauge.

NOTE: Both gauges should be within 100 pounds per square inch of each other.

   p. Hold the facepiece to your face.
      (1) Seal the facepiece to your face.
      (2) Inhale to start the flow of air.
      (3) Breath normally to ensure proper operation.
   q. Remove the facepiece from your face to allow air to flow freely.
   r. Fully depress the air saver and/or donning switch on the top of the regulator, and release it.

NOTE: The airflow should stop at this time. If air continues to flow, the unit is defective and should be removed from service.

   s. Rotate the purge valve one-half of a turn counterclockwise and air will flow from the regulator.
   t. Rotate the purge valve one-half of a turn clockwise and the airflow stops.
   u. Read the remote and regulator pressure gauges.

NOTE: The needle should not move. If the needle does move, take the unit out of service and document the problem on a DA Form 5988-E.

   v. Slightly open the purge valve with the cylinder valve closed until the low-pressure alarm sounds.
   w. Close the purge valve as soon as the low-pressure alarm sounds.
   x. Read the pressure gauge.

NOTE: The pressure gauge should read one-fourth of a tank or 1,090 pounds per square inch.

   y. Open the purge valve to bleed-off the remaining pressure from the system.
   z. Fully close the purge valve when the airflow completely stops.
   aa. Document all findings on a DA Form 5988-E.

Evaluation Preparation: Setup: Provide the soldier with the items in the conditions.

Brief soldier: Tell the soldier to maintain a SCBA.

Performance Measures	**GO**	**NO GO**
1. Maintained the Interspiro SCBA.	____	____
2. Maintained the Scott SCBA.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	**Related**
DA FORM 5988-E	AR 420-90
	DA FORM 2404
	DA PAM 738-750
	IFSTA MANUALS
	LO 5-4210-220-12
	NFPA 1001
	TM 5-4210-220-12

Subject Area 2: Perform Common Firefighting Tasks

Perform Fire Pump Operations

052-249-1102

Conditions: Given a firefighting apparatus, a pumping apparatus, protective clothing, a fire scene, one additional firefighter, a crew chief, and the unit standing operating procedure (SOP).

Standards: Deliver water to the fire scene with a firefighting apparatus or from a water source.

Performance Steps

1. Perform structural stationary pump operations using an onboard water supply.
    a. Arrive at an emergency situation, and position the firefighting apparatus as directed by the crew chief.
    b. Set the air brakes of the vehicle.
    c. Place the gear selector into the NEUTRAL position (lock the gear selector in place).

DANGER: FAILURE TO LOCK THE GEAR SELECTOR IN PLACE COULD CAUSE THE VEHICLE TO JUMP INTO GEAR AND SERIOUSLY OR FATALLY INJURE ANY PERSONNEL IN FRONT OF OR BEHIND THE VEHICLE. PROPERTY AND VEHICLE DAMAGE COULD ALSO BE IMMINENT.

    d. Place the MODE selector switch into the STRUCT mode.
    e. Place the TANK VALVE switch into the OPEN position.
    f. Place the PUMP switch into the ON position.

NOTE: Panel indicator lights should be on (red in color) over the TANK and PUMP switches.

    g. Dismount the vehicle.
    h. Remove the chock blocks from the compartment, and place one in front of and one behind the rear driver's side wheel.
    i. Proceed to the pump panel.
    j. Place the TANK VALVE switch on the pump panel into the OPEN position.
    k. Unlock the wing nut on the governor, and adjust the governor to bring the pump pressure to the correct operations level for this operation.

NOTE: To calculate pump pressures, see task 052-249-1124.

    l. Open the discharge gate to the hose line without causing a water hammer.

WARNING: OPENING OR CLOSING A GATE TOO FAST WILL CAUSE A WATER HAMMER. THIS WILL CAUSE DAMAGE TO THE FIREFIGHTING PUMP AND INTERNAL PLUMBING SYSTEMS. SLOWLY OPEN AND CLOSE GATES AS A RULE OF THUMB.

    m. Monitor the gauges, and assist the crew with the equipment download.
    n. Signal the crew chief when the water tank on the firefighting apparatus is one-fourth full, and proceed to shut down pumping operations.

WARNING: DO NOT PUMP THE TANK EMPTY. THIS MAY CAUSE DAMAGE TO THE FIREFIGHTING PUMP FOR FUTURE OPERATIONS.

    o. Close all the open gate valves slowly.
    p. Throttle-down the engine using the pump panel governor, and lock the governor using the wing nut.
    q. Place the TANK VALVE switch from OPEN to EM, pause for the air to release, move the switch to the CLOSED position, pause for the air to release, and then move the switch back to the EM position.
    r. Dismount the pump section of the apparatus, and move to the vehicle cab.
    s. Place the PUMP switch to the OFF position.
    t. Place the TANK VALVE switch from OPEN to EM, pause for the air to release, move the switch to the CLOSED position, pause for the air to release, and then move the switch back to the EM position.
    u. Place the MODE selector switch in the EM position.

NOTE: All panel indicator lights should be off at this time.

    v. Ensure that all tools and equipment are returned to the vehicle.

Performance Steps

w. Remove the chock blocks from the wheel, and return them to the compartment.
x. Return to the vehicle cab for directions from the crew chief.

2. Perform structural stationary pump operations using the water supplied from a fire hydrant or another firefighting apparatus.
   a. Arrive at an emergency situation, and position the firefighting apparatus as directed by the crew chief.
   b. Set the air brakes of the vehicle.
   c. Place the gear selector into the NEUTRAL position (lock the gear selector in place).

DANGER: FAILURE TO LOCK THE GEAR SELECTOR IN PLACE COULD CAUSE THE VEHICLE TO JUMP INTO GEAR AND SERIOUSLY OR FATALLY INJURE ANY PERSONNEL IN FRONT OF OR BEHIND THE VEHICLE. PROPERTY AND VEHICLE DAMAGE COULD ALSO BE IMMINENT.

   d. Place the MODE selector switch into the STRUCT mode.
   e. Place the TANK VALVE switch into the OPEN position.
   f. Place the PUMP switch into the ON position.

NOTE: Panel indicator lights should be on (red in color) over the TANK and PUMP switches.

   g. Dismount the vehicle.

NOTE: If a hydrant was available, a hose lay would have been performed (see task 052-249-1112).

   h. Remove the chock blocks from the compartment, and place one in front of and one behind the rear driver's side wheel.
   i. Proceed to the pump panel.
   j. Place the TANK VALVE switch on the pump panel into the OPEN position.
   k. Unlock the wing nut on the governor, and adjust the governor to bring the pump pressure to the correct operations level for this operation.

NOTE: To calculate pump pressures, see task 052-249-1124.

   l. Open the discharge gate(s) to the attack lines without causing a water hammer.

WARNING: OPENING OR CLOSING A GATE TOO FAST WILL CAUSE A WATER HAMMER. THIS WILL CAUSE DAMAGE TO THE FIREFIGHTING PUMP AND INTERNAL PLUMBING SYSTEMS. SLOWLY OPEN AND CLOSE GATES AS A RULE OF THUMB.

   m. Dismount the pump panel to retrieve the hose clamp and the spanner wrenches.
   n. Pull the line from the hose bed that is connected to either the hydrant or the other firefighting vehicle.
   o. Place the hose clamp on the hose, leaving enough hose to attach it to the selected suction port.
   p. Signal the plug man or another pump operator to charge the hose line.
   q. Attach the line to the suction port, and release the hose clamp.
   r. Return to the pump panel, and open the tank hatch and the water tank lids.
   s. Receive the water from the resupply source one of these two ways:
      (1) Send the water directly to the tank from a water source.
         (a) Open the tank fill gate.
         (b) Slowly open the suction gate attached to the water source.
         (c) Watch the water tank indicator level lights to make sure that it does not overfill or empty the tank.
         (d) Continue the operation until either the fire is extinguished or the water supply is exhausted.
      (2) Draw water directly from the supply line.
         (a) Slowly open the suction gate to draw water from the supply source.

DANGER: THE TRUCK MAY REACT VIOLENTLY AND CAUSE THE ENGINE TO RACE. REGAIN CONTROL OF THE ENGINE BY THROTTLING DOWN, AND GIVE THE FIRE CREW THE EMERGENCY WITHDRAWAL SIGNAL. ONCE PRESSURE IS REGAINED, FIREFIGHTING OPERATIONS MAY CONTINUE. THE LOSS OF WATER PRESSURE TO FIREFIGHTERS COMBATING A WORKING FIRE COULD BE EXTREMELY DANGEROUS. DEATH OR SEVERE INJURY MAY RESULT DUE TO THE FIRE OVERTAKING THEM. EXTENSIVE DAMAGE TO THE FIREFIGHTING APPARATUS MAY ALSO OCCUR IF THE ENGINE IS ALLOWED TO RACE VIOLENTLY WITHOUT BEING THROTTLED DOWN.

Performance Steps

(b) Monitor the operating pressure to the hose lines as water is taken in from the suction port.

NOTE: There may be have enough water pressure to start slowly refilling the tank by slightly opening the tank fill lever on the pump panel. If the operating pressure drops below what is needed, close the tank lever and fill the tank at a later time.

(c) Continue the operation until either the fire is extinguished or the water supply is exhausted.

t. Close the discharge gate levers when the driver or operator is informed that firefighting operations are complete.
u. Open the tank fill valve to resupply the tank.
v. Close the tank fill gate once the tank is full.
w. Signal the supplying vehicle or plug man to cease the operation.
x. Close the suction gate.
y. Throttle-down the engine using the pump panel governor, and lock the governor using the wing nut.
z. Place the TANK VALVE switch from OPEN to EM, pause for the air to release, move the switch to the CLOSED position, pause for the air to release, and then move the switch back to the EM position.
aa. Dismount the pump section of the apparatus, and move to the vehicle cab.
ab. Place the PUMP switch to the OFF position.
ac. Place the TANK VALVE switch from OPEN to EM, pause for the air to release, move the switch to the CLOSED position, pause for the air to release, and then move the switch back to the EM position.
ad. Place the MODE selector switch into the EM position.

NOTE: All panel indicator lights should be off at this time.

ae. Exit the vehicle cab, and disconnect the suction hose line.
af. Ensure that all tools and equipment are returned to the vehicle.
ag. Remove the chock blocks from the wheel, and return them to the compartment.
ah. Return to the vehicle cab for directions from the crew chief.

3. Pump water to resupply another firefighting apparatus.
   a. Arrive at an emergency situation, and position the firefighting apparatus as directed by the crew chief.
   b. Set the air brakes of the vehicle.
   c. Place the gear selector into the NEUTRAL position (lock the gear selector in place).

DANGER: FAILURE TO LOCK THE GEAR SELECTOR IN PLACE COULD CAUSE THE VEHICLE TO JUMP INTO GEAR AND SERIOUSLY OR FATALLY INJURE ANY PERSONNEL IN FRONT OF OR BEHIND THE VEHICLE. PROPERTY AND VEHICLE DAMAGE COULD ALSO BE IMMINENT.

   d. Place the MODE selector switch into the STRUCT mode.
   e. Place the TANK VALVE switch into the OPEN position.
   f. Place the PUMP switch into the ON position.

NOTE: Panel indicator lights should be on (red in color) over the TANK and PUMP switches.

   g. Dismount the vehicle.
   h. Remove the chock blocks from the compartment, and place one in front of and one behind the rear driver's side wheel.
   i. Proceed to the pump panel.

NOTE: The firefighter should be connecting the hose for the resupply operation.

   j. Place the TANK VALVE switch on the pump panel into the OPEN position.
   k. Unlock the wing nut on the governor, and adjust the governor to bring the pump pressure to the correct operations level for this operation.

NOTE: To calculate pump pressures, see task 052-249-1124.

   l. Slowly open the selected discharge port lever, sending water to the other firefighting apparatus.
   m. Increase or decrease the water pressure as directed by the other driver or operator.
   n. Flow water until the one-fourth tank indicator light is flashing on the pump panel.
   o. Inform the other driver or operator and the crew chief that he is shutting down operations.

Performance Steps

p. Close the discharge gate lever.
q. Throttle-down the engine using the pump panel governor, and lock the governor using the wing nut.
r. Place the TANK VALVE switch from OPEN to EM, pause for the air to release, move the switch to the CLOSED position, pause for the air to release, and then move the switch back to the EM position.
s. Dismount the pump section of the firefighting apparatus, and move to the vehicle cab.
t. Place the PUMP switch to the OFF position.
u. Place the TANK VALVE switch from OPEN to EM, pause for the air to release, move the switch to the CLOSED position, pause for the air to release, and then move the switch back to the EM position.
v. Place the MODE selector switch into the EM position.

NOTE: All panel indicator lights should be off at this time.

NOTE: The firefighter should have disconnected the hose from the vehicle.

w. Ensure that all tools and equipment are returned to the vehicle.
x. Remove the chock blocks from the wheel, and return them to the compartment.
y. Return to the vehicle cab for directions from the crew chief.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to deliver water to the fire scene either with the firefighting apparatus or from a water source.

Performance Measures	**GO**	**NO GO**
1. Performed structural stationary pump operations using an onboard water supply.	____	____
2. Performed structural stationary pump operations using water supplied from a fire hydrant or another firefighting apparatus.	____	____
3. Pumped water to resupply another firefighting apparatus.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Don Protective Clothing

052-249-1103

Conditions: Given an aluminized or structural protective coat, trousers, a hood or helmet, gloves, rubber boots, and a Nomex® hood.

Standards: Don the protective clothing and fasten all snaps, hooks, and other devices within 60 seconds.

Performance Steps

1. Don the aluminized protective clothing.
    a. Ensure that all gear is serviceable (snaps can be snapped, hooks can be hooked, and the fastening devices can be fastened).
    b. Lay out the gear for emergency donning.

NOTE: Before laying out the protective gear, ensure that the protective clothing fits you (length and width) and that the rubber boots are the correct size. Place the trouser legs over the boots, and slide them down over the boots until the top of the boots are visible. Adjust the hood to the configuration of your head, and place the protective gloves in the coat pockets.

    c. Don the protective clothing when the alarm sounds.
        (1) Remove the safety shoes.
        (2) Step into the bunker boots, one foot at a time.
        (3) Don the aluminized trousers using the waistband to pull the trousers up.
        (4) Snap all the trouser snaps, hooks, and fastening devices.
        (5) Don the Nomex hood.
        (6) Don the aluminized coat.
        (7) Snap all the coat snaps, hooks, and fastening devices.
        (8) Turn-up and secure the aluminized coat collar.
        (9) Don the aluminized hood.
        (10) Adjust the hood chin strap.
        (11) Lower the hood flap down around your shoulders.
        (12) Don the protective gloves.

2. Don the structural protective clothing.
    a. Ensure that all the gear is serviceable (snaps can be snapped, hooks can be hooked, and the fastening devices can be fastened).
    b. Lay out the gear for emergency donning.

NOTE: Before laying out the protective gear, ensure that the protective clothing fits you (length and width) and that the rubber boots are the correct size. Place the trouser legs over the boots, and slide them down over the boots until the top of the boots are visible. Adjust the hood to the configuration of your head, and place the protective gloves in the coat pockets.

    c. Don the protective clothing when the alarm sounds.
        (1) Remove the safety shoes.
        (2) Step into the bunker boots, one foot at a time.
        (3) Don the structural trousers using the waistband to pull the trousers up.
        (4) Snap all trouser snaps, hooks, and fastening devices.
        (5) Don the Nomex hood.
        (6) Don the structural coat.
        (7) Snap all coat snaps, hooks, and fastening devices.
        (8) Turn-up and secure the structural coat collar.
        (9) Don the structural helmet with the ear covers down.
        (10) Adjust the helmet chin strap.
        (11) Lower the helmet face shield.
        (12) Don the protective gloves.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to don either the aluminized protective clothing or the structural protective clothing within 60 seconds of the alarm sounding.

Performance Measures	GO	NO GO
1. Donned the aluminized protective clothing.	____	____
2. Donned the structural protective clothing.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
AR 420-90
DA FORM 2404
DA FORM 2408-14
IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Load a Hose

052-249-1111

Conditions: Given a firefighting apparatus with an empty hose bed, 600 feet of 2 1/2-inch hose, 300 feet of 1 1/2-inch hose, and two firefighters to assist with the loading of the hose line.

Standards: Form an accordion load, a flat load, or a horseshoe load when instructed.

Performance Steps

1. Lay out the hose line, and look for any deficiencies, including—
    a. Wetness.
    b. Mildew, mold, petroleum, or chemical stains on the hose jacket.
    c. Abrasions, tears, holes, cracks, or chafing on the jacket.
    d. Separation of the inner lining from the outer jacket.
    e. Heat or fire damage to the outer jacket.
    f. Deformities, such as lumps, bubbles, or blisters.
    g. Damaged threads.
    h. Bent couplings.
    i. Binding swivels on female coupling.
    j. Broken or missing lugs.
    k. Cracked, broken, or poorly fitted gaskets.
    l. Damaged expansion rings or sleeves.

2. Record any deficiencies, and replace that section of the hose line.

3. Form one of the following hose loads when instructed:

NOTE: Load hose couplings so that they do not turn or flip over in the hose bed. Use a reverse bend or dutchman to change the direction that the coupling will pay out or to change the location of the coupling. To form a reverse bend or dutchman for the accordion load, and place a short fold in the hose. When completed, the hose coupling should not turn around, but pay out straight.

    a. Form an accordion load.
        (1) Place a coupling (male or female) in any corner of the hose bed.
        (2) Lay the hose line on edge.
        (3) Place the hose line in the hose bed from front to rear or from rear to front depending on the type of hose lay.
        (4) Connect the hose sections by threading the male and female hose couplings together and rotating the swivel on the female end until the couplings join.
        (5) Start the second layer when the bottom load is complete by gradually raising the last portion of the bottom load until it reaches the front (the end of the hose bed toward the cab) and top of the bottom load.
        (6) Continue laying the layers in this manner.
        (7) Complete the load by constructing the appropriate hose load.

NOTE: Using this load, you can easily load hose sections into a hose bed or onto your shoulders for hand stretching lines. However, the according load places many sharp bends and turns in the hose line. Remove the hose line from the hose bed and reload it at least once a month.

    b. Form a flat load.
        (1) Place a coupling (male or female) in any corner of the hose bed.
        (2) Lay the hose line that is parallel with the long axis of the firefighting apparatus (front to rear or rear to front of the hose bed).
        (3) Load the hose at a slight angle.
        (4) Continue laying the hose line until the bed is full.

Performance Steps
NOTE: A flat load must be used for a 5-inch supply line, but can be used for preconnects and 2 1/2- or 3-inch hose lines.

NOTE: A flat load pays out easier and produces a straighter lay than the accordion load. It also places many sharp turns and bends in the hose line. Remove the hose line from the hose bed, and reload the hose line at least once a month.

c. Form a horseshoe load.
   (1) Place a coupling (male or female) in any corner of the hose bed.
   (2) Lay the hose against the interior of the hose bed wall.
   (3) Lay the hose line completely around the hose bed to the corner directly opposite the starting point.
   (4) Bend the hose back, and continue laying the hose into the hose bed in the opposite direction.
   (5) Continue laying the hose line until the bed is full.
   (6) Start the second layer when the bottom load is complete by bringing the hose to the rear of the bed, across the end half of the layer. Gradually raise it as it is being brought to the front of the bed.

NOTE: The horseshoe load reduces the number of sharp bends and turns in the hose line, but makes hand-stretching lines very difficult. Unload and reload the horseshoe load at least once a month.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier the type of hose load to form.

Performance Measures	**GO**	**NO GO**
1. Laid out the hose line and looked for any deficiencies.	____	____
2. Recorded any deficiencies that were found and replaced that section of the hose line.	____	____
3. Formed one of the three hose loads when instructed.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Conduct Hose Lays

052-249-1112

Conditions: Given a firefighting apparatus, a structural fire scene, a fire hydrant, the necessary tools and equipment, protective clothing and equipment, a self-contained breathing apparatus (SCBA), and one additional firefighter.

Standards: Conduct hose lays.

Performance Steps

1. Conduct a forward hose lay.

NOTE: A forward hose lay involves laying the hose line from a water source (usually a fire hydrant) to the fire scene, supplying the firefighting apparatus with water for the attack lines.

NOTE: Forward lays using hose lines with a diameter less than 3 inches should not exceed 400 feet. If the lay will exceed 400 feet, lay two parallel hose lines at the same time or conduct a combination forward and reverse lay.

a. Stop the firefighting apparatus at the fire hydrant closest to the fire scene.

NOTE: Do not proceed to the fire scene until signaled to do so.

b. Proceed to the fire scene, and stop the firefighting apparatus a safe distance from the fire after the plug man signals.
c. Place a hose clamp on the supply line, which the plug man has connected to the fire hydrant.
d. Signal the plug man to charge the line.
e. Remove the chock blocks from the compartment, and place one in front of and one behind either of the rear wheels of the firefighting apparatus.
f. Remove more hose line from the hose bed.

NOTE: Removing more hose line will give you enough hose line to reach the supply intake port where the hose will be connected.

g. Disconnect the hose coupling, and place the loose end back into the hose bed.
h. Connect the supply line to the supply intake.
i. Remove the hose clamp.
j. Open the supply intake.

NOTE: Water should flow from the fire hydrant into the firefighting apparatus when the supply intake is open.

k. Start the pumping operations.

NOTE: The plug man or hydrant man position is not the evaluated task position, but it must be performed correctly to give an assessment of the driver or operator task. The plug man or hydrant man will complete the following in support of the driver or operator: (1) Remove necessary tools (hydrant and spanner wrenches) and extra hose line from the hose bed when the fire apparatus has stopped at the fire hydrant. Doing so will give you enough hose line to reach the fire hydrant. (2) Anchor the hose line by wrapping it one full turn around the fire hydrant and stepping on the hose line with your foot. (3) Signal the driver to proceed to the fire. (4) Remove the cap of the 2 1/2-inch discharge port that is closest to the fire. (5) Unwrap the supply line from around the fire hydrant, and connect the supply line to the 2 1/2-inch discharge port when the firefighting apparatus has stopped at the fire scene. (6) Use the hydrant wrench, and fully open the hydrant gate when the driver signals you to charge the hose line. (7) Proceed to the fire scene, and tighten any leaking hose couplings, as needed.

2. Conduct a reverse hose lay.

NOTE: A reverse hose lay involves laying the hose line from the fire scene to the fire hydrant or water source. Use this lay when the fire hydrant has insufficient pressure, when you want to use the full capacity of the firefighting apparatus pump, or in combination with a forward lay.

NOTE: Conducting a reverse lay requires more time. However, having consistent pressure from the firefighting apparatus compensates for the additional time.

Performance Steps

a. Stop the firefighting apparatus at the fire scene.

NOTE: Stop the firefighting apparatus 75 to 100 feet before the fire scene. This will provide you extra working line at the fire scene.

b. Help the plug man and crew chief remove all the necessary firefighting tools, equipment, SCBA, ladders and, if the crew chief directs, additional attack lines.
c. Remount the firefighting apparatus, and make sure that the plug man has remounted.

NOTE: When conditions permit, the plug man should remount the firefighting apparatus and ride in the cab with the driver.

d. Wait until the crew chief signals you to proceed to the fire hydrant.

DANGER: ONCE THE CREW CHIEF SIGNALS YOU, PROCEED TO THE FIRE HYDRANT. PULL AWAY SLOWLY; THE NOZZLE MAN WILL BE ANCHORING THE HOSE LINE. IF YOU DO NOT PROCEED SLOWLY, YOU COULD SEVERELY INJURE THE NOZZLE MAN. CONTINUOUSLY WATCH THE NOZZLE MAN AS YOU PULL AWAY.

e. Stop the firefighting apparatus at the fire hydrant.
f. Remove the chock blocks from the compartment, and place one in front of and one behind either of the rear wheels of the firefighting apparatus.
g. Disconnect the hose line, and place the loose end coupling back into the hose bed.
h. Connect the hose line to a 2 1/2-inch discharge outlet.
i. Start the pumping operations.

NOTE: The plug man position is not the evaluated task position, but it must be performed correctly to give an assessment of the driver or operator task. The plug man or hydrant man will complete the following in support of the driver or operator: (1) Wait until the firefighting apparatus stops at the fire scene. (2) Help the driver and crew chief remove all necessary firefighting tools, equipment, ladders and, if the crew chief directs, additional attack lines. (3) Remount the firefighting apparatus. (4) Wait until the firefighting apparatus stops before dismounting the firefighting apparatus. (5) Remove enough hose line so that you can reach the discharge port where the hose will be connected. (6) Uncouple the hose, and place the loose end back in the hose bed. (7) Proceed to the fire scene, tightening any leaking hose couplings.

Evaluation Preparation: Setup: Provide the soldier with items listed in the conditions.

Brief soldier: Tell the soldier what type of hose lay to conduct. If the soldier receives a NO-GO for the selected hose lay, he will not be tested on a different hose lay until he passes the failed task.

Performance Measures	**GO**	**NO GO**
1. Conducted a forward hose lay.	____	____
2. Conducted a reverse hose lay.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	**Related**
	IFSTA MANUALS LO 5-4210-220-12 TM 5-4210-220-12

Advance a Hose Line

052-249-1113

Conditions: Given a firefighting apparatus, a structural fire scene, a self-contained breathing apparatus (SCBA), protective clothing and equipment, an extension ladder, one assistant firefighter, and a hose line with a nozzle.

Standards: Advance one of the following as directed by the instructor: a uncharged handline up an interior stairway and down an exterior stairway, a charged handline up an interior stairway and down an exterior stairway, an uncharged handline up an exterior stairway and down an interior stairway, a charged handline up an exterior stairway and down an interior stairway, an uncharged attack line up a ground ladder to a second-floor landing, or a charged attack line up a ground ladder to a second-floor landing.

Performance Steps

NOTE: Although the assistant firefighter is not being evaluated, his duties must be done correctly for the lead firefighter to obtain a GO during the evaluation.

1. Advance an uncharged handline up an interior stairway and down an exterior stairway.
    a. Load 50 feet of hose on your shoulder, and proceed to the doorway.

NOTE: The lead firefighter and the assistant firefighter will be on the same side of the hose line.

    b. Feel the door for heat before opening it.

DANGER: IF THE DOOR IS OPENED WITHOUT CHECKING FOR HEAT, A VIOLENT EXPLOSION MAY OCCUR (BACK DRAFT) WHICH COULD SEVERELY INJURE OR KILL FIREFIGHTERS AROUND THE STRUCTURE.

    c. Enter the structure with the assistant firefighter.

NOTE: The assistant firefighter advances the hose line for the lead firefighter.

        (1) Maintain enough walking distance between the assistant firefighter and yourself.
        (2) Do not allow couplings to drag on the stairs.
        (3) Ensure that the hose is laid down to the outside wall of the stairwell.
    d. Advance the hose line to the top of the stairs and then to the exterior stairway door.
    e. Exit the structure with the assistant firefighter.
    f. Gather the hose line at the top of the stairwell landing.
    g. Advance the hose line down the stairway.

2. Advance a charged handline up an interior stairway and down an exterior stairway.
    a. Bleed the air out of the handline, and adjust the nozzle pattern.
    b. Advance to the door.

NOTE: The lead firefighter and the assistant firefighter will be on the same side of the hose line.

    c. Feel the door for heat before opening it.

DANGER: IF THE DOOR IS OPENED WITHOUT CHECKING FOR HEAT, A VIOLENT EXPLOSION MAY OCCUR (BACK DRAFT) WHICH COULD SEVERELY INJURE OR KILL FIREFIGHTERS AROUND THE STRUCTURE.

    d. Enter the structure with the assistant firefighter, advancing up the interior stairway.

NOTE: The assistant firefighter advances the hose line for the lead firefighter.

        (1) Maintain enough walking distance between the assistant firefighter and yourself.
        (2) Do not allow couplings to drag on the stairs.
        (3) Ensure that the hose is laid to the outside wall of the stairwell.
    e. Advance the hose line to the top of the stairs and then to the exterior stairway door.
    f. Exit the structure with the assistant firefighter.
    g. Advance the hose line down the stairway.

NOTE: The assistant firefighter feeds the hose line down the stairway to the lead firefighter.

3. Advance an uncharged handline up an exterior stairway and down an interior stairway.
    a. Load 50 feet of hose on your shoulder, and proceed to the doorway.

NOTE: The lead firefighter and the assistant firefighter will be on the same side of the hose line.

    b. Advance the hose line up the exterior stairway with the assistant firefighter.

Performance Steps

c. Carry the hose line on your shoulder up the stairway.

NOTE: The assistant firefighter advances the hose line up the stairway.

(1) Maintain enough walking distance between the assistant firefighter and yourself.
(2) Do not allow couplings to drag on the stairs.
(3) Ensure that the hose is laid to the outside wall of the stairwell.

d. Bleed the air out of the handline, and adjust the nozzle pattern when the door is reached.
e. Feel the door for heat before opening it.

DANGER: IF THE DOOR IS OPENED WITHOUT CHECKING FOR HEAT, A VIOLENT EXPLOSION MAY OCCUR (BACK DRAFT) WHICH COULD SEVERELY INJURE OR KILL FIREFIGHTERS AROUND THE STRUCTURE.

f. Enter the structure with the assistant firefighter.
g. Advance the hose line down the stairway.

NOTE: The assistant firefighter feeds the hose line down the stairway to the lead firefighter.

4. Advance a charged handline up an exterior stairway and down an interior stairway.
   a. Bleed the air out of the handline, and adjust the nozzle pattern.

NOTE: The lead firefighter and the assistant firefighter will be on the same side of the hose line.

   b. Advance the hose line up the exterior stairway with the assistant firefighter.
   c. Carry the hose line on your shoulder up the stairway.

NOTE: The assistant firefighter advances the hose line up the stairway.

(1) Maintain enough walking distance between the assistant firefighter and yourself.
(2) Do not allow couplings to drag on the stairs.
(3) Ensure that the hose is laid to the outside wall of the stairwell.

   d. Advance to the door.
   e. Feel the door for heat before opening it.

DANGER: IF THE DOOR IS OPENED WITHOUT CHECKING FOR HEAT, A VIOLENT EXPLOSION MAY OCCUR (BACK DRAFT) WHICH COULD SEVERELY INJURE OR CAUSE THE DEATH OF FIREFIGHTERS AROUND THE STRUCTURE.

   f. Enter the structure with the assistant firefighter.
   g. Advance the hose line down the stairway.

NOTE: The assistant firefighter feeds the hose line down the stairway to the lead firefighter.

5. Advance an uncharged attack line up a ground ladder to a second-floor landing.
   a. Drape the nozzle on your shoulder.
   b. Climb the ladder using both hands, while ensuring the attack line remains to the outside of the ladder.
   c. Sound the landing before stepping off the ladder.
   d. Secure the attack line to the ladder.

NOTE: The assistant firefighter must do the following to support the lead firefighter's duties: Maintain 20 to 25 feet of hose between the firefighters. Assist in keeping the attack line over the side of the ladder. Lock-in when the lead firefighter reaches the landing. Feed the line to lead firefighter. Advance to the landing when signaled by the lead firefighter. Back up the lead firefighter.

   e. Advance the attack line to the firefighting position.

6. Advance a charged attack line up a ground ladder to a second-floor landing.
   a. Bleed the air out of the handline and adjust the nozzle pattern.
   b. Climb the ladder, and lock-in near the top.
   c. Signal the assistant firefighter to advance the attack line to the second floor.
   d. Unlock from the ladder, and advance to the second floor after sounding it.
   e. Signal for more attack line, if necessary.

NOTE: The assistant firefighter must do the following to support the lead firefighter's duties: Climb the ladder after the lead firefighter exits to the landing. Lock-in and feed line to the lead firefighter. Unlock from the ladder and advance to the landing when signaled. Secure the attack line to the ladder.

   g. Advance the attack line to the firefighting position.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to advance one of the following: a uncharged handline up an interior stairway and down an exterior stairway, a charged handline up an interior stairway and down an exterior stairway, an uncharged handline up an exterior stairway and down an interior stairway, a charged handline up an exterior stairway and down an interior stairway, an uncharged attack line up a ground ladder to a second-floor landing, or a charged attack line up a ground ladder to a second-floor landing.

Performance Measures	**GO**	**NO GO**
1. Advanced an uncharged handline up an interior stairway and down an exterior stairway.	____	____
2. Advanced a charged handline up an interior stairway and down an exterior stairway.	____	____
3. Advanced an uncharged handline up an exterior stairway and down an interior stairway.	____	____
4. Advanced a charged handline up an exterior stairway and down an interior stairway.	____	____
5. Advanced an uncharged attack line up a ground ladder to a second-floor landing.	____	____
6. Advanced a charged attack line up a ground ladder to a second-floor landing.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related

IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Operate a Nozzle

052-249-1114

Conditions: Given a firefighting apparatus, a structural fire scene, a self-contained breathing apparatus (SCBA), protective clothing and equipment, and sufficient hose line and nozzles.

Standards: Operate a solid-stream nozzle and an adjustable fog nozzle to extinguish a fire.

Performance Steps

NOTE: Remove the hose line from the firefighting apparatus according to the procedures outlined in task 051-249-1113.

1. Test the nozzle for full operation.

DANGER: OPERATING A NOZZLE WITH TOO MUCH PRESSURE CAN CAUSE SERIOUS INJURY TO FIREFIGHTERS, DAMAGE FIREFIGHTING EQUIPMENT, OR CAUSE UNNECESSARY DAMAGE TO THE STRUCTURE. INSUFFICIENT NOZZLE PRESSURE CAN IMPEDE FIREFIGHTING OPERATIONS. FIREFIGHTERS WILL HAVE TO WORK HARDER TO COMBAT, CONTAIN, AND EXTINGUISH THE FIRE.

2. Select the desired discharge pattern for the type of nozzle being used.

3. Locate the fire.

WARNING: CHECK THE DOOR FOR HEAT PRIOR TO ENTERING THE STRUCTURE. YOU MAY HAVE TO ADVANCE BEHIND A WATER-FOG PATTERN IF THE HEAT IS TOO INTENSE OR IF YOU HAVE TO DRIVE AWAY DENSE SMOKE. YOU MAY ALSO HAVE TO PERFORM FORCED-STREAM VENTILATION WITH THE HOSE LINE TO CLEAR AWAY THE DENSE SMOKE OR INTENSE HEAT SO THAT YOU CAN LOCATE OR CONTAIN THE FIRE. YOU SHOULD ADVANCE BEHIND A WATER-FOG PATTERN ONLY WHEN ABSOLUTELY NECESSARY BECAUSE THE ADDITIONAL WATER COULD DAMAGE THE STRUCTURE.

4. Operate one of the following nozzles:
    a. A solid-stream nozzle.

NOTE: Advantages of a solid-stream nozzle: produces a compact stream, can be effectively employed over long distances, has great penetrating power through loose or porous material, and the tip can be changed to increase the flow. Disadvantages of a solid-stream nozzle: heat-absorbing capabilities are poor, the high velocity of the water stream causes damage to the structure and the contents of the structure, the rough surface in the tip lessens the effectiveness of the nozzle, and the strong backward thrust makes handling difficult.

    b. An adjustable fog nozzle.

NOTE: Advantages of a fog nozzle: minimizes water damage to the structure or the contents, emits finely dispersed water particles that have high heat-absorbing capabilities, produces steam or vapor in large quantities (which displaces more heat and smoke), can be adjusted to a variety of patterns, can be handled more easily, and can be adjusted to emit a limited straight stream pattern. Disadvantages of a solid stream nozzle: has limited reach compared to a solid-stream nozzle, has very little penetrating power through loose or porous material, and can adversely affect the effectiveness of the fog pattern if you use the incorrect nozzle pressure.

5. Apply the selected water stream to the fire directly or by deflecting the stream off a wall, ceiling, or other stationary object. Only use a broken stream if it is more practical to deflect the water stream to combat the fire.

6. Control or extinguish the fire without damaging the structure or the contents.

WARNING: FAILURE TO SLOWLY OPEN OR CLOSE THE NOZZLE CAN CAUSE A WATER HAMMER. THIS CONDITION OCCURS WHEN THE WATER FLOW STOPS SUDDENLY, WHICH RESULTS IN A REDIRECTION OF THE WATER ENERGY. THE BUILDUP OF THE WATER ENERGY PRESSURE CAUSES AN ENORMOUS AMOUNT OF STRESS ON THE FIRE PUMP AND HOSE LINE. IF THIS HAPPENS, THE FIRE PUMP OR HOSE LINE COULD FAIL.

Evaluation Preparation: Setup: Provide the soldier with a simulated fire scene and all other items listed in the conditions.

Brief soldier: Tell the soldier to operate the nozzle to extinguish the fire.

Performance Measures	GO	NO GO
1. Tested the nozzle for full operation.	____	____
2. Selected the desired discharge pattern for the type of nozzle being used.	____	____
3. Located the fire.	____	____
4. Operated the selected nozzle.	____	____
5. Applied the selected water stream to the fire directly or by deflection.	____	____
6. Controlled or extinguished the fire without damaging the structure or the contents.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Conduct Ventilation Procedures

052-249-1118

Conditions: Given a firefighting apparatus, all necessary firefighting tools and equipment, a hose line with a nozzle, protective clothing, a self-contained breathing apparatus (SCBA), a rope, ladders, two additional firefighters, a structure, and ground ladders.

Standards: Conduct ventilation procedures.

Performance Steps

1. Apply the factors of ventilation.
    a. Locate the fire within the structure, if possible.
    b. Determine the extent of the fire.
    c. Determine the time of day.
    d. Determine the building occupancy.
    e. Determine the wind direction.

NOTE: Perform horizontal ventilation first from the leeward side and then the windward side. When performing vertical ventilation, the wind should be at your back. (The wind direction will also indicate potential exposure hazards.)

    f. Determine the structure layout.
    g. Determine the structure age.
    h. Determine the type of construction materials.
    i. Determine the exterior exposures.

DANGER: THE ESCAPING HEAT, SMOKE, AND GASES COULD CAUSE ADJACENT BUILDINGS TO CATCH FIRE. THE OCCUPANTS IN ADJACENT BUILDINGS COULD BE IN DANGER.

    j. Determine the existing openings.
    k. Determine if there is any evidence of a back draft.

DANGER: TAKE EXTRA PRECAUTIONS IF BACK DRAFT CONDITIONS EXIST. IMPROPER VENTILATION WHEN BACK DRAFT CONDITIONS ARE PRESENT USUALLY RESULTS IN AN EXPLOSION.

    l. Determine the roof type or pitch.

2. Perform a horizontal ventilation.

NOTE: This method is most effective if the heat and smoke have been confined to one floor or a few floors of a structure. Horizontal ventilation is a much faster method and, depending on the wind, is much more effective and less expensive than vertical ventilation.

NOTE: If possible, start horizontal ventilation at the fire floor and move upward. The greatest concentration of heat, smoke, and gases will be on the fire floor and upper floors because of the convection cycle. As air is heated it rises. The cooler air recirculates back to the lower levels and is heated. This cycle continues as long as the fire burns freely.

    a. Wear full protective clothing with a SCBA.
    b. Open a door or window as close as possible to the fire (normally on the leeward side). If necessary, use forcible-entry tools.

WARNING: IF YOU MAKE THE OPENING CLOSE TO THE MAIN FIRE AREA (SEAT), YOU MUST HAVE A PREPOSITIONED, CHARGED HOSE LINE READY FOR IMMEDIATE ATTACK ON THE FIRE AND FOR PROTECTION OF THE FIREFIGHTERS VENTILATING THE STRUCTURE. YOU SHOULD ALWAYS HAVE A CHARGED HOSE LINE BY THE VENTILATION OPENING.

    c. Open the top half of a window (standing to the side of the window) on the leeward side of the building. Open as many windows as necessary to facilitate removal of the smoke and gas.

NOTE: The leeward side of the building is the nonwind side. When you open windows on the leeward side, the hot smoke and gases escape because there is no wind to blow the hot smoke and gases back in.

    d. Open the bottom half of windows on the windward side of the building after the hot smoke and gases escape.

Performance Steps

DANGER: ALWAYS OPEN A WINDOW ON THE WINDWARD SIDE AFTER YOU HAVE OPENED ONE ON THE LEEWARD SIDE. IF YOU DO NOT, A VIOLENT EXPLOSION CAN OCCUR.

e. Use mechanical smoke ejectors to facilitate ventilation if time, situation, and manpower permit.

CAUTION: IF YOU USE MECHANICAL SMOKE EJECTORS, REMOVE ALL CURTAINS, DRAPES, SHADES, AND BLINDS FROM AROUND THE WINDOW OPENING. THESE OBJECTS COULD REDUCE THE EFFECTIVENESS OF THE SMOKE EJECTOR AND COULD GET DRAWN INTO THE SMOKE EJECTOR AND DAMAGE IT.

f. Proceed to the next floor, if necessary, and continue horizontal ventilation.

3. Perform a vertical ventilation.

NOTE: This method is most effective if the heat, smoke, and gases have completely filled the structure. Vertical ventilation is more difficult than horizontal ventilation, and repair costs are usually higher.

NOTE: Make vertical ventilation openings directly over the fire seat or as close as possible to the seat. Doing so helps prevent the heat and smoke from being drawn into areas that would not have been involved in the fire had you not ventilated in that area.

a. Ascend an extension ladder to the roof.

CAUTION: WHENEVER YOU PERFORM VERTICAL VENTILATION, YOU MUST HAVE A CHARGED HOSE LINE MANNED AND POSITIONED IN AN AREA THAT WILL PROVIDE YOU THE MOST PROTECTION. THIS HOSE LINE MAY ALSO BE USED TO HELP REMOVE THE HEAT AND SMOKE BY DIRECTING THE HOSE STREAM ACROSS THE OPENING AFTER YOU MAKE THE OPENING. HOWEVER, THE HOSE STREAM SHOULD NEVER BE DISCHARGED DIRECTLY INTO THE OPENING. THIS WOULD FORCE THE HEAT AND SMOKE DOWNWARD INSIDE THE STRUCTURE.

b. Tie a lifeline to yourself.

WARNING: IF THE ROOFTOP IS PITCHED OR ARCHED, A ROOF LADDER MUST BE LAID ON THE ROOF AND, WHEN POSSIBLE, SECURED TO THE ROOFTOP. A FIREFIGHTER WILL HAVE BETTER SUPPORT WHEN HE IS MAKING AN OPENING IF HE IS STANDING ON THE LADDER. NEVER OPERATE ON A PITCHED OR ARCHED ROOF UNLESS YOU USE A ROOF LADDER.

c. Ensure that a nozzle man with a hose line is in position.

d. Check the condition of the roof supports. Ensure that they have not been burned away or are so weak that they may collapse under your weight.

DANGER: IF THE ROOF SAGS UNDER YOUR WEIGHT OR FEELS SPONGY, DO NOT GO OUT ON THE ROOF. THESE CONDITIONS ARE STRONG INDICATORS THAT THE ROOF SUPPORTS HAVE BEEN SEVERELY WEAKENED AND ARE LIKELY TO COLLAPSE UNDER YOUR WEIGHT.

e. Plan an escape route from the roof. If you feel the roof shift or sag while you are on it, get off immediately.

f. Use natural roof openings if they can provide the degree of ventilation necessary and are in the proper location.

g. Step on the roof and locate the cut area. Whenever possible, make the opening directly over the fire seat.

h. Determine where to make the cut using the—

(1) Location of the fire.
(2) Highest point of the roof.
(3) Direction of the wind.
(4) Existing exposures (property and life).
(5) Extent of the fire.
(6) Safety precautions.

i. Locate the roof supports by sounding with an ax head.

NOTE: When you drop the ax head between joists, the ax will noticeably bounce and you will hear a hollow sound. When you drop the ax head on or near a joist, the ax will have little bounce and you will hear a solid sound.

j. Mark off the cut area by scratching a line on the roof surface with the pick end of the ax.

NOTE: The cut area should be a 4- by 4-foot area to provide adequate ventilation and to facilitate repairs after the fire.

Performance Steps

k. Remove the built-up roofing material (felt paper, metal, shingles) by precutting the material with the ax blade and pulling the material up and away using the pick head of the ax.
l. Cut the wood decking at a 60° angle.
   (1) Cut on the side farthest from the escape route.
   (2) Cut at the highest point of the opening.
   (3) Cut at the lowest point of the opening.
   (4) Cut closest to your escape route.

WARNING: NEVER CUT THROUGH THE JOISTS. YOU COULD SERIOUSLY WEAKEN THE ROOF, AND THE ROOF COULD COLLAPSE UNDER YOUR WEIGHT.

m. Keep the wind at your back.
n. Pry up the roof boards with the pick end of the ax after making all the cuts.
o. Push the blunt end of a pike pole through the roof opening to open the ceiling below.
p. Remove all the tools and equipment from the rooftop when you complete the opening.

Evaluation Preparation: Setup: Provide the soldier with a simulated fire scene and all other items listed in the conditions.

Brief soldier: Tell the soldier to conduct ventilation procedures.

Performance Measures	**GO**	**NO GO**
1. Applied the factors of ventilation.	____	____
2. Performed a horizontal ventilation.	____	____
3. Performed a vertical ventilation.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	**Related**
	IFSTA MANUALS LO 5-4210-220-12 TM 5-4210-220-12

Protect and Preserve Evidence at a Fire Scene

052-249-1120

Conditions: Given a firefighting apparatus, a fire scene, paper, a pen, a pencil, tape, a camera, rope, protective clothing and equipment, containers, salvage covers, a self-contained breathing apparatus (SCBA), and a hose line with a nozzle.

Standards: Protect and preserve the evidence at a fire scene.

Performance Steps

1. Identify the evidence that could determine the cause of the fire or possible arson.
   a. Locate any gasoline cans or containers of other flammable liquids.
   b. Locate any matches or lighters found at the main fire area.
   c. Look for the rearrangement of furniture in the main fire area.
   d. Determine if any of the doors that lead to the outside area or the main fire area are propped open.
   e. Determine if there are any fires inside the structure occurring at the same time in several different locations.
   f. Identify any odors of flammable liquids in unusual places.
   g. Locate any film or cotton trails.
   h. Identify any unusual smoke colors for the type of material burning.

2. Protect the evidence.

NOTE: During the extinguishment and overhaul, you could uncover evidence that indicates the cause or start of the fire. You must protect this evidence to later determine the cause of the fire.

NOTE: Do not destroy evidence while extinguishing the fire. Hose streams improperly applied to extinguish the fire can destroy valuable evidence. This could make determining the cause of the fire extremely difficult or impossible.

NOTE: If not properly guarded, evidence could become useless. The fire investigator has a better chance of determining the cause of a fire with untouched and undisturbed evidence. Unless absolutely necessary, do not touch or move evidence.

   a. Avoid trampling over possible arson evidence while fighting the fire.
   b. Do not touch or disturb the evidence unless it is absolutely necessary.
   c. Rope off the entire area included in the fire to keep personnel away.
   d. Lock or secure the room or structure where the evidence is located.
   e. Post a guard, if necessary, to prevent tampering with the evidence.
   f. Identify any evidence that cannot be left at the scene.

3. Preserve the evidence.
   a. Take pictures of the evidence before it is touched or moved.
   b. Place the evidence in a container or other suitable device so that the evidence will not be damaged.
   c. Place the paper ash that was found between two sections of glass.
   d. Label all containers containing evidence, annotating the following information on each label—
      (1) Date the material was found.
      (2) Time the material was found.
      (3) Place the material was found.
      (4) Initials of the person who found the evidence.
      (5) Initials of the person who removed the evidence.
   e. Place all evidence in a safe, securable location.
   f. Maintain a record of all the personnel who had or have possession of any evidence removed from the fire scene.

Evaluation Preparation: Setup: Provide the soldier with all items listed in the conditions.

Brief soldier: Tell the soldier to protect and preserve the evidence at a fire scene.

Performance Measures	GO	NO GO
1. Identified the evidence that could determine the cause of the fire or possible arson.	____	____
2. Protected the evidence.	____	____
3. Preserved the evidence.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Conduct Salvage Operations

052-249-1121

Conditions: Given a firefighting apparatus, all necessary firefighting tools and equipment, a smoke ejector, a hose line with a nozzle, protective clothing and equipment, a self-contained breathing apparatus (SCBA), salvage covers, rope, and a fire scene.

Standards: Conduct salvage operations.

Performance Steps

1. Determine the location in the structure that will be the most valuable by considering the following factors of salvage operations:
   a. Location of the fire.
   b. Extent of the smoke and water damage.
   c. Size and quantity of the contents.
   d. Available manpower.
   e. Available salvage covers, smoke ejectors, sawdust, and pallets.
   f. Value of the contents.
   g. Location of the contents.

2. Perform forced ventilation.

WARNING: BE VERY CAREFUL WHEN VENTILATING A STRUCTURE OR ROOM TO REDUCE SMOKE AND HEAT DAMAGE. IF YOU VENTILATE IMPROPERLY, YOU COULD CAUSE HEATED SMOKE AND GASES TO BE DRAWN THROUGH THE STRUCTURE, YOU COULD INTERFERE WITH NATURAL VENTILATION, AND YOU COULD INTERFERE WITH ANY VENTILATION OPENINGS ALREADY MADE.

   a. Perform negative pressure-forced ventilation by positioning the smoke ejector at the highest point possible of an outside opening on the leeward side of the structure.

CAUTION: REMOVE ALL THE OBJECTS THAT COULD BE DRAWN INTO THE SMOKE EJECTOR AWAY FROM THE SMOKE EJECTOR.

   b. Perform positive pressure-forced ventilation by positioning the fan so that the air cone covers the entire opening.
   c. Perform hydraulic pressure-forced ventilation by using a fog nozzle at a 45° to 60° angle two feet from the opening where you want to expel the smoke. The hose stream shall cover 85 to 90 percent of the opening.

CAUTION: HOSE STREAM VENTILATION CAN CAUSE ADDITIONAL WATER DAMAGE TO THE STRUCTURE. USE THIS TYPE OF VENTILATION ONLY WHEN REMOVING HEAT AND SMOKE FROM THE STRUCTURE IS MORE IMPORTANT THAN THE INCREASED AMOUNT OF WATER DAMAGE.

3. Move the contents to an outside area.

NOTE: If unable to move the contents outside, place them in a pile. Stack the items by degree of lowest to greatest value and vulnerability to water damage.

4. Divert the water with salvage covers.
   a. Construct a stairway drain.
      (1) Place the first salvage cover from the midpoint of the stairway downward over the bottom half of the stairway.
      (2) Place the second salvage cover from the top of the stairway downward toward the top of the first salvage cover.
      (3) Ensure that the top salvage cover overlaps the bottom salvage cover by at least one foot.
      (4) Roll the edges in toward the middle of the stairway.
   b. Construct a window chute drain.
      (1) Open the salvage cover, and attach the rope through the grommets.
      (2) Attach the rope to a stationary object or portion of the structure near the window opening.

Performance Steps

(3) Raise the other end of the salvage cover by erecting a pike pole or ladder stand for the cover to rest on, or use the rope and attach the cover to a stationary object or portion of the structure.

(4) Ensure that the end of the salvage cover extends through the window opening.

c. Construct a catch basin.

(1) Construct a deep catch basin.

NOTE: Use this basin to catch large quantities of water leaking through a ceiling when you cannot channel the water to an outside area.

(a) Place some building contents (such as tables, desks, furniture, or boxes) in a circle or square under the leak.

(b) Drape the salvage cover over the items, and fasten the edge of the cover to the furniture, floor, or building contents.

(c) Ensure that the bottom of the salvage cover is touching the floor.

(d) Remove the water to an outside area after the fire is controlled.

(2) Construct a shallow catch basin.

NOTE: Use this basin to catch small quantities of water leaking through a ceiling when you cannot channel the water to an outside area.

NOTE: The shallow catch basin is only a temporary measure because it cannot hold very much water.

(a) Open the salvage cover, and place it under the leak.

(b) Roll all four edges of the salvage cover toward the center.

Evaluation Preparation: Setup: Provide the soldier with all items listed in the conditions.

Brief soldier: Tell the soldier to conduct salvage operations.

Performance Measures	**GO**	**NO GO**
1. Determined the location in the structure that would be the most valuable considering the factors of salvage operations.	____	____
2. Performed forced ventilation.	____	____
3. Moved the contents to an outside area.	____	____
4. Diverted the water with salvage covers.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related

IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Conduct Overhaul Operations

052-249-1122

Conditions: Given a firefighting apparatus, a fire scene, protective clothing and equipment, a self-contained breathing apparatus (SCBA), necessary firefighting tools and equipment, rope, salvage covers, a smoke ejector, and a hose line with a nozzle.

Standards: Conduct overhaul operations.

Performance Steps

1. Identify the factors that affect the stability of a fire-involved structure.

NOTE: The crew chief or senior fire official at the scene usually determines if the structure is safe for conducting overhaul operations. He bases his decision partially on information you provide him. Your knowledge of these factors is essential as a safety measure for yourself and other personnel entering the structure.

   a. Determine the fire intensity by using the amount of time the fire burned and the type of materials involved.
   b. Identify the water weight.

CAUTION: ONE GALLON OF WATER WEIGHS 8.34 POUNDS. THE EXCESS WEIGHT OF THE WATER AND THE STRESS IT PLACES ON THE FLOORS AND WALLS IS A KEY FACTOR WHEN DETERMINING STRUCTURAL INTEGRITY.

   c. Identify the material weight.

CAUTION: MATERIALS INVOLVED IN THE FIRE OR NEAR THE MAIN FIRE AREA THAT READILY ABSORB WATER CAN CONTRIBUTE TO THE LOAD (WEIGHT) STRESS PLACED ON THE STRUCTURAL MEMBERS. THESE MATERIALS COULD WEIGH AS MUCH AS THREE TIMES THEIR NORMAL WEIGHT.

   d. Identify the structural exposures.

DANGER: WALLS, CEILING, AND FLOORS CLOSE TO THE MAIN FIRE AREA ARE USUALLY SEVERELY WEAKENED BY THE INTENSE HEAT AND DIRECT FLAME. THE ADDED WATER WEIGHT FROM EXTINGUISHING OPERATIONS PLACES STRESS ON THESE MEMBERS AND COULD CAUSE IMMINENT COLLAPSE OF THE ENTIRE STRUCTURE.

   e. Identify the structural damage.

DANGER: BE VERY CAREFUL WHEN YOU INSPECT AROUND CUT AREAS. YOUR WEIGHT AROUND THE CUT AREAS COULD CAUSE THE STRUCTURE TO COLLAPSE. FORCIBLE ENTRY, VENTILATION, OR ACCESS TO THE FIRE AREA CAN DAMAGE THE STRUCTURE.

2. Identify the conditions that indicate a collapse of the structure.
   a. Look for cracks in the load-bearing concrete walls.
   b. See if the structure is leaning to one side.
   c. See if the roof, ceiling, or floor is sagging.
   d. Listen for any noise.
   e. See if the floor moves as you apply your weight.
   f. Look for large cracks or severely charred and burned interior walls.
   g. Look for the separation of the floor from the wall.
   h. Look for the separation of the stairs from the top sill.

DANGER: DO NOT ENTER ANY STRUCTURE BELIEVED TO BE STRUCTURALLY UNSTABLE. SECTION OFF THE AREA AND LEAVE A FIREFIGHTING CREW TO CONTAIN ANY FIRE THAT MAY REKINDLE. THIS METHOD SHOULD NOT JEOPARDIZE THE LIVES OF THE FIREFIGHTING CREW.

3. Shut off or disconnect the building utilities.

4. Check the structure and contents, including—

Performance Steps

DANGER: DURING INTERIOR OVERHAUL, YOU SHOULD CONTINUE TO WEAR YOUR SCBA. POISONOUS AND TOXIC PROPERTIES STILL EXIST IN THE AIR; IF A FIRE IS STILL BURNING, THESE PROPERTIES ARE STILL BEING PRODUCED. DEATH OR INJURY CAN OCCUR IF YOU BREATHE SUFFICIENT QUANTITIES OF THESE GASES.

a. Spaces between the floor joists, ceiling beams, false or hanging ceilings, walls, and partitions.
b. Window or door casings.
c. Airshafts, chutes, or vertical shafts (elevators).
d. Pipe and wire recesses.
e. Textiles, such as a sofa, a mattress, or clothing.
f. Piles, such as newspapers, boxes, or rags.
g. Charred lumber for deep-seated heat and sparks.
h. Adjacent rooms to the main fire area, including the basement or attic.
i. Hot spots.

NOTE: If a surface feels overly warm to the touch or is unexplainably blackened, open it up and investigate.

j. Glowing embers or visible flame.
k. Smoke escaping from concealed spaces.

5. Investigate an area if a hidden fire is suspected.
   a. Locate the stud, rafter, or joist.
   b. Cut a small hole adjacent to the stud, rafter, or joist; and inspect the area.
   c. Cut additional holes to determine if the area is free of fire, if necessary.
   d. Cut to reach the seat of a fire if you locate a smoldering or free-burning fire.

6. Extinguish the fire.

DANGER: ALWAYS BE EXTREMELY CAREFUL WHEN HANDLING BURNED MATERIALS. YOU MAY FIND POISONOUS, CORROSIVE, OR EXPLOSIVE SUBSTANCES, CONTAINERS, OR MATERIALS.

   a. Remove textile and paper products to the outside area, and immerse the product in water.

NOTE: Add a wetting agent to the water to penetrate the textile or paper material. This helps to extinguish deep-seated fires. The wetting agent is also very effective in circumventing the normal resistance that charcoal has against water by allowing the water to penetrate into the wood.

   b. Move the wood used for flooring, walls, and other contents in the structure to an outside area, when possible.

WARNING: REMOVING FLOOR OR WALL MEMBERS CAN SEVERELY WEAKEN A STRUCTURE. BE VERY CAREFUL WHEN DETERMINING WHETHER OR NOT TO REMOVE THE MEMBERS.

7. Ensure that the building is safe.

WARNING: WHEN THE FIRE HAS BEEN COMPLETELY EXTINGUISHED, YOU MUST ENSURE THAT THE STRUCTURE IS SAFE FOR THE PERSONNEL (FIRE INSPECTOR AND FIREFIGHTERS) WHO MUST REMAIN IN THE STRUCTURE.

   a. Board up the holes in the floors or walls.
   b. Brace the load-bearing structural members damaged by the fire.
   c. Pull down the ceilings that have been weakened by the fire or water and appear ready to collapse.
   d. Block off the approaches to all weakened stairways or open elevator shafts.
   e. Pull down severely weakened walls, or block off the wall areas.

8. Clean up the structure.
   a. Take debris to the outside area.
   b. Absorb any standing water using the absorbent materials. Take the materials to the outside area.
   c. Separate burned and unburned material, and place the unburned material in a safe area.

9. Secure the structure.

Performance Steps

a. Place boards over doors and windows that were destroyed by the fire. Secure the boards to the structure.
b. Cover the holes in the roof by nailing boards over the holes.
c. Fasten hasps and locks to the doors or windows you forced open and cannot secure with the installed door locks or window locks.

NOTE: The facility engineers usually help by supplying the necessary materials and manpower to secure the structure. If security guards are required, the military police usually provide this support.

Evaluation Preparation: Setup: Provide the soldier with all items listed in the conditions.

Brief soldier: Tell the soldier to conduct overhaul operations.

Performance Measures	**GO**	**NO GO**
1. Identified the factors that affected the stability of a fire-involved structure.	____	____
2. Identified the conditions that indicated a collapse of a structure.	____	____
3. Shut off or disconnected the building utilities.	____	____
4. Checked the structure and contents.	____	____
5. Investigated an area if a hidden fire was suspected.	____	____
6. Extinguished the fire.	____	____
7. Ensured that the building was safe.	____	____
8. Cleaned up the structure.	____	____
9. Secured the structure.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Communicate With Hand Signals

052-249-1123

Conditions: Given a flashlight, one assistant firefighter to communicate with, and the unit standing operating procedure (SOP).

Standards: Communicate with hand signals during the day and night.

Performance Steps

1. Signal to charge the hose line.
   a. Signal during the day. Face the receiver, and raise both arms vertically over your shoulders, palms facing the direction of the receiver. Hold your arms stationary until the receiver acknowledges the signal.
   b. Signal during the night. Face the receiver, hold the flashlight in one hand, and raise that arm, vertically, over your head. Point the flashlight in the direction of the receiver. Move the light horizontally over your head until the receiver acknowledges your signal.

2. Signal to shut down the hose line.

NOTE: Use this signal when you need the hose line to be depressurized so that you can repair a ruptured section. Also, use this signal to indicate that you no longer need the hose line.

   a. Signal during the day. Face the receiver, and extend both hands and arms downward to the front of your waist. Swing your hands across your body until they cross each other. Continue this action until the receiver acknowledges your signal.
   b. Signal during the night. Face the receiver, place the flashlight in one hand, and lower that hand to the front of your waist. Swing the light across the front of your body at waist level, and direct the light at the receiver.

3. Signal to increase the pressure.

NOTE: One movement indicates a 10-pounds per square inch (psi) increase.

   a. Signal during the day. Face the receiver, and raise your arms horizontally to shoulder level, palms facing upward. Move your hands upward to head level while keeping your arms straight; return to the starting position.
   b. Signal during the night. Face the receiver, place the flashlight in one hand, and direct the beam at the receiver. Raise your arm horizontally from waist level to shoulder level.

4. Signal to decrease the pressure.

NOTE: One movement indicates a 10-psi increase.

   a. Signal during the day. Face the receiver, and raise your arms horizontally to shoulder level, palms facing downward. Move your arms in a downward motion to waist level, and return them to shoulder level.
   b. Signal during the night. Face the receiver, place the flashlight in one hand, and direct the beam at the receiver. Lower your arm horizontally from shoulder level to waist level.

5. Signal to cease operations.
   a. Signal during the day. Face the receiver, and extend your arm in front of your body. Rotate your arm in a circle toward the front of your body.
   b. Signal during the night. Face the receiver, and place the flashlight in one hand. Use the same maneuver as the daytime movements only direct the beam at the receiver.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to communicate with hand signals during the day and night.

Performance Measures	**GO**	**NO GO**
1. Signaled to charge the hose line.	____	____

Performance Measures	GO	NO GO
2. Signaled to shut down the hose line.	____	____
3. Signaled to increase the pressure.	____	____
4. Signaled to decrease the pressure.	____	____
5. Signaled to cease operations.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Calculate Pump Operating Pressure

052-249-1124

Conditions: Given a firefighting apparatus, a multistory structure with a basement, the length and diameter of a laid hose line, the type and diameter of the nozzle, the type of the appliances connected to the hose line, and protective clothing.

Standards: Calculate the pump operating pressure to within 10 pounds per square inch (psi).

Performance Steps

1. Use the following pump pressure formula:

   EP = FL + NP + BP

   where—
   EP = engine pump operating pressure
   FL = friction loss
   NP = nozzle pressure
   BP = increase or decrease in elevation

2. Calculate the friction loss.

NOTE: Friction loss is the loss of pressure resulting from the friction between flowing water and the inner lining of the hose line. If the amount of water flowing is increased, the friction loss will be increased. The formula for computing friction loss in hose lines is based on the gallons-per-minute (gpm) flow through 2 1/2-inch hose line. This formula is as follows:
FL = 2Qý + Q or 2 * (Q * Q) + Q (The use of "*" indicates multiplication).

NOTE: The quantity in hundreds of gpm is determined by the following formula:

Q = gpm/100

where—
FL = friction loss
Q = the quantity of water flowing in hundreds of gpm.

The use of "/" indicates division. Example: 200 gpm are flowing through a 2 1/2-inch hose. What is the friction loss per 100 feet of hose? Determine Q: 200/100 = 2 hundreds of gallons. Determine the friction loss per 100 feet of hose: 2Qý + Q = 2 (2 * 2) + 2 = 10 psi loss per 100 feet.

NOTE: When the flow rate is less than 100 gpm, obtain more accurate results by adjusting the formula to: FL = 2Qý + (1/2) Q. Example: 80 gpm are flowing through a 2 1/2-inch hose line. What is the friction loss per 100 feet of hose? Determine Q: 80/100 = 0.8 hundreds of gallons. Determine the friction loss per 100 feet of hose: 2Qý + 1/2Q = 2 * (0.8 * 0.8) + 0.4 = 1.68 psi loss per 100 feet.

NOTE: The formula must be adjusted when the diameter of the hose line is more or less than 2 1/2 inches. To accomplish this, a conversion factor is figured into the end of the formula after the friction loss for 100 feet of 2 1/2-inch hose has been determined. The friction loss for 100 feet of 2 1/2-inch hose line is either divided or multiplied by the conversion factor for the increased or decreased efficiency in the hose line.

NOTE: The friction loss for wye appliances is usually computed at 15 psi.

3. Select the nozzle pressure standard psi.

NOTE: The nozzle pressure was standardized at 50 psi for solid-stream nozzles and 100 psi for fog nozzles when affixed or used on hose lines.

Performance Steps

a. Determine the friction loss for a 2 1/2-inch hose line. Determine Q: 200/100 = 2 hundreds of gallons (200 gpm is used because of the two 1 1/2-inch hose lines with 100 gpm fog nozzles on each line.) Determine the friction loss per 100 feet of hose line: 2Qý + Q = 2 * (2 * 2) + 2 = 10 psi loss per 100 feet of hose line. Multiply the friction loss by the number of 100-foot lengths: 10 psi * 2 = 20 psi loss in the 2 1/2-inch hose line.

b. Determine the friction loss for a 1 1/2-inch hose line, but compute the friction loss as if it were a 2 1/2-inch hose line. Determine Q: 100/100 = 1 hundreds of gallons. Determine the friction loss per 100 feet of hose line: 2Qý + Q = 2 * (1 * 1) + 1 = 3 psi loss per 100 feet of hose line.

c. Convert the friction loss from a 2 1/2-inch hose line to a 1 1/2-inch hose line.

NOTE: Multiplication indicates an increase in the amount of friction loss in the 1 1/2-inch line when compared to the 2 1/2-inch hose line or a decrease in efficiency in the hose line. Division then would indicate the exact opposite of multiplication. Multiply the psi loss per 100 feet of hose line by 13.5: 13.5 * 3 = 40.5 psi friction loss per 100 feet of 1 1/2-inch hose line. Multiply the friction loss by the number of 100-foot lengths: 40.5 psi * 2 = 81 psi loss in the 1 1/2-inch hose line.

d. Determine the total friction loss: 20 + 81 + 15 (wye psi) = 116 psi friction loss. Example: You are pumping into 200 feet of 3-inch hose line with 2 1/2-inch couplings that have been wyed off into two 200-foot lengths of 1 3/4-inch hose line with 1/2-inch couplings, with a 100 gpm fog nozzle on the end of each 1 3/4-inch hose line. What is the friction loss per 100 feet?

(1) Determine the friction loss for the 3-inch hose line by figuring it as if it were a 2 1/2-inch hose line. Determine Q: 200/100 = 2 hundreds of gallons (200 gpm is used because of the two 1 3/4-inch hose lines with 100 gpm fog nozzles on each line). Determine the friction loss per 100 feet of hose line: 2Qý + Q = 2 * (2 * 2) + 2 = 10 psi loss per 100 feet of hose line. Convert the friction loss from a 2 1/2-inch hose line to a 3-inch hose line. Determine the conversion factor for the 3-inch hose line. Multiply the psi loss per 100 feet of hose line by 0.4: (0.4 * 10) = 4 psi friction loss per 100 feet of 3-inch hose line with 2 1/2-inch couplings. Multiply the friction loss by the number of 100-foot lengths: 4 psi * 2 = 8 psi loss in the 3-inch hose line with the 2 1/2-inch couplings.

(2) Determine the friction loss for a 1 3/4-inch hose line with 1 1/2-inch couplings, but figure it first as if it were a 2 1/2-inch hose line. Determine Q: 100/100 = 1 hundreds of gallons. Determine the friction loss per 100 feet of hose line: 2Qý + Q = 2 * (1 * 1) + 1 = 3 psi loss per 100 feet of hose line. Convert the friction loss from a 2 1/2-inch hose line to a 1 3/4-inch hose line. Multiply the psi loss per 100 feet of hose line by 7.76: 7.76 * 3 = 23.28 psi friction loss per 100-feet of 1 3/4-inch hose line with 1 1/2-inch couplings. Multiply the friction loss by the number of 100-foot lengths: 23.28 psi * 2 = 46.56 psi (round up to 47) loss in the 1 3/4-inch hose line.

(3) Calculate the total friction loss: 8 + 47 + 15 (wye psi) = 70 psi friction loss.

NOTE: If the fire streams require great volumes of water or if the hose lays are extremely long, then the friction loss in the hose line will also be greater. To help reduce the degree of pump pressure to overcome the friction loss, parallel lines should be laid and siamesed into a single line near the point of discharge. There are several methods used to calculate the advantage of laying two parallel lines, which are then siamesed into one line, but the easiest method is to divide the total flow by 2 and compute the friction loss using the above formula.

(4) Determine the friction loss for two parallel 2 1/2-inch hose lines. Determine Q: Divide the total flow by 2: 250 gpm/2 = 125 gpm 125/100 = 1.25 hundreds of gallons. Determine the friction loss per 100 feet of hose line: 2Qý + Q = 2 * (1.25 * 1.25) + 1.25 = 6.25 psi loss per 100 feet of hose line. Multiply the friction loss by the number of 100-foot lengths: 6.25 psi * 15 = 93.55 psi friction loss in the 2 1/2-inch hose line.

(5) Determine the friction loss for a 2 1/2-inch hose line after the siamese hose. Determine Q: 250/100 = 2.5 hundreds of gallons. Determine the friction loss per 100 feet of hose line: 2Qý + Q = 2 * (2.5 * 2.5) + 2.5 = 15 psi loss per 100 feet of hose line.

(6) Add the friction loss for the siamese hose, which is standardized at 10 psi.

(7) Calculate the total friction loss: 93.55 + 15 + 10 (siamese) = 128.55 psi friction loss.

4. Calculate for increased or decreased elevation.

Performance Steps

a. Increase in elevation: Add 5 psi friction loss to the pump operating pressure for every 10 feet (one floor) in elevation that the nozzle is raised aboveground. This helps to overcome the resistance of pushing water upward.
b. Decrease in elevation: Subtract 5 psi friction gain from the pump operating pressure for every 10 feet (one floor) in elevation that the nozzle is lowered belowground. This allows for the increased efficiency water gains as it flows downward.

5. Add all three of the following elements which results in the pump operating pressure:
   a. Friction loss.
   b. Nozzle pressure.
   c. Elevation increase or decrease.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to calculate the pump operating pressure to within 10 psi.

Performance Measures	**GO**	**NO GO**
1. Used the pump pressure formula.	____	____
2. Calculated the friction loss.	____	____
3. Selected the nozzle pressure standard psi.	____	____
4. Calculated for increased or decreased elevation.	____	____
5. Added all three elements, which resulted in the pump operating pressure.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	**Related**
	IFSTA MANUALS
	LO 5-4210-220-12
	TM 5-4210-220-12

Perform Alarm Duties

052-249-1125

Conditions: Given an alarm room communications center with emergency receiving and recording equipment, a telephone, radios, a pencil, red and black pens, a logbook, paper, an emergency recording board, an area or installation map, a firefighter with a radio to act as the distant engine company, an emergency, and the department standing operating procedure (SOP).

Standards: Perform alarm duties.

Performance Steps

1. Test and monitor all the equipment.
   a. Test the automatic alarm devices.
   b. Test the emergency telephone recording devices.
   c. Monitor the radios.
   d. Maintain the logbook.
   e. Update the installation or area map.
   f. Conduct a roll call.

NOTE: Immediately contact by telephone any satellite fire station that does not respond to the roll call to determine why they did not respond. If they did not respond because their radio is not working, notify the assistant chief and report the required repair to the proper agency.

2. Conduct emergency procedures.
   a. Respond to the telephonic receipt of an emergency.
      (1) Remain calm.
      (2) Note the time of the call.
      (3) Obtain information from the caller, including the—
         (a) Location of the emergency (building, street, or area).
         (b) Type of emergency (fire, rescue, vehicle accident).
         (c) Life hazard that is involved (number of personnel trapped in the structure or vehicle).
         (d) Name and telephone number of the caller.
      (4) Reassure the caller.
      (5) Tell the caller not to hang up.
      (6) Dispatch the appropriate engine company or support agencies, including the—
         (a) Military police.
         (b) Ambulance.
         (c) Department of public works (DPW).
      (7) Notify the assistant chief.
      (8) Tell the caller that you have dispatched help.
      (9) Obtain any other information.
      (10) Repeat the caller's name and phone number back to him to ensure that you have the correct information, and let him hang up first.
      (11) Monitor transmissions from the on-scene fire officials.
      (12) Dispatch additional equipment or other agencies as requested by the on-scene fire chief.
      (13) Annotate all essential information relative to the emergency. Use red ink to make emergency entries in the logbook.
   b. Monitor the automatic alarm devices, including the—
      (1) Automatic sprinklers.
      (2) Fire alarm pull boxes.
      (3) Smoke detectors that transmit a signal to the fire department.
         (a) Note the code as it is recorded on the tape or display window, and record the time.
         (b) Locate the building or area.
         (c) Dispatch the appropriate engine company.
         (d) Notify the assistant chief.
         (e) Notify the support agencies.

Performance Steps

NOTE: Prefire plans on commercial buildings contain the support agency response information.

(f) Monitor the radio transmission from the responding engine company.

(g) Annotate all essential information relative to the emergency.

3. Maintain the logbook.
   a. Record all of the information into the logbook legibly.
   b. Brief the incoming alarm operator prior to the ending shift.
   c. Close out the shift by signing your name directly after the last entry made. Use black ink to make these entries in the logbook.

Evaluation Preparation: Setup: Provide the soldier with all items listed in the conditions.

Brief soldier: Tell the soldier to perform alarm duties.

Performance Measures	**GO**	**NO GO**
1. Tested and monitored all the equipment.	____	____
2. Conducted emergency procedures.	____	____
3. Maintained the logbook.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related

IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Perform Rescue Carries

052-249-1131

Conditions: Given an aircraft crash or structural fire scene, victims, protective clothing, a self-contained breathing apparatus (SCBA), a lifeline, a firefighting apparatus, a hose line with a nozzle, and one assistant firefighter to operate the nozzle and assist with two-firefighter rescue carries.

Standards: Perform rescue carries.

Performance Steps

DANGER: BEFORE MOVING ANY VICTIM, DETERMINE THE EXTENT OF INJURIES. MAKE A QUICK SURVEY OF THE VICTIM TO DETERMINE IF HE HAS LIFE-THREATENING INJURIES. EVEN THOUGH TIME IS CRITICAL, YOU MUST CONDUCT AN INITIAL SURVEY. IMPROPERLY MOVING AN INJURED VICTIM COULD CAUSE FURTHER INJURY OR RESULT IN DEATH.

NOTE: When you locate numerous victims at the same time, first rescue the victims closest to egress points and ones you can easily free. Then, rescue trapped victims with serious injuries or victims requiring more involved rescue efforts.

1. Perform single-firefighter rescue carries.
    a. Perform a close-fisted drag.
        (1) Determine the extent of injuries.
        (2) Kneel at the victim's head.
        (3) Grasp the victim under the armpits, one hand under each armpit.
        (4) Extend backward as far as possible while still on your knees.
        (5) Pull the victim to your position.
        (6) Repeat until the victim is removed from the hazardous environment.
    b. Perform a back-strap carry.

NOTE: Use this carry if the victim does not have serious injuries and if the victim's weight is equal to or less than your own. Also, use this carry on unconscious victims.

NOTE: You cannot perform this carry if the victim has broken bones or if you are wearing an SCBA.

        (1) Position the victim on his back.
        (2) Lie down with your back on the victim's chest.
        (3) Reach over and grab one of the victim's arms, pull it over your shoulder, and hold his arm against your chest with the opposite hand.
        (4) Grab the victim's clothing at his hip area with your free hand, and roll over until the victim is on your back.
        (5) Raise yourself to both knees while holding the victim on your back.
        (6) Slide one of your feet forward, and balance yourself on the ball of your foot.
        (7) Slide your second foot forward as you rise to a standing position.
    c. Perform a fireman carry.

NOTE: The fireman carry lets you carry a victim a considerable distance without becoming fatigued. You also have a free hand to perform actions, such as opening a door.

NOTE: You cannot perform this carry if the victim has broken bones or if you are wearing an SCBA.

        (1) Place the victim facedown with his head resting on his arm.
        (2) Straddle the victim's back, and place your hands under his armpits.
        (3) Lift the victim to a standing position.
        (4) Support the victim by placing your arm around his waist.
        (5) Step in front of the victim with one leg, and place it between his legs.
        (6) Grab the victim's right (left) wrist as you place your right (left) shoulder in his midsection.

Performance Steps

(7) Pull the victim's right (left) arm around the back of your neck as you assume a squatting position.

NOTE: The victim should now be draped across your shoulders.

(8) Slip your free hand between the victim's legs and around one of his knees.
(9) Bring the victim's wrist down to your hand, which is wrapped around his knee, and grab his wrist with your hand.
(10) Lift straight upward.

CAUTION: RAISE THE VICTIM TO A STANDING POSITION USING YOUR LEG MUSCLES. YOU COULD INJURE YOUR BACK IF YOU TRY TO LIFT THE VICTIM'S WEIGHT WITH YOUR BACK.

(11) Raise the victim to a standing position.

d. Perform an arms carry.
(1) Grab the victim around the back, and place your hand under his armpit.
(2) Place your other hand under his legs and around his knees.
(3) Lift the victim to chest level using your leg muscles as you rise up.
(4) Carry the victim high to reduce the extent of fatigue.

2. Perform two-firefighter rescue carries.
a. Perform a seat carry.
(1) Extend both arms and grab the arms of the second rescuer just below the elbow.
(2) Let the victim seat himself on your arms.
(3) Tell the victim to place his arms around the shoulders of the rescuers.
(4) Carry the victim to safety.
b. Perform a chair carry.
(1) Position the victim in the chair in a seated position.
(2) Grab the top of the chair while the other rescuer grabs the legs or bottom of the chair.
(3) Carry the victim to safety.
c. Perform an extremities carry.
(1) Position the victim on his back.
(2) Face away from the victim and grab the victim by the legs while the other rescuer grabs the victim under his arms and around his chest.
(3) Lift the victim, and carry him to safety.

Evaluation Preparation: Setup: Provide the soldier with all items listed in the conditions.

Brief soldier: Tell the soldier to perform rescue carries.

Performance Measures	**GO**	**NO GO**
1. Performed single-firefighter rescue carries.	____	____
2. Performed two-firefighter rescue carries.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	**Related**
	IFSTA MANUALS
	LO 5-4210-220-12
	NFPA 1001
	TM 5-4210-220-12

Operate a Fire Extinguisher

052-249-1136

Conditions: Given a fire scene, protective clothing and equipment; a self-contained breathing apparatus (SCBA); and the following fire extinguishers: carbon dioxide; pressurized-water; Halon 1211; Halon 1301; multipurpose, dry-chemical; pressurized, dry-chemical; cartridge-operated, dry-chemical; and pressurized dry-powder extinguisher.

Standards: Operate a fire extinguisher.

Performance Steps

1. Identify the fire materials by class.
    a. Identify Class A materials. They are composed of ordinary combustible materials (primarily vegetable fibers), such as wood, paper, cotton, straw, grain, grass, and combustible minerals (coal and coke).
    b. Identify Class B materials. They are composed of flammable liquids, such as gasoline, fuel oils, lubricating oils, and greases; animal fats (butter, lard, and tallow); vegetable compounds (shortenings and margarines); and natural and compressed gases (butane, propane, hydrogen, and acetylene).
    c. Identify Class C materials. They are electrical materials, such as computer equipment and electrical motors, appliances, and machinery.

DANGER: ELECTRICAL SHOCK IS AN ADDED DANGER IN CLASS C FIRES. YOU MUST BE EXTREMELY CAREFUL WHEN SELECTING AN EXTINGUISHING AGENT TO COMBAT CLASS C FIRES TO ENSURE THAT THE EXTINGUISHING AGENT IS NOT A CONDUCTOR OF ELECTRICITY.

    d. Identify Class D materials. They are composed of combustible metals, alloys, or metal compounds, such as sodium, titanium, uranium, magnesium, sodium potassium, iron, aluminum, steel, copper, and brass. These metals usually exist in a solid, semisolid, or liquid state. They can also be found in a reduced state of shavings, grindings, granules, or dust.

DANGER: APPLYING AN INCORRECT EXTINGUISHING AGENT ON A CLASS D FIRE COULD RESULT IN A VIOLENT EXPLOSION.

2. Identify a fire extinguisher to effectively extinguish a fire by class.
    a. Identify a fire extinguisher for Class A fires, including—

NOTE: Lowering the temperature of the burning material or interrupting the chemical chain reaction are the most effective ways to extinguish Class A fires.

        (1) Water, wet water, or aqueous film-forming foam (AFFF) because they lower the temperature of the burning material.
        (2) Multipurpose, dry-chemical; Halon 1211; or Halon 1301 because they interrupt the chemical chain reaction.

NOTE: Halon agents and AFFF are expensive to replace. Try to use other agents before choosing them.

    b. Identify a fire extinguisher for Class B fires, including—

NOTE: Smothering the fire, interrupting the chemical chain reaction, or removing the fuel are the most effective ways to extinguish Class B fires.

        (1) Carbon dioxide, which smothers the fire and displaces the oxygen.
        (2) Halon 1211 or 1301, which interrupt the chemical chain reaction.
        (3) Dry-chemical or multipurpose, dry-chemical, which interrupt the chemical chain reaction.
        (4) AFFF, which reduces the heat of the burning material and seals the fuel surface to prevent fuel vapors from escaping and causing flashbacks.

NOTE: You can use water to extinguish a Class B fire if you can apply the water in large quantities. Applying water reduces the heat in the burning material or displaces the oxygen and smothers the fire. However, water is not considered an effective agent because Class B fires burn hotter than Class A fires, requiring larger quantities of water.

    c. Identify a fire extinguisher for Class C fires, including—

Performance Steps

NOTE: If possible, shut off the power to the equipment, room, or building. Then, treat and extinguish the fire depending on the burning material. Use the extinguishing agent that corresponds to the class of burning material. The most effective extinguishing agents are those that are not conductors of electricity.

(1) Carbon dioxide, which smothers the fire and displaces the oxygen.
(2) Halon 1211 or 1301, which interrupt the chemical chain reaction.
(3) Dry-chemical or multipurpose, dry-chemical, which interrupt the chemical chain reaction.

DANGER: DO NOT USE WATER OR AFFF TO EXTINGUISH CLASS C FIRES. SUCH AGENTS ARE EXCELLENT CONDUCTORS OF ELECTRICITY.

WARNING: DO NOT USE DRY-CHEMICAL AGENTS TO EXTINGUISH CLASS C FIRES UNLESS ABSOLUTELY NECESSARY. THE CHEMICALS DAMAGE EQUIPMENT. ALSO, IT IS EXPENSIVE TO CLEAN THE DRY-CHEMICAL AGENT OFF THE EQUIPMENT.

d. Identify an extinguisher for Class D fires, including—

DANGER: USE G-1 POWDER ONLY ON FIRES INVOLVING MAGNESIUM AND MAGNESIUM ALLOY. YOU CAN USE MET-L-X POWDER ON VARIOUS TYPES OF METAL FIRES. READ THE MANUFACTURER INSTRUCTION PLATE FASTENED TO THE FRONT OF THE FIRE EXTINGUISHER. USING THE WRONG POWDER ON A FIRE INVOLVING METALS COULD RESULT IN A SERIOUS EXPLOSION, THE RELEASE OF TOXIC GASES, OR BOTH.

DANGER: DO NOT CONFUSE THE DRY-CHEMICAL FIRE EXTINGUISHER WITH THE DRY-POWDER FIRE EXTINGUISHER. SERIOUS INJURY COULD RESULT.

(1) Smother the fire, and reduce the temperature.
(2) Use dry powder to smother the fire.

NOTE: G-1 and Met-L-X powders are available in pails or barrels. Scoop these powders onto the fire. Met-L-X powder is also available in a cartridge-operated fire extinguisher that is similar to the cartridge-operated dry-chemical fire extinguisher.

3. Select the fire extinguisher best-suited for the fire.

4. Combat the fire.
   a. Carry the fire extinguisher to the fire location.

NOTE: If you are outdoors, approach the fire with the wind at your back, whenever possible. The extinguishing agent will go farther, and the wind will not blow the agent back to you.

   b. Place the fire extinguisher on the ground.
   c. Break and remove the seal from the fire extinguisher.

NOTE: If the fire extinguisher is cartridge-operated, break the seal over the puncture handle and depress it. The substance in the cartridge should flow into the fire extinguisher and charge it.

   d. Grab the discharge handle, and aim the nozzle at the front base of the fire.

WARNING: WHEN OPERATING A CARBON DIOXIDE FIRE EXTINGUISHER, GRAB THE DISCHARGE HORN BY THE WOODEN OR INSULATED HANDLE. DO NOT PLACE YOUR BARE HAND ON THE NONINSULATED PART OF THE HORN. YOU COULD BE INJURED BECAUSE CARBON DIOXIDE IS EXTREMELY COLD WHEN DISCHARGED.

   e. Depress the discharge handle, and discharge the agent at the fire.

CAUTION: WHEN USING CARBON DIOXIDE FIRE EXTINGUISHERS ON A CLASS C FIRE, ENSURE THAT THE FIRE EXTINGUISHER REMAINS IN CONTACT WITH THE GROUND. DOING SO REDUCES THE POSSIBILITY OF STATIC ELECTRICITY BUILDUP.

   f. Sweep the agent across the fire by moving the nozzle back and forth.
   g. Continue to discharge the agent until the fire is extinguished or until the fire extinguisher is empty.
   h. Check the area to ensure that the fire is completely extinguished.
   i. Apply the extinguishing agent to any area with glowing embers or smoldering hot spots.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to operate a fire extinguisher.

Performance Measures	GO	NO GO
1. Identified the fire materials by class.	____	____
2. Identified a fire extinguisher to effectively extinguish the fire by class.	____	____
3. Selected the fire extinguisher best-suited for the fire.	____	____
4. Combated the fire.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Operate a Self-Contained Breathing Apparatus

052-249-1137

Conditions: Given a self-contained breathing apparatus (SCBA), spare bottles, and a set of protective clothing.

Standards: Operate a SCBA in 60 seconds.

Performance Steps

1. Identify and operate the type of SCBA.

NOTE: The positive-pressure SCBA units are activated by opening the cylinder valve. These units function based on pressure. Do not open the cylinder valve unless you have your mask on and it is connected to the regulator; otherwise, the air will freely flow out of the cylinder.

NOTE: Some SCBA models are equipped with a switch. You can use these SCBA models in demand or positive-pressure mode.

   a. Identify and operate the Interspiro© SCBA.
      (1) Activate the positive pressure by closing the spiro-hatch.
      (2) Use the bypass valve on the unit to relieve the pressure for doffing.
   b. Identify and operate the Scott® SCBA.
      (1) Activate the positive pressure by inhaling sharply.
      (2) Use the purge valve on the unit to relieve the pressure for doffing.

2. Place the SCBA unit on your back and adjust all the straps.

NOTE: You may use the coat or over-the-head method for this event.

3. Don the mask, and tighten the head harness.

4. Check the seal of the mask by covering the breathing tube with your thumb and slowly inhaling.

NOTE: The mask should collapse against your face. Readjust the mask if you detect leaks.

5. Check the exhalation valve by inhaling, covering the end of the breathing tube, and exhaling.

NOTE: If the exhalation tube does not function properly, keep the end of the breathing tube sealed, press the mask against your face, and blow forcibly to free the exhalation valve.

6. Open the cylinder valve fully.

NOTE: If the SCBA is a positive-pressure unit, do not open the cylinder valve until you connect the breathing tube to the regulator.

7. Connect the hose to the regulator.

8. Open the main line valve mounted on the regulator.

9. Check for leaks, and readjust the mask as necessary.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to operate a SCBA in 60 seconds.

Performance Measures	**GO**	**NO GO**
1. Identified the types of SCBA.	____	____
2. Placed the SCBA unit on your back and adjusted all straps.	____	____
3. Donned the mask and tightened the head harness.	____	____

Performance Measures	GO	NO GO
4. Checked the seal of the mask.	____	____
5. Checked the exhalation valve.	____	____
6. Opened the cylinder valve fully.	____	____
7. Connected the hose to the regulator.	____	____
8. Opened the main line valve mounted on the regulator.	____	____
9. Checked for leaks, and readjusted the mask as necessary.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Use Firefighting Tools and Equipment

052-249-1138

Conditions: Given a firefighting apparatus, protective clothing and equipment, one assistant firefighter, and all necessary firefighting tools and equipment.

Standards: Use firefighting tools and equipment.

Performance Steps

1. Demonstrate the use of structural firefighting tools and equipment.
    a. Use a spanner wrench.
        (1) Use the wrench to tighten and untighten hose couplings.
        (2) Use the long, tapered end to remove door hinge pins.
        (3) Pry open the light objects.
        (4) Close the gas cocks.
    b. Use a hydrant wrench.
        (1) Open or close the fire hydrant.
        (2) Remove or replace the hydrant caps.
        (3) Tighten or loosen the hose coupling connections.
    c. Use a rubber mallet. Tighten or loosen the hard suction hose lines on the pumper intake connections.
    d. Use a pike pole.
        (1) Pull down the plaster or lath from the ceiling.
        (2) Open a window.
        (3) Punch holes through the subceilings for ventilation.
        (4) Separate the burned or burning materials.
    e. Use bolt cutters. Cut any bolt or rod up to 5/8 inch in diameter (except hardened bolts or rods).

DANGER: DO NOT USE BOLT CUTTERS ON ANY MATERIAL CARRYING A LIVE ELECTRICAL LOAD. YOU COULD BE ELECTROCUTED.

    f. Use a pick head ax.
        (1) Open the windows.
        (2) Open the doors.
        (3) Cut the flooring.
        (4) Cut the roofing.
        (5) Remove the door hinge pins.
        (6) Smash the windows.
        (7) Pull down the lath or plaster from the ceiling.
    g. Use a door opener (claw tool).

WARNING: THE TAPERED HOOK IS VERY SHARP. BE CAREFUL WHEN WORKING WITH IT.

        (1) Pry the doors open.
        (2) Pry the windows open.
        (3) Remove the door hinge pins.
        (4) Batter-down the door.
        (5) Use the claw to remove any nails or spikes.
    h. Use a crowbar (wrecking bar).
        (1) Tear away the lath or plaster.
        (2) Remove the metal composition roofs or ceilings.
    i. Use a K-12 rescue saw. Cut with one of the three blades designed for the saw.
    j. Use a hose strap.
        (1) Move a charged hose line.
        (2) Anchor the hose line to a stationary object.
        (3) Assist in holding a nozzle.
    k. Use a solid-stream nozzle. Change the nozzle tips quickly without shutting down the line.
    l. Use an adjustable fog nozzle. Change from a straight stream to a fog stream.

Performance Steps

m. Use a hose clamp. Stop or start the water flow using a smooth, steady motion.
n. Use a wye connection.
   (1) Use a gated connection.
   (2) Use a nongated connection.
o. Use a siamese.
   (1) Attach a siamese with a clapper valve.
   (2) Attach a siamese without a clapper valve.
p. Use a double-male or double-female coupling. Connect the hoses together.
q. Use a hose jacket.
   (1) Stop a coupling from leaking.
   (2) Jacket a ruptured hose line.

2. Demonstrate the use of crash firefighting tools and equipment.
   a. Use a metal-cutting saw to cut a metal object.
   b. Use lineman pliers to cut small wires.
   c. Use cable cutters to cut a charged electrical cable up to 3/8 inch in diameter.
   d. Use a V blade rescue knife (harness cutter) to cut seat belts or harnesses.
   e. Use a hacksaw frame and blades to cut light metal or rods.
   f. Use a dzus key (wrench).
      (1) Open the compartments on an aircraft.
      (2) Access various panels on an aircraft.
   g. Use a crash ax to cut the metal skin on a aircraft.
   h. Use a K-12 rescue saw to cut with one of the three blades designed for the saw.
   i. Use the wooden or rubber pegs to impede or stop a fuel, hydraulic, or engine leak.

3. Demonstrate the use of brush firefighting tools and equipment.
   a. Use a shovel.
      (1) Cover the fire with dirt.
      (2) Uncover the fire in roots, peat, or moss.
   b. Use a brush hook to cut down small trees, heavy brush, bushes, or grass.
   c. Use a fire broom.
      (1) Knock down the fire.
      (2) Beat out the fire.
   d. Use a water pack to extinguish slow-moving fire.
   e. Use a mattock to chop, cut, clear, or dig.
   f. Use a fire rake to move leaves, grass, or weeds from the fire area.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to use firefighting tools and equipment.

Performance Measures	**GO**	**NO GO**
1. Demonstrated the use of structural firefighting tools and equipment.	____	____
2. Demonstrated the use of crash firefighting tools and equipment.	____	____
3. Demonstrated the use of brush firefighting tools and equipment.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	**Related**
	IFSTA MANUALS
	LO 5-4210-220-12

References

Required

Related

TM 5-4210-220-12

Employ an Extension Ladder

052-249-1139

Conditions: Given a firefighting apparatus, protective clothing, a self-contained breathing apparatus (SCBA), a fire scene, and additional firefighters.

Standards: Employ an extension ladder.

Performance Steps

1. Carry the ladder.
   a. Perform a four-man carry (35-foot ladder).
      (1) Position yourself at one end, one additional firefighter at the other end, and two firefighters on each side of the ladder.
      (2) Face the same direction, and assume a kneeling position.

NOTE: The firefighters positioned at each end of the ladder should grab the same rung on their respective end for even lifting.

      (3) Reach down and grab a rung of the ladder with your hand closest to the ladder.

CAUTION: LIFT AND LOWER HEAVY EQUIPMENT USING YOUR LEG MUSCLES, NOT YOUR BACK.

NOTE: To ensure that the firefighters lift the ladder in unison, one firefighter should assume the lead position. Generally, the firefighter at the left rear (when lifting) and right front (when carrying) gives the commands to kneel, grab, and lift the ladder and the commands while moving the ladder to the designated area. The leader is then responsible for the commands to raise and secure the ladder.

      (4) Stand and raise the ladder straight up while rotating your bodies 180°, and place the ladder on your shoulder opposite the lifting hand on the command "lift."
      (5) Carry the ladder to the designated area, with the right front firefighter giving the movement commands and acting as a safety guide.
      (6) Place the ladder at the designated area as close to the structure as possible.
      (7) Lower the ladder, with the right front firefighter facing the structure (heel of the ladder toward the structure).
      (8) Lower the ladder to the ground opposite the way you lifted it. (Grab the rung with your hand opposite the shoulder your ladder is resting on. On the command "lower," raise the ladder off your shoulder while rotating your body 180°. Lower the ladder to the ground and assume a kneeling position.)
   b. Perform a two-man carry (24-foot ladder).
      (1) Position yourself at one end of the ladder and one additional firefighter at the other end.
      (2) Face the same direction, and assume a kneeling position.
      (3) Reach down and grab a rung of the ladder with your hand closest to the ladder.
      (4) Stand and raise the ladder straight up while rotating your bodies 180°, place your arm between two rungs, and rest the rung on your shoulder opposite the lifting hand on the command "lift."
      (5) Carry the ladder to the designated area, with the front firefighter giving the movement commands and acting as a safety guide.
      (6) Place the ladder at the designated area as close to the structure as possible.
      (7) Lower the ladder, with the front firefighter facing the structure (heel of the ladder toward the structure).
      (8) Lower the ladder to the ground opposite the way you lifted it. (Grab the rung with your hand opposite the shoulder the ladder is resting on. On the command "lower," raise the ladder off your shoulder while rotating your body 180°. Lower the ladder to the ground and assume a kneeling position.)

2. Raise the ladder.
   a. Raise a 35-foot extension ladder.

Performance Steps

(1) Secure the ladder with one firefighter positioned at the heel.
(2) Position yourself at the top with one additional firefighter.
(3) Raise the ladder. The two firefighters at the top kneel down and grab the ladder by the beam and raise the ladder upward. As the firefighters raise the ladder vertically, they position themselves under the ladder, on the command "raise the ladder."
(4) Guide and steady the ladder until it is perpendicular to the ground, using the two firefighters at the top of the ladder.
(5) Steady the front of the ladder, while the other firefighters untie the halyard and prepare to raise the fly.
(6) Raise the fly to the desired height.
(7) Secure the ladder by locking the pawls and tying the halyard securely to a bottom rung on the ladder.
(8) Use either of the following methods to determine the correct climbing angle:
(a) Method 1. Divide the needed length by 5 and add 2. For example: 24 feet divided by 5 + 2 = 6 feet.
(b) Method 2. Divide the needed length by 4. For example: 35 feet divided by 4 = 8 feet (rounded down).
(9) Move the ladder outward until you get the proper climbing angle.

b. Raise a 24-foot extension ladder.
(1) Position yourself at the heel to secure the ladder.
(2) Position one firefighter at the top of the ladder to serve as the raiser.
(3) Kneel down and grab the ladder by the rungs, and raise the ladder upward.
(4) Guide and steady the ladder until it is perpendicular to the ground.
(5) Steady the front of the ladder, while the first firefighter unties the halyard and prepares to raise the fly.
(6) Raise the fly to the desired height.
(7) Secure the ladder by locking the pawls and tying the halyard securely to a bottom rung on the ladder.
(8) Use either of the following methods to determine the correct climbing angle:
(a) Method 1. Divide the needed length by 5 and add 2. For example: 24 feet divided by 5 + 2 = 6 feet.
(b) Method 2. Divide the needed length by 4. For example: 35 feet divided by 4 = 8 feet (rounded down).
(9) Move the ladder outward until you get the proper climbing angle.

3. Climb the ladder.

NOTE: Before climbing the ladder, make sure that the climbing angle is correct, the pawls are locked, and the halyard is securely fastened to the ladder.

a. Keep one hand in contact with the ladder at all times.
b. Keep your body upright, with your eyes forward.
c. Place your boot in the center of the rung to keep the ladder as steady as possible.
d. Climb the ladder using your legs, not your hands.
e. Use the balls of your feet against the rung for leverage.

CAUTION: WHEN CLIMBING THE LADDER DURING WET OR ICY CONDITIONS, PLACE THE ARCH OF YOUR BOOT AGAINST THE RUNG AS AN ADDED SAFETY MEASURE.

WARNING: AS YOU CLIMB THE LADDER, DO NOT REACH UP FOR A RUNG. THIS ACTION WILL PULL YOU INTO THE LADDER.

4. Lock into the ladder.
a. Stand with both feet on the same rung.
b. Raise your leg opposite the work side on the upward two rungs and over the second rung.
c. Pass your leg down one rung and wrap it around the rung or the beam.

CAUTION: FOR SAFETY AND IF TIME AND CONDITIONS PERMIT, ANCHOR THE LADDER TO THE STRUCTURE USING A HOSE STRAP OR ROPE.

Evaluation Preparation: Setup: Provide the soldier with all items listed in the conditions.

Brief soldier: Tell the soldier to employ an extension ladder.

Performance Measures	GO	NO GO
1. Carried the ladder.	____	____
2. Raised the ladder.	____	____
3. Climbed the ladder.	____	____
4. Locked into the ladder.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Operate the Turret(s) of a Firefighting Apparatus

052-249-1144

Conditions: Given a firefighting apparatus, an aircraft crash scene, and protective clothing.

Standards: Operate the turret(s) of a firefighting apparatus.

Performance Steps

1. Operate the roof or bumper turret in a stationary position.

CAUTION: DOUBLE-CHECK THAT THE AIR BRAKES HAVE BEEN SET AND THAT THE GEAR SELECTOR IS LOCKED INTO THE NEUTRAL POSITION.

a. Place the MODE selector switch to the CFR position.
b. Place the TANK VALVE switch to the OPEN position.
c. Open the roof or bumper turret valve.

NOTE: Opening the valve lessens the chance of water hammer on the water delivery system.

d. Adjust the roof or bumper turret spray pattern control to STRAIGHT or DISPERSED.

NOTE: The roof turret can reach 205 feet at 500 gallons per minute on a straight stream and 125 feet at 500 gallons per minute on a dispersed stream.

NOTE: Always use the roof turret when creating a rescue path for firefighters.

e. Place the PUMP switch in the ON position.

NOTE: One hand should control the turret being used at all times.

f. Place the WATER EDUCTOR switch in the OPEN position.
g. Place the FOAM VALVE switch in the OPEN position.
h. Adjust the FOAM METERING VALVE to 6 PERCENT.

NOTE: If the foam metering valve on the structural pump panel is set at 6 percent also, the flow will be 12 percent water and foam solution. Always set the structural pump panel valve to 0 percent when not in use.

i. Operate the apparatus accelerator, and throttle-up the engine to the required gallons per minute.

DANGER: KEEP YOUR LEFT FOOT FIRMLY ON THE APPARATUS'S BRAKE PEDAL WHILE OPERATING THE FIREFIGHTING APPARATUS. IF IT GOES INTO GEAR, SERIOUS INJURY OR DEATH COULD BE CAUSED TO FIREFIGHTERS ON THE GROUND.

WARNING: DO NOT ENGAGE THE GOVERNOR. IT HAS A MECHANICAL DEFECT THAT WILL RACE THE ENGINE UNCONTROLLABLY AND POSSIBLY DAMAGE THE PUMP, ENGINE, AND WATER DELIVERY SYSTEMS.

j. Rotate the turret handle, side to side, opening a rescue path for the firefighting crew.

NOTE: Remember that you have 660 gallons of water. If you use the roof turret for more than 60 seconds, you will be out of water and become ineffective for the firefighting operation.

NOTE: Reapply foam as needed to maintain the rescue path. Foam will dissipate in about 20 to 40 minutes (sooner if there is a strong wind). Reapply foam as long as necessary when anyone is in the immediate vicinity of the aircraft.

k. Perform steps 1a through 1j in reverse order to shut down the operation.

2. Operate the roof or bumper turret from pump-and-roll.
   a. Arrive on the scene, positioning the apparatus where it will be most effective.
   b. Place the MODE selector switch in the CFR position.
   c. Place the TANK VALVE switch in the OPEN position.
   d. Open the roof or bumper turret valve.

NOTE: Opening the valve lessens the chance of water hammer on the water delivery system.

e. Adjust the roof or bumper turret spray pattern control to STRAIGHT or DISPERSED.

Performance Steps

NOTE: The roof turret can reach 205 feet at 500 gallons per minute on a straight stream and 125 feet at 500 gallons per minute on a dispersed stream.

NOTE: Always use the roof turret when creating a rescue path for firefighters.

f. Place the PUMP switch in the ON position.

NOTE: One hand should be in control of the turret being used at all times.

g. Place the WATER EDUCTOR switch in the OPEN position.
h. Place the FOAM VALVE switch in the OPEN position.
i. Adjust the FOAM METERING VALVE to 6 PERCENT.

NOTE: If the foam metering valve on the structural pump panel is set at 6 percent also, the flow will be 12 percent water and foam solution. Always set the structural pump panel valve to 0 percent when not in use.

j. Operate the apparatus accelerator, and throttle-up the engine to the required gallons per minute.

DANGER: THE APPARATUS WILL WANT TO GO FORWARD AS YOU PRESS THE ACCELERATOR TO BRING UP THE WATER PRESSURE. ENSURE THAT YOU HAVE FULL CONTROL OF THE APPARATUS (FOOT ON THE BRAKE AND HAND ON THE STEERING WHEEL.) THE LOSS OF CONTROL COULD SERIOUSLY INJURE OR KILL THE FIREFIGHTING CREW, VICTIMS IN THE AIRCRAFT, OR ONLOOKERS AT THE SCENE.

k. Rotate the turret handle, side to side, opening a rescue path for the firefighting crew.
l. Stop the vehicle a safe distance from the scene for firefighters to dismount the vehicle.

DANGER: ALWAYS REMEMBER THAT THE APPARATUS IS IN A FORWARD DRIVE GEAR DURING THIS OPERATION. NEVER REMOVE YOUR LEFT FOOT FROM THE BRAKE PEDAL.

m. Perform steps 2b through 2j in reverse order to shut down the operation.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to operate the turret(s) of a firefighting apparatus.

Performance Measures	**GO**	**NO GO**
1. Operated the roof or bumper turret in a stationary position.	____	____
2. Operated the roof or bumper turret from the pump-and-roll.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	**Related**
	IFSTA MANUALS LO 5-4210-220-12 NFPA 1001 TM 5-4210-220-12

React to Various Fire Behaviors

052-249-1149

Conditions: Given a classroom environment and reference materials.

Standards: React to various fire behaviors.

Performance Steps

1. Identify the following methods of heat transfer:

NOTE: One natural law is the law of heat flow. Heat tends to flow from a hot substance to a cold substance. The colder of two objects in contact will absorb heat until both objects are the same temperature.

   a. Conduction. In the early stages of fire, heat transfer is primarily due to conduction. Fire spreads slowly during conduction.

NOTE: During the point-to-point transmission of heat energy, heat can be transferred through the direct contact of two objects.

   b. Convection. During convection, heated air or vaporized liquids expand and rise. The heat rises to the highest point and spreads outward until it runs out of ceiling space and then travels back toward the floor.
   c. Heat transfer. During heat transfer, radiated heat travels until it reaches an opaque object. As an object is exposed to heat radiation, it radiates heat from its surface. Radiation is the cause of most exposure fires.

2. Identify the following elements of fire tetrahedron:
   a. Oxygen.
   b. Fuel.
   c. Heat.
   d. Self-sustained chemical reaction.

3. Identify the following fuel-reducing agent forms:
   a. Solid. Pyrolysis is the chemical decomposition of a substance through the action of heat. Pyrolysis is the process of solid-producing gases that burn.

NOTE: Fuel gases evolve from solid fuels by pyrolysis.

   b. Liquid. Vaporization is changing from a liquid to a gaseous state. The rate of vaporization depends on the liquid involved and the amount of heat.

NOTE: Fuel gases are evolved from liquids by vaporization.

   c. Gases.

NOTE: Gases are in the natural state required for ignition. No pyrolysis or vaporization is needed.

4. Define the following combustion processes:
   a. Flash point— the minimum temperature at which a liquid gives off enough vapors to form an ignitable mixture with air near the liquid surface.
   b. Fire point— the temperature at which a liquid fuel produces sufficient vapors to support combustion once the fuel is ignited.
      (1) The fire point is a few degrees above the flash point.
      (2) The fire point is also called the burning point.
   c. Ignition temperature— the minimum temperature to which a fuel in the air must be heated in order to start self-sustained combustion independent of the heating source.
   d. British thermal unit (BTU)— the amount of heat energy required to raise the temperature of 1 pound of water 1°F.

5. Recognize the following phases of the fire:
   a. Ignition. Ignition can be a result of a flame (piloted) or caused when the material reaches its ignition temperature (nonpiloted).

NOTE: This is the earliest phase of a fire.

      (1) Recognize the following hazards during the ignition phase:

Performance Steps

(a) Oxygen content is high.
(b) Fire is producing water vapor.
(c) Carbon dioxide.
(d) Small quantities of sulfur dioxide.
(e) Carbon monoxide.

(2) Perform the following actions during the ignition phase:
(a) Attack the seat of the fire.
(b) Ventilate to get rid of smoke and hot gases.

b. Growth.

NOTE: During this phase, total involvement is possible.

(1) Recognize that during this phase, there is sufficient oxygen and fuel for the fire to grow due to the following:
(a) Drawing oxygen in the room into the flame.
(b) Carrying the heat to the uppermost regions of the confined area.

NOTE: The temperature in the plume is still moderate due to the air that is drawn into the plume. Once the air is recycled, the temperature rises quickly.

(2) Recognize the following hazards during the growth phase:
(a) Heat and fire spread out laterally from the top down and ignite all material in the upper levels of the room.
(b) Phase flame spread is predominant in the early portion of the growth.
(c) Temperatures in the upper regions can exceed 1,300°F.

(3) Perform the following actions during the growth phase:
(a) Ventilate overhead to relieve the structure of superheated smoke and gases.
(b) Use a hose line to extinguish or control the fire and protect firefighters.
(c) Use a combination attack to advance and make a direct attack on the seat of the fire.

c. Flashover.

NOTE: The transition between the growth and fully developed phases and is not a specific event such as ignition.

(1) Recognize that during this phase flames flash over the entire surface of a room due to the following:
(a) Buildup of heat from the fire.
(b) All contents of the fire area gradually reach their ignition temperature.
(c) Once the ignition temperature of contents is reached, simultaneous ignition occurs and the area becomes fully involved.

(2) Recognize the following hazards during the flashover phase:
(a) High temperatures.
(b) Total fire involvement (room or area).

(3) Perform the following actions during the flashover phase:
(a) Ventilate overhead to relieve the structure of superheated smoke and gases.
(b) Use sufficient-size hose lines to extinguish or control the volume of fire and protect firefighters.

d. Fully developed.

NOTE: This phase occurs when all combustible materials in the compartment are involved in fire.

(1) Recognize the following hazards during the fully developed phase:
(a) Burning fuels are releasing the maximum amount of heat.
(b) Heat released depends on the number and size of the ventilation openings.
(c) Hot unburned gases are likely to begin flowing from the compartment of origin into adjacent spaces or compartments.

(2) Perform the following actions during the fully developed phase:
(a) Ventilate overhead.
(b) Coordinate the hose streams.

e. Decay. This is the last phase of a fire, the fire starts to diminish due to the following:
(1) The rate of heat released begins to decline as available fuel is consumed.
(2) The fire begins to become fuel-controlled as with the ignition phase.
(3) Temperatures within the compartment begin to decline.

Performance Steps

6. Recognize the following conditions of the fire:
    a. Flame over and/or rollover.

NOTE: This takes place when flames move through the unburned gases during the fire progression.

(1) Recognize that the fire involvement is limited to only the fire gases. These conditions occur when—
(a) A hot gas layer forms at the ceiling during the growth phase.
(b) Superheated vapors ignite.
(c) A flame front rolls across the ceiling.
(d) Flames move through or across unburned gases.
(2) Perform the following actions during a flame over and/or rollover:
(a) Ventilate to relieve the structure of unburned gases.
(b) Remain low to the floor or ground (12 inches to 24 inches).
(c) Cool the heated products overhead and gases by advancing hose lines to attack the fire seat.
(d) Avoid flame over and/or rollover by directing water towards the ceiling level and the room contents to cool material below their ignition temperatures.

b. Back draft. Unburned carbon particles and other flammable products are available for combustion.

DANGER: BACK DRAFT IS THE MOST HAZARDOUS CONDITION A FIREFIGHTER WILL EVER FACE. SERIOUS INJURY OR DEATH TO PERSONNEL IN THE AREA OF A BACK DRAFT MAY OCCUR.

NOTE: Back draft is the result of a confined fire that is late in the fully developed or decay phase.

(1) Signs. Recognize the following signs for conditions that are favorable for a back draft:
(a) Pressurized smoke exiting small openings.
(b) Black smoke becoming dense gray and/or yellow.
(c) Confinement and excessive heat.
(d) Little or no visible flame.
(e) Smoke leaving the building in puffs or at intervals.
(f) Smoke-stained windows.
(2) Recognize the hazards of a back draft, and do not introduce oxygen to the fire.
(3) Perform the following actions during a back draft:
(a) Size up the scene prior to any action.
(b) Wear proper protective clothing with a self-contained breathing apparatus (SCBA).
(c) Ventilate at the highest point to release the fire gases and smoke prior to entry.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to react to various fire behaviors.

Performance Measures	**GO**	**NO GO**
1. Identified the methods of heat transfer.	____	____
2. Identified the elements of fire tetrahedron.	____	____
3. Identified fuel-reducing agent forms.	____	____
4. Defined the combustion processes.	____	____
5. Recognized the phases of the fire.	____	____
6. Recognized the conditions of the fire.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related

FM 5-415
IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Utilize Air-Lifting Bags and Cribbing

052-249-1154

Conditions: Given a firefighting apparatus, protective clothing, air-lifting bags, cribbing, and one assistant firefighter.

Standards: Utilize air-lifting bags and cribbing.

Performance Steps

1. Identify the three types of air-lifting bags.

NOTE: A fourth type of bag is used for sealing leaks, but it has little, if any, rescue application.

   a. Identify a high-pressure bag.
      (1) Look for a tough, neoprene rubber exterior reinforced with steel wire or Kevlar®.
      (2) Check for deflated bags that lie flat and are about 1 inch thick.
      (3) Check if the bag can be inflated to a height of about 20 inches.
      (4) Check for sizes of 6 by 6 inches to 36 by 36 inches.
   b. Identify a medium-pressure bag.
      (1) Check if it is smaller than a high-pressure bag.
      (2) Use to lift or stabilize large vehicles or objects.
      (3) Check the lifting distance. It is greater than a high-pressure bag (capable of lifting objects 6 feet.)
   c. Identify a low-pressure bag.
      (1) Check if it is smaller than a high-pressure bag.
      (2) Use to lift or stabilize large vehicles or objects.
      (3) Check the lifting distance. It is greater than a high-pressure bag (capable of lifting objects 6 feet.)

2. Exercise safety when using air-lifting bags.

NOTE: Operators should follow the manufacturer is recommendations for the specific system used.

   a. Ensure that adequate air supplies and cribbing are available prior to starting an operation.
   b. Position the bag on or against a solid surface.
   c. Do not inflate the bag against a sharp object.
   d. Inflate the bag slowly, and continually monitor for any shifting.
   e. Never work under a load supported by air-lifting bags.
   f. Stabilize the lifted load with cribbing in case of an air-lifting bag failure.

WARNING: CONTINUOUSLY SHORE UP AND STABILIZE THE LOAD WITH BOX CRIBBING. THE TOP LAYER SHOULD BE SOLID; LEAVING A HOLE IN THE CENTER MAY CAUSE SHIFTING AND COLLAPSE.

   g. Keep the bags away from objects and materials that are hotter than 220°F.
   h. Never stack the bags more than two high.
      (1) Place the smaller bag on top of the larger bag.
      (2) Start inflating the bottom bag first.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to utilize air-lifting bags and cribbing.

Performance Measures	**GO**	**NO GO**
1. Identified the three types of air-lifting bags.	____	____
2. Exercised safety when using air-lifting bags.	____	____

Evaluation Guidance: Score the soldier a GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	Related
	IFSTA MANUALS
	LO 5-4210-220-12
	NFPA 1001
	TM 5-4210-220-12

Perform Hoisting Operations With Ropes

052-249-1156

Conditions: Given an ax, a pike pole, a ladder, a 1 1/2- or 2 1/2-inch uncharged hose line, a 1 1/2- or 2 1/2-inch charged hose line, a smoke ejector, a power saw, 50 to 100 feet of 3/8- or 1/4-inch rope, protective clothing, a multistory structure with a fire, and one assistant firefighter.

Standards: Hoist items up a multistory structure within 30 minutes.

Performance Steps

1. Hoist an ax.
   a. Tie a clove hitch.
   b. Slide the clove hitch down the ax handle to the ax head.

NOTE: The excess running end becomes the tag line.

   c. Loop the working end of the rope around the ax head and back up the handle.
   d. Tie a half hitch on the handle a few inches above the clove hitch.
   e. Tie another half hitch at the butt end of the handle.
   f. Hoist the ax up the structure.

2. Hoist a pike pole with the pike up.
   a. Tie a clove hitch at the butt end of the handle.
   b. Tie a half hitch in the middle of the handle.
   c. Tie a half hitch around the head.

NOTE: The excess running end becomes the tag line.

   d. Hoist the pike pole up the structure.

3. Hoist a roof ladder.
   a. Tie a figure eight on a bight with a large loop, and slip it between the third and fourth rungs of the ladder from the top.
   b. Pull the loop through the rungs.
   c. Slip the loop over the top of the ladder.
   d. Tie a half hitch around the top.
   e. Use a separate rope to tie a clove hitch with an overhand safety on the bottom rung.

NOTE: This will be used as the tag line.

   f. Hoist the roof ladder up the structure.

NOTE: When hoisting the roof ladder, the hooks should be opened and facing the structure.

4. Hoist an uncharged 1 1/2- or 2 1/2-inch hose line.
   a. Fold the nozzle end of the hose line back over the rest of the hose, forming an overlap of 4 to 5 feet.
   b. Tie a clove hitch, with an overhand safety knot, around the tip of the nozzle and the hose it is folded against, lashing them together.
   c. Place a half hitch on the doubled hose about 12 inches from the loop end.
   d. Hoist the uncharged hose line up the structure.

5. Hoist a charged 1 1/2- or 2 1/2-inch hose line.
   a. Tie a clove hitch, with an overhand safety knot, around the hose about 1 foot below the coupling and nozzle.
   b. Tie a half hitch through the bail (nozzle handle) and around the nozzle itself in a manner that allows the rope to hold the bail shut while the hose is being hoisted.
   c. Hoist the charged hose line up the structure.

6. Hoist a smoke ejector.
   a. Tie a figure eight, with an overhand safety knot, around two of the handles.
   b. Tie a clove hitch, with an overhand safety knot, on one of the remaining handles.

NOTE: This will be used as the tag line.

Performance Steps

c. Hoist the smoke ejector up the structure.

7. Hoist a power saw.
   a. Tie a figure eight on a bight with a large loop near the middle of the rope.
   b. Feed the loop through the carrying handle, forming a girth hitch, and then around the blade.

NOTE: The excess running end becomes the tag line.

c. Hoist the power saw up the structure.

CAUTION: WHEN PERFORMING HOISTING OPERATIONS, THE FIREFIGHTER STANDING ON THE GROUND SHOULD EITHER FACE THE UPPER LEVEL OF THE STRUCTURE AS THE TOOLS OR EQUIPMENT ARE HOISTED OR MOVE A SAFE DISTANCE AWAY FROM THE HOISTING AREA. THE FIREFIGHTER FACES UPWARD SO THAT HE CAN RESPOND IMMEDIATELY OR MOVE AWAY IF THE TOOLS OR EQUIPMENT FALL TO THE GROUND.

NOTE: All life safety rope must conform to National Fire Protection Association (NFPA) standards. Fire service rope falls into two classifications:

1. **Life safety rope to support rescuers and/or victims.**
2. **Utility rope (no life safety applications.)**

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier that he has 30 minutes to hoist the seven different items up a multistory structure.

Performance Measures	**GO**	**NO GO**
1. Hoisted an ax.	____	____
2. Hoisted a pike pole with the pike up.	____	____
3. Hoisted a roof ladder.	____	____
4. Hoisted an uncharged 1 1/2- or 2 1/2-inch hose line.	____	____
5. Hoisted a charged 1 1/2- or 2 1/2-inch hose line.	____	____
6. Hoisted a smoke ejector.	____	____
7. Hoisted a power saw.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related

IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Perform a Fire Prevention Education Brief

052-249-1159

Conditions: Given a target audience; access to all fire department manuals; and a classroom with a podium, pen, and paper.

Standards: Perform a fire prevention education brief.

Performance Steps

1. Identify the target audience.
    a. Identify a school as a target audience, including—
        (1) Children.
        (2) Young adults.
        (3) Adults.
    b. Identify special interest groups as a target audience, including—
        (1) Seniors or retirees.
        (2) Preschoolers.
        (3) Men's or women's groups.
    c. Identify homeowners or occupants as a target audience.
    d. Identify work groups as a target audience.
2. Identify the types of fire education programs.
    a. Identify exit drills in the home(EDITH) as a fire education program.
    b. Identify learning not to burn as a fire education program.
    c. Identify Sparky the Fire Dog as a fire education program.
    d. Identify Smokey the Bear as a fire education program.
3. Prepare the presentation.
    a. Create a lesson plan.
        (1) Establish an introduction.
        (2) Establish a body.
        (3) Establish a conclusion.
    b. Review the lesson to ensure that the information is pertinent.
    c. Rehearse the lesson to build self-confidence.
    d. Inspect the room where the briefing will be conducted.
        (1) Check the lighting.
        (2) Check seating.
        (3) Check voice projection to the back of the room.
    e. Gather training aids and handouts.
4. Document the presentation.
    a. Document the program title.
    b. Document the number of participants.
    c. Document the date and time.
    d. Document the location.
    e. Document the evaluation, including—
        (1) Positive comments.
        (2) Suggestions for improvement.

Evaluation Preparation: Setup: Provide the soldier with the items in the conditions.

Brief soldier: Tell the soldier to perform a fire prevention education brief.

Performance Measures	**GO**	**NO GO**
1. Identified the target audience.	____	____

Performance Measures	GO	NO GO
2. Identified the types of fire education programs.	____	____
3. Prepared the presentation.	____	____
4. Documented the presentation.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	Related
	AR 420-90
	DA FORM 5376-R
	DA FORM 5377-R
	IFSTA MANUALS
	LO 5-4210-220-12
	TM 5-4210-220-12

Load and Deploy Attack Lines

052-249-1161

Conditions: Given a firefighting apparatus with empty attack line hose beds, 600 feet of 1 1/2- or 1 3/4-inch double-jacketed hose line, fire nozzles, protective clothing, and one additional firefighter.

Standards: Load and deploy attack lines.

Performance Steps

1. Load a preconnected flat load.
    a. Connect the female coupling to the discharge.
    b. Lay the hose back and forth, flat in the hose bed.
    c. Make loops after the first and second couplings are in the load to provide handholds for hose deployment.

NOTE: The first loop will be shorter than the second loop.

    d. Ensure that the loops are accessible from the ground for efficient deployment.
    e. Attach the nozzle to the end of the hose line.

2. Deploy the preconnected flat load.
    a. Place the nozzle across your chest.
    b. Place one arm through the large loop, and grasp the smaller loop in your other hand.
    c. Pull the load from the hose bed, facing away from the firefighting apparatus.
    d. Continue to pay-out the load until the hand loop pulls tight, drop it, and continue on.
    e. Proceed until the hose line is straight and the nozzle is in your hand.

3. Load a minuteman load.
    a. Connect the female coupling to the discharge.
    b. Load 100 feet of hose flat in one stack, straight up.
    c. Lay the coupling at the 100-foot point off to the side of the hose bed.
    d. Start the second 100 feet of the load with the nozzle at the bottom of the load.
    e. Connect the two couplings at the top of the load.

4. Deploy the minuteman load.
    a. Face the firefighting apparatus, and pull the stack with the nozzle partially out of the hose bed.
    b. Turn your shoulder into the stack to face away from the firefighting apparatus with the stack evenly distributed on the shoulder.
    c. Advance the hose, keeping the stack intact.
    d. Let the stack pay-off your shoulder one fold at a time after 100 feet of the hose is off the hose bed.
    e. Proceed until the hose line is straight and the nozzle is in your hand.

5. Load a triple-layer load.

NOTE: This load allows all of the hose to be deployed from the hose bed by pulling one section of the load from the firefighting apparatus. The hose may be charged at that time.

    a. Connect the female coupling to the discharge.
    b. Lay the hose straight to the hose bed where it will be loaded.
    c. Fold the hose into three sections, placing the nozzle on the top section.
    d. Load the hose into the hose bed in the same fashion as a flat load.

6. Deploy the triple-layer load.
    a. Face away from the firefighting apparatus with the nozzle across your chest.
    b. Pull the resulting loop and advance the hose until all of the hose pays out from the hose bed.
    c. Proceed until the hose line is straight and the nozzle is in your hand.

Evaluation Preparation: Setup: Provide the soldier with the items in the conditions.

Brief soldier: Tell the soldier to load and deploy the attack lines.

Performance Measures	GO	NO GO
1. Loaded a preconncted flat load.	____	____
2. Deployed the preconnected flat load.	____	____
3. Loaded a minuteman load.	____	____
4. Deployed the minuteman load.	____	____
5. Loaded a triple-layer load.	____	____
6. Deployed the triple-layer load.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related

DA FORM 4119
FM 5-415
IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Perform Hose Load Finishes

052-249-1162

Conditions: Given a firefighting apparatus with an unfinished hose load, 600 feet of 1 1/2- or 1 3/4-inch double-jacketed hose, fire nozzles, protective clothing, a hydrant wrench, and a hose strap.

Standards: Perform hose load finishes.

Performance Steps

1. Prepare a donut roll finish.

NOTE: Use this finish mainly on straight lay loads.

   a. Lay the last 50 feet of the hose line back parallel onto itself.
   b. Roll the section into the shape of a donut.
   c. Place the female coupling at the end of the hose bed.
   d. Fasten a hydrant wrench to the end of the female coupling with a hose strap.

2. Prepare a double donut roll finish.

NOTE: Use this finish on a forward or reverse lay.

   a. Lay two 50-foot sections of the hose line parallel to each other.
   b. Roll the two sections into the shape of a donut.
   c. Fasten a hydrant wrench or a nozzle on the open end of the hose.

NOTE: This finish depends on the type of hose lay. If you have a male coupling showing, the nozzle will be fastened to it with a hose strap. If you have a female coupling showing, the hydrant wrench will be fastened to it with a hose strap.

3. Prepare a riprap.

NOTE: Use this fold only on forward lays.

   a. Lay the last section of the hose line back and forth across the hose bed from front to rear.
   b. Place the female coupling at the end of the hose bed.
   c. Fasten a hydrant wrench to the female coupling with a hose strap.

4. Prepare a skid load finish.

NOTE: Use this finish only on reverse lays.

   a. Use the last three or four 50-foot sections of the hose line to form this finish.
   b. Extend the hose line from the rear of the hose bed.
   c. Fold the hose line back on to itself, leaving a 6-to 8-inch overhang at the front of the bed.
   d. Lay the hose line across the rear of the hose bed about 2 feet away and perpendicular to the first leg.
   e. Bend and turn the hose line so that it can make a second leg.
   f. Lay the hose line from rear to front the same as the first leg.
   g. Leave 6 to 8 inches of overhang at the front end of the hose bed.
   h. Fold the hose line back onto itself until it is at the point where the second leg started.
   i. Lay the remaining hose line back and forth across the two legs.
   j. Leave a 2- to 3-inch clearance between the hose line and the hose bed side boards.
   k. Connect the nozzle to the hose line with a hose strap, and lay it on top of the load.

NOTE: Place all of the couplings directly on one of the legs to support the couplings.

Evaluation Preparation: Setup: Provide the soldier with the items in the conditions.

Brief soldier: Tell the soldier to perform hose load finishes.

Performance Measures	**GO**	**NO GO**
1. Prepared a donut roll finish.	____	____
2. Prepared a double donut roll finish.	____	____

Performance Measures	GO	NO GO
3. Prepared a riprap.	____	____
4. Prepared a skid load finish.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Subject Area 3: Perform Structural Firefighting

Search for Victims in a Structure

052-249-1119

Conditions: Given a firefighting apparatus, a structural fire scene, protective clothing and equipment, a self-contained breathing apparatus (SCBA) with spare air bottles, a rope, and forcible-entry tools.

Standards: Search for victims in a structure.

Performance Steps

1. Don protective clothing. (See task 052-249-1103.)

2. Don the SCBA. (See task 052-249-1137.)

CAUTION: MAKE SURE THAT YOU ARE WEARING ALL OF YOUR PROTECTIVE CLOTHING AND THAT YOUR AIR BOTTLE IS FULL.

3. Check to see that ventilation has been completed and that the firefighting effort has begun before entering the structure.

DANGER: FIREFIGHTERS WHO CONDUCT SEARCH-AND-RESCUE OPERATIONS SHOULD NOT BE PERMITTED TO ENTER THE STRUCTURE UNTIL VENTILATION HAS BEEN COMPLETED AND THE FIREFIGHTING EFFORT HAS BEGUN. HOWEVER, SEARCH-AND-RESCUE OPERATIONS SHOULD NOT BE UNREASONABLY DELAYED IN THE ATTEMPT TO REACH IDEAL CONDITIONS FOR SEARCH AND RESCUE. THE CREW CHIEF OR RESCUE MAN MUST DETERMINE WHEN IT IS REASONABLY SAFE TO ENTER THE STRUCTURE.

4. Gain entry to the structure using forcible-entry methods, if necessary.

5. Enter the structure and start a primary search.

NOTE: The main objective of a primary search is to rescue the victims you can easily find. Rescuers must cover the entire fire area quickly. Time is the most critical factor when conducting a primary search. Rescue the victims you can see or hear.

   a. Start on the fire floor as close as possible to the fire.
   b. Proceed to the floor above the fire after searching the fire floor.

NOTE: Search on your hands and knees if you cannot readily see the search area. A good rule of thumb is: if you cannot see your feet while you are standing, search on your hands and knees until visibility improves.

6. Search in one direction, and maintain contact with a wall.

CAUTION: IF YOU DO NOT MAINTAIN CONTACT WITH A WALL, YOU COULD BECOME DISORIENTED AND LOSE YOUR SENSE OF DIRECTION. MAINTAINING CONTACT HELPS YOU SEARCH UNFAMILIAR AREAS QUICKLY, IDENTIFY AREAS THAT HAVE BEEN SEARCHED, LOCATE DOORS AND WINDOWS FOR POSSIBLE VENTILATION, AND KEEP A SENSE OF DIRECTION.

7. Search the entire area, including:

NOTE: Be especially alert in common areas where you might find victims.

   a. Under or on top of beds.
   b. Inside closets or storage rooms.
   c. In a bathroom tub or shower stall.
   d. Inside a child's toy chest.
   e. Behind or on furniture.
   f. Under tables or behind curtains.
   g. Around doors and windows.

NOTE: Periodically pause and listen for cries for help, coughing, or other sounds.

Performance Steps

8. Locate the victim(s).
9. Remove the victim(s) to the outside area.

Evaluation Preparation: Setup: Provide the soldier with all items listed in the conditions.

Brief soldier: Tell the soldier to search for victims in a structure.

Performance Measures	**GO**	**NO GO**
1. Donned protective clothing.	____	____
2. Donned the SCBA.	____	____
3. Checked to see that ventilation had been completed and the firefighting effort had begun before entering the structure.	____	____
4. Gained entry to the structure using forcible-entry methods, if necessary.	____	____
5. Entered the structure and began a primary search.	____	____
6. Searched in one direction and maintained contact with a wall.	____	____
7. Searched the entire area.	____	____
8. Located the victim(s).	____	____
9. Removed the victim(s) to the outside area.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Rescue a Victim from a High-Rise Structure

052-249-1140

Conditions: Given a multistory structure with a fire, rope, carabiners, D rings, a Class III harness, an extension ladder, protective clothing, a self-contained breathing apparatus (SCBA), two assistant firefighters, and victims.

Standards: Rescue a victim from a high-rise structure.

Performance Steps

NOTE: When performing this type of rescue operation, three rescuers should be dedicated to the task. Two rescuers should be inside the structure to help the victim on the ladder, and one rescuer should be on the ladder to take the victim down the ladder.

1. Rescue a conscious victim from a high-rise structure.
    a. Raise the ladder to a point above the window.
    b. Check the four points of contact, including—
        (1) Pawls locked.
        (2) Halyard secured.
        (3) Heeler in place.
        (4) Correct climbing angle.
    c. Place a carabineer under the bottom rung (front to back) and to the outside of the ladder beam.
    d. Ascend the ladder, carrying the haul and tag lines with attached carabiners around your thumb.
    e. Reach the bottom of the window, and pass the haul line (back to front) between the ladder rungs.
    f. Count up three or four rungs, and pass the haul line through the rungs (front to back).

NOTE: The rescuers inside will be placing victims into Class III harnesses at this time.

    g. Hand the rescuer at the window enough haul line to attach to the upper D ring on the victim's harness.
    h. Hand the rescuer at the window the tag line to attach to the lower D ring on the victim's harness.
    i. Descend the ladder.
    j. Place one foot on the bottom rung, and take up the slack from the haul line.

NOTE: The rescuers inside lower the victims from the window using the hand-under-hand technique.

NOTE: Once the victim reaches shoulder height of the rescuer, an additional firefighter places one foot on the ladder and takes the haul and tag lines.

WARNING: DO NOT REMOVE YOUR FOOT OR RELEASE THE HAUL LINE UNTIL THE FIREFIGHTER GAINS FULL CONTROL OF THE LADDER AND THE HAUL LINE.

    k. Take the victim to safety using the fireman carry.

2. Rescue an unconscious victim from a high-rise structure.
    a. Raise the ladder to the area just below the window.
    b. Check the four points of contact, including—
        (1) Pawls locked.
        (2) Halyard secured.
        (3) Heeler in place.
        (4) Correct climbing angle.
    c. Ascend the ladder.

NOTE: The victim is lowered to the rescuer by the firefighters inside the building.

    d. Grasp the rungs adjacent to the victim.

NOTE: Your arms will be positioned under the victim's arms supporting some of their weight.

    e. Place one knee between the victim's legs for support.
    f. Descend with the victim, moving the victim from one knee to the other while descending.

Performance Steps

NOTE: Monitor the victim while descending the ladder. The victim may regain consciousness and be startled by what is happening. If this happens, reassure him and continue to descend the ladder.

g. Ensure that the victim's feet do not get entangled in the ladder rungs.
h. Kneel upon reaching the ground.

NOTE: Rescuers on the ground will hold the victim by his armpits and lower him across your back.

i. Return to the standing position, and take the victim to safety using the fireman carry.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to rescue a victim from a high-rise structure.

Performance Measures	**GO**	**NO GO**
1. Rescued a conscious victim from a high-rise structure.	____	____
2. Rescued an unconscious victim from a high-rise structure.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Gain Access to a Structure Using Forcible-Entry Techniques

052-249-1151

Conditions: Given a firefighting apparatus, protective clothing, a self-contained breathing apparatus (SCBA), a charged hose line, one additional firefighter to man the hose line, and a structure.

Standards: Gain access to a structure using forcible-entry techniques.

Performance Steps

1. Determine the four basic categories of forcible-entry tools.
    a. Identify the following cutting tools:
        (1) Axes and hatchets.
        (2) Handsaws.
        (3) Power saws.
        (4) Metal-cutting devices and torches.
    b. Identify the following prying tools:
        (1) Manual prying tools.
            (a) Crowbar.
            (b) Halligan tool.
            (c) Pry bar.
            (d) Hux Bar™.
            (e) Claw tool.
            (f) Kelly Tool™.
            (g) Pry ax.
            (h) Flat bar.
        (2) Hydraulic prying tools.
            (a) Rescue tool.
            (b) Hydraulic door opener.
    c. Identify the following pushing and/or pulling tools:
        (1) Standard pike pole.
        (2) Clemens Hook™.
        (3) Plaster hook.
        (4) Drywall hook.
        (5) San Francisco hook.
        (6) Multipurpose hook.
        (7) Roofman's hook.
    d. Identify the following striking tools:
        (1) Sledgehammer.
        (2) Maul.
        (3) Battering ram.
        (4) Pick.
        (5) Flat-head ax.
        (6) Mallet.
        (7) Hammer.
        (8) Punch.
        (9) Chisel.

2. Use forcible entry on a wooden check rail window.
    a. Size up the situation.
        (1) Check the construction type.
        (2) Check the wind direction.
        (3) Check the locking mechanism.
        (4) Check for hazards around the area.
    b. Try to open the window before applying force.
    c. Select a forcible-entry tool.

Performance Steps

d. Insert the blade of the tool under the sash, in line with the lock.
e. Pry upward to force the screws out of the lock.
f. Open the window.

3. Use forcible entry on a door with glass.
   a. Size up the situation.
      (1) Check the construction type.
      (2) Check the wind direction.
      (3) Check the locking mechanism.
      (4) Check for hazards around the area.
   b. Try to open the door before applying force.
   c. Select a forcible-entry tool.
   d. Stand to the windward side of the glass panel.

NOTE: Standing with the wind at your back moves the broken glass shards away from your body.

   e. Strike the glass as close to the top of the panel as possible.

NOTE: Do not strike the glass with so much force that you lose control of the tool.

   f. Keep your hands above the point of impact or at an angle to the impact.
   g. Use the tool to clean all the broken glass from the frame.
   h. Reach inside with a gloved hand, and open the door.

4. Use forcible entry on an inward swinging door without glass.
   a. Size up the situation.
      (1) Check the construction type.
      (2) Check the wind direction.
      (3) Check the locking mechanism.
      (4) Check for hazards around the area.
   b. Try to open the door before applying force.
   c. Select a forcible-entry tool.
   d. Insert the prying tool just above or below the lock.
   e. Strike the prying tool with the back of a flat-head ax or another striking tool.
   f. Drive the prying tool past the interior doorjamb.
   g. Exert pressure on the tool towards the door, forcing it open.

5. Use forcible entry on an outward swinging door without glass.
   a. Size up the situation.
      (1) Check the construction type.
      (2) Check the wind direction.
      (3) Check the locking mechanism.
      (4) Check for hazards around the area.
   b. Try to open the door before applying force.
   c. Select a forcible-entry tool.
   d. Insert the prying tool just above or below the lock.
   e. Strike the prying tool with the back of a flat-head ax or another striking tool.
   f. Drive the prying tool past the interior doorjamb.
   g. Exert pressure on the tool towards the door, forcing it open.

6. Breach wooden walls.
   a. Size up the situation.
      (1) Check the construction type.
      (2) Check the wind direction.
      (3) Check for hazards around the area.
   b. Use a pick head ax, to sound the wall for studs.
   c. Use the pick end of the ax to make purchase points next to the studs where cuts will be made.
   d. Cut along the studs, watching for hidden obstructions.

7. Breach masonry walls.

Performance Steps

a. Size up the situation.
   (1) Check the construction type.
   (2) Check the wind direction.
   (3) Check for hazards around the area.
b. Select a forcible-entry tool.
c. Select the place for the opening to be made.
d. Breach the wall, making a diamond or triangle pattern and watching for hidden obstructions.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to gain access to a structure using forcible-entry techniques.

Performance Measures	**GO**	**NO GO**
1. Identified the four basic categories of forcible-entry tools.	____	____
2. Used forcible entry on a wooden check rail window.	____	____
3. Used forcible entry on a door with glass.	____	____
4. Used forcible entry on an inward swinging door without glass.	____	____
5. Used forcible entry on an outward swinging door without glass.	____	____
6. Breached wooden walls.	____	____
7. Breached masonry walls.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Perform Sprinkler System Applications

052-249-1153

Conditions: Given a firefighting apparatus, protective clothing, a self-contained breathing apparatus (SCBA), wedges or tongs, lock keys, a charged hose line, and one additional firefighter to man the hose line.

Standards: Perform sprinkler system applications.

Performance Steps

1. Stop the flow of water at the sprinkler head.
   a. Locate the sprinkler(s).
   b. Position a ladder beneath the sprinkler head.
   c. Insert the wedge or tongs into the sprinkler head.
   d. Drive the wedge or lock the tongs into place until the water stops.
2. Stop the flow of water at the main control valve.
   a. Locate the main control valve.
   b. Unlock the post indicator valve (PIV) wrench.
   c. Position the wrench on the stem nut.
   d. Close the PIV.
      (1) Turn the stem nut slowly clockwise.
      (2) Turn the stem nut until the target window reads SHUT.
   e. Open the PIV.
      (1) Turn the stem nut slowly counterclockwise.
      (2) Turn the stem nut until the target window reads OPEN.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to perform sprinkler system applications.

Performance Measures	GO	NO GO
1. Stopped the flow of water at the sprinkler head.	____	____
2. Stopped the flow of water at the main control valve.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	Related
	IFSTA MANUALS
	LO 5-4210-220-12
	NFPA 1001
	TM 5-4210-220-12

Perform Fire Prevention Inspection

052-249-1158

Conditions: Given a pen, a note pad, a building to inspect, a firefighter acting as a building occupant, the building prefire plan, Department of the Army (DA) Form 5382-R (Hazard/Deficiency Inspection Record [LRA]), and the prior building inspection records.

Standards: Perform a fire prevention inspection.

Performance Steps

1. Prepare for a fire prevention inspection.
   a. Maintain a courteous attitude.
   b. Give constructive comments regarding the elimination of hazardous conditions.
   c. Maintain a positive attitude during the inspection.
   d. Review prior building inspection records and National Fire Protection Association (NFPA) and International Fire Service Training Association (IFSTA) standards.

2. Perform the five steps of a fire prevention inspection.
   a. Schedule the appointment.
      (1) Inform the building occupant of the purpose of the inspection.
      (2) Perform the inspection during normal duty or business hours.
   b. Approach the occupant.
      (1) Observe the property prior to entering the building.
         (a) Look for fire hydrant locations.
         (b) Look for road names or numbers.
         (c) Check the visibility of the building address.
         (d) Check the location of the fire alarm boxes.
         (e) Check accessibility from all sides of the building.
         (f) Look for any overhead obstructions.
         (g) Check for possible problems with forcible entry.
      (2) Tell the occupant that you are a member of the fire department.
      (3) Request that a building representative accompany you during the inspection.
      (4) Ensure that the building representative has all keys to access any locked doors.
   c. Conduct the inspection.
      (1) Take a systematic and thorough route.
      (2) Write down all adjacent exposures and terrain features.
      (3) Note locations of firefighting appliances, such as—
         (a) Hydrants.
         (b) Standpipes.
         (c) Sprinklers.
         (d) Fire alarm boxes.
      (4) Note areas labeled "secret" and not inspected.
   d. Conduct the final interview.
      (1) Discuss the results with the building owner.
         (a) Provide closing comments with a person of authority for the property.
         (b) Comment on good conditions prior to the violations.
      (2) Discuss any violations in general terms, indicating that a written report will be sent later with specific details.
      (3) Express thanks for courtesies extended to the fire department, and express that a representative from the fire department will make a return visit to note all corrective actions.
   e. Conduct the follow-up.
      (1) Conduct the follow-up a couple of weeks after the owner or occupant has received the written report.
      (2) Reinspect only the problem areas from the report.

Performance Steps

3. Record the fire prevention inspection.
   a. Fill out DA Form 5382-R.

CAUTION: FORMAL REPORTS ARE WARRANTED WHEN FIREFIGHTERS IDENTIFY A LIFE THREATENING HAZARD, MAJOR RENOVATIONS, OR AN EXTENSIVE LIST OF MINOR VIOLATIONS.

   (1) Ensure that this report is not opinionated, biased, emotional, or unfair.
   (2) State the facts, and show evidence to prove the point, draw a conclusion, or justify a recommendation.

NOTE: Firefighters should answer any questions they can and refer the owner or occupant to the fire marshal's office for further assistance if they cannot answer the question.

   b. Maintain a written report at the fire department.
      (1) Store the finished report so that it can be retrieved upon request.
      (2) Ensure that the report describes a specific state or condition of the occupancy.

4. Prepare a building prefire plan after the inspection.
   a. Draw a map or sketch of the area.
      (1) Use a plot plan to indicate how the building is situated with respect to other buildings and streets in the area.
      (2) Use a floor plan to show the layout of the individual floors.
      (3) Use an elevation drawing to show the number of floors and the grade surrounding the building.
   b. Add basic information to the prefire plan, including the—
      (1) Facility number.
      (2) Occupancy.
      (3) Address or location.
      (4) Type of construction.
   c. Draw a facility layout diagram.
      (1) Show exposures or buildings that fire could spread to.
      (2) Show locations of utility shutoffs.
      (3) Show locations of alarm and detection equipment.
      (4) Identify special features, such as—
         (a) Fire walls.
         (b) Fire doors.
      (5) Identify fire suppression systems, such as—
         (a) Sprinklers.
         (b) Standpipes.
      (6) Show the location of special hazards, such as explosive materials.
      (7) Identify fire alarm equipment.
      (8) Note the type of construction, such as—
         (a) Steel.
         (b) Timber.
         (c) Masonry.
   d. Prepare a legend to identify the standard plan symbols.

Evaluation Preparation: Setup: Provide the soldier with the items listed in the conditions.

Brief soldier: Tell the soldier to perform a fire prevention inspection.

Performance Measures	**GO**	**NO GO**
1. Prepared for a fire prevention inspection.	____	____
2. Identified the five steps of a fire prevention inspection.	____	____
3. Recorded the fire prevention inspection.	____	____

Performance Measures	GO	NO GO
4. Prepared a building prefire plan after the inspection.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	Related
	AR 420-90
	DA FORM 5378-R
	DA FORM 5382-R
	DA FORM 5383-R
	IFSTA MANUALS
	LO 5-4210-220-12
	NFPA 1001
	TM 5-4210-220-12

Subject Area 4: Perform Wild Land Firefighting

Perform Wildland Firefighting

052-249-1155

Conditions: Given a firefighting apparatus; protective clothing; a self-contained breathing apparatus (SCBA); a wildland, controlled fire; and additional firefighters.

Standards: Perform wildland firefighting.

Performance Steps

1. Identify the fire fuels of a wildland fire.
    a. Identify wildland fire fuels found in the subsurface, including—
        (1) Roots.
        (2) Peat.
        (3) Duff.
        (4) Other partially decomposed organic matter that lies under the surface of the ground.
    b. Identify wildland fire fuels found on the surface, including—
        (1) Grass.
        (2) Brush.
        (3) Downed logs.
        (4) Heavy limbs.
    c. Identify wildland fire fuels found in aerial locations, including—
        (1) Pine needles.
        (2) Leaves.
        (3) Branches.

2. Identify the characteristics of a wildland fire.
    a. Identify the fuel size (small and light or large and heavy).
    b. Identify the compactness (loose or tight).
    c. Identify the continuity (close, separated, or patchy).
    d. Identify the volume.
    e. Identify the fuel moisture content.

3. Identify the four major weather aspects that affect a wildland fire, including the—
    a. Wind.
        (1) Controls the spread of the fire.
        (2) Supplies fresh air, which speeds combustion.

NOTE: Larger fires create their own wind.

    b. Temperature.
    c. Relative humidity.
    d. Precipitation.

4. Identify the topography that can affect a wildland fire.

WARNING: TOPOGRAPHY CAN RESULT IN INCREASED WIND SPEED, CREATING A CHIMNEY AFFECT.

    a. Slopes.

WARNING: THE SOUTHERN EXPOSURE OF A HILL OR MOUNTAIN NORTH OF THE EQUATOR RECEIVES THE MOST SUNLIGHT AND HEAT. FIRES WILL BURN FASTER ON THE SOUTHERN EXPOSURE.

    b. Local terrain features.

WARNING: LOCAL TERRAIN AFFECTS FIRE MOVEMENT; RIDGES, TREES, ROCK FORMATIONS, AND HOMES ALL AFFECT AIR CURRENTS. THE RESULTS ARE ERRATIC SPREAD OF THE FIRE.

    c. Canyons.

WARNING: FIRES IN THESE AREAS ARE VERY DANGEROUS AND UNPREDICTABLE.

Performance Steps

5. Identify the parts of a wildland fire.
    a. Head.
        (1) Moves in the direction of the wind.
        (2) Burns intensely and does the most damage.
        (3) Moves more rapidly than the rest of the fire.
    b. Finger.
        (1) Is a strip extending out from the main fire.
        (2) May form a new head.
        (3) Occurs where the fuel load is patchy.
    c. Heel.
        (1) Is opposite of the head.
        (2) Burns downhill or against the wind.
        (3) Is slow-moving.
    d. Flanks.
        (1) Are the sides of the fire.
        (2) May form fingers.
        (3) Are identified when facing the head.
        (4) A wind shift can change into the head.
    e. Perimeter.
        (1) Is the boundary line of the fire.
        (2) Changes as the fire burns.
    f. Spot fire.
        (1) Is a small fire outside the perimeter.
        (2) Is caused by flying embers or sparks.

CAUTION: SPOT FIRES MAY TRAP FIREFIGHTERS IF NOT QUICKLY EXTINGUISHED.

    g. Islands.
        (1) Are unburned areas inside the fire perimeter.
        (2) Must be watched.
    h. Green.
        (1) Are unburned areas next to the fire.
        (2) Does not indicate a safe area.
    i. Black. This is the area that the fire has consumed.

6. Attack a wildland fire.
    a. Use a direct attack.
        (1) Establish a control line.
        (2) Take action directly against the flames at the edges or closely parallel to them.
    b. Use an indirect attack.
        (1) Construct a control line away from the fire edge.
        (2) Start a back burn (burning intervening fuel in front of the fire edge.)

7. Determine wildland fire exposures.
    a. Look at all the considerations, including the—
        (1) Weather.
            (a) Wind.
            (b) Temperature.
            (c) Humidity.
            (d) Precipitation.
        (2) Flanks.
        (3) Heel.
        (4) Spot fires.
    b. Determine the highest priority exposures.
        (1) Check for any immediate danger.
        (2) Determine the location of the greatest value.
    c. Protect exposures, including the—

Performance Steps

(1) Fire lines.
(2) Water streams.
(3) Head.
(4) Fingers.

8. Select wildland firefighting tools, including—
   a. Axes.
   b. Rakes.
   c. Brush hooks.
   d. Pulaski tools.
   e. Swatters.
   f. Fire shelters.
   g. Round-tipped shovels.
   h. Backpack pumps.

9. Construct a fire line.
   a. Determine the location of the fire line.
   b. Determine the size of the construction line crew by the—
      (1) Size of the fire.
      (2) Length of the fire.
      (3) Fuel involved.
   c. Assign each crew member a major job function.
   d. Form a line formation with the crew.
   e. Extinguish the fire.

NOTE: Remember your fire orders: Fight the fire aggressively but provide for safety first. Initiate all action based on the current and expected fire behavior. Recognize the current weather conditions and obtain forecasts. Ensure that the instructions are given and understood. Obtain the current information on the fire status. Remain in communication with the crew members, your supervisor, and the adjoining forces. Determine safety zones and escape routes. Establish lookouts in potentially hazardous situations. Retain control at all times. Stay alert, keep calm, think clearly, and act decisively.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to perform wildland firefighting.

Performance Measures	**GO**	**NO GO**
1. Identified the fire fuels of a wildland fire.	____	____
2. Identified the characteristics of a wildland fire.	____	____
3. Identified the four major weather aspects that affect a wildland fire.	____	____
4. Identified the topography that can affect a wildland fire.	____	____
5. Identified the parts of a wildland fire.	____	____
6. Attacked a wildland fire.	____	____
7. Determined wildland fire exposures.	____	____
8. Selected wildland firefighting tools.	____	____
9. Constructed a fire line.	____	____

Evaluation Guidance: Score the soldier a GO if all measures are passed (P). Score the soldier a NO-GO if any measure if failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related

AR 420-90
FM 5-415
IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Subject Area 5: Perform Vehicle Firefighting

Perform Forcible-Entry Techniques on an Automobile
052-249-1145

Conditions: Given a firefighting apparatus, necessary firefighting tools, protective clothing, a self-contained breathing apparatus (SCBA), and a simulated automobile wreck.

Standards: Perform forcible-entry techniques on an automobile.

Performance Steps

1. Stabilize the automobile.
   a. Stabilize the automobile horizontally.
      (1) Place chock blocks on the downhill side of the automobile if it is on a grade.
      (2) Place chock blocks on both ends of the automobile if it is on level ground.
   b. Stabilize the automobile vertically.
      (1) Stabilize an automobile with inflated tires.
         (a) Build the cribbing up under the automobile frame.
         (b) Pull out the valve stems.
      (2) Stabilize an automobile with flat tires.
         (a) Position the cribbing by the automobile frame.
         (b) Lift the automobile slowly by the fender or wheel well.
         (c) Slide the cribbing under the frame.
         (d) Set the automobile down slowly until it is resting on the cribbing.

2. Attempt the simplest entry first.

NOTE: Try before you pry.

   a. Enter through normal-operating doors.
   b. Enter through the windows.
   c. Enter through any compromises in the automobile body.

3. Remove tempered glass.

NOTE: Tempered glass is designed to shatter into small pieces and is usually located in the side and rear windows of automobiles.

   a. Remove the glass farthest from the victims.

NOTE: Prior to breaking glass, use a blanket, tarp, or similar item to protect the victim if possible.

   b. Use a hand tool to strike the glass in the bottom corner.
   c. Use a hand tool to clear the glass from around the window frame.

4. Remove safety glass.

NOTE: Safety glass is normally located in the windshield of an automobile.

   a. Use an ax, glass master, or other cutting tool to cut the top of the windshield.
   b. Cut down the edges.
   c. Keep the windshield from falling into the automobile by using hay hooks to hold the windshield in place.
   d. Cut across the bottom edge of the windshield.
   e. Use hay hooks to remove the windshield by pulling it outward towards the hood.

NOTE: Place the removed windshield in a safe location away from the automobile.

5. Remove automobile doors.
   a. Use an ax and hooligan tool to make purchase points.
   b. Wedge the hooligan tool close to the door-operating mechanism.
   c. Pry the door open.

Performance Steps

NOTE: Prying a door open is extremely difficult with a hooligan tool. If you become fatigued during a real emergency, hand the tool off so that an additional firefighter can continue the extrication process.

6. Remove the automobile roof.

CAUTION: HEAD PROTECTION SYSTEMS DEPLOY FROM A NARROW OPENING BETWEEN THE HEADLINER AND THE TOP OF THE DOOR FRAME. THESE BAGS REMAIN RIGIDLY INFLATED AFTER INFLATION. INFLATORS ARE USUALLY LOCATED IN THE C POSTS.

a. Cut the roof door posts as low as possible.
b. Make relief cuts in the roof near the point where the roof will fold.
c. Place a pike pole or other long bar over the roof by the relief cuts.
d. Apply pressure to the pike pole or bar, and flap the roof over towards the trunk.
e. Secure the roof so that it does not flip back over.

7. Displace the automobile dashboard.

DANGER: AIRBAGS THAT HAVE NOT DEPLOYED CAN EXERT A TREMENDOUS AMOUNT OF FORCE AND A SPEED OF 200 MILES PER HOUR. THIS POTENTIAL HAZARD COULD CAUSE SEVERE INJURY OR DEATH TO THE RESCUERS OR THE VICTIMS IF THEY DEPLOY DURING THE EXTRICATION. A GENERALLY SAFE WORKING DISTANCE FOR SIDE IMPACT BAGS IS 5 INCHES, DRIVER'S BAG IS 10 INCHES, AND THE PASSENGER'S BAG IS 20 INCHES.

DANGER: SOME AIRBAGS MAY STILL DEPLOY UP TO 10 MINUTES AFTER THE BATTERY IS DISCONNECTED.

a. Cut a relief notch in both of the A posts as low as possible.
b. Use jacks on each side to push the dashboard up and away from the front seat.
c. Insert the cribbing into the cut on the A posts.

NOTE: Cribbing the A posts supports the dashboard from falling back into place.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to perform forcible-entry techniques on an automobile.

Performance Measures	**GO**	**NO GO**
1. Stabilized the automobile.	____	____
2. Attempted the simplest entry first.	____	____
3. Removed tempered glass.	____	____
4. Removed safety glass.	____	____
5. Removed automobile doors.	____	____
6. Removed the automobile roof.	____	____
7. Displaced the automobile dashboard.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required	**Related**
	IFSTA MANUALS LO 5-4210-220-12 TM 5-4210-220-12

Control a Vehicle Fire

052-249-1166

Conditions: Given a firefighting apparatus, protective clothing, a self-contained breathing apparatus (SCBA), one additional firefighter, a hose line, a fire extinguisher, and a vehicle fire.

Standards: Control a vehicle fire.

Performance Steps

1. Review safety procedures prior to combating the fire.
   a. Ensure that all personnel entering the area are wearing full protective clothing and a SCBA.
   b. Identify a safe haven prior to entry.
2. Identify the location of the fire.
   a. Identify an engine compartment fire.
   b. Identify a passenger compartment fire.
3. Extinguish the fire.
   a. Extinguish an engine fire.
      (1) Use at least a 1 1/2-inch hose line.
      (2) Fight the fire from the upwind side.
      (3) Knock down the fire coming from the hood area prior to opening the hood.
         (a) Fight fire through the wheel well area.
         (b) Fight fire through the radiator.
      (4) Open the hood mechanically or manually.
         (a) Attempt to release the hood using the cable release.
         (b) Use a halligan tool to open the hood.
      (5) Prop the hood open with the halligan tool.
      (6) Extinguish the fire, and cool the shock-absorbing bumper mounts.

NOTE: Small vehicle fires, such as a carburetor, may be extinguished with a portable fire extinguisher.

   b. Extinguish passenger compartment fires.
      (1) Approach the vehicle from the front corner with a wide fog stream pattern.
      (2) Open the vehicle door.
      (3) Change to a 30° fog pattern.
      (4) Knock down the fire using a circular motion.
      (5) Control any fuel leaks.
      (6) Overhaul the compartment.
4. Retreat from the fire.
   a. Back out the crew when alerted by the emergency signal or signs from the fire, including—
      (1) The intensity of the fire coming at the crew.
      (2) Firefighting apparatus horn sounds.
      (3) A fire crew member's alert of a problem.
   b. Keep the crew together while exiting the fire area.
      (1) Face the fire during the exit of the fire area.
      (2) Keep the cooling stream on until all crew members are clear of the fire area.

Evaluation Preparation: Setup: Provide the soldier with the items in the conditions.

Brief soldier: Tell the soldier to control a vehicle fire.

Performance Measures	**GO**	**NO GO**
1. Reviewed safety procedures prior to combating the fire.	____	____

Performance Measures	GO	NO GO
2. Identified the location of the fire.	____	____
3. Extinguished the fire.	____	____
4. Retreated from the fire.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
AR 420-90
FM 5-415
IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Subject Area 6: Perform Hazardous Materials Firefighting

Perform Hazardous-Material Operations at the Hazardous Materials Operational Level
052-249-1147

Conditions: Given a hazardous-material (HAZMAT) scene, material safety data sheets (MSDSs), HAZMAT placards, and protective clothing.

Standards: Perform HAZMAT operations at the HAZMAT operational level.

Performance Steps

1. Identify HAZMAT by class or symbol.
   a. Identify explosives by class or symbol.
      (1) Class 1.
      (2) Placard - orange background with a bursting ball and the words "EXPLOSIVES" or "BLAST AGENTS."
   b. Identify compressed gases by class or symbol.
      (1) Class 2.
      (2) Placards.
         (a) Flammable - red background with a white flame.
         (b) Nonflammable - green background with a white cylinder.
         (c) Oxidizer - yellow background with a flaming "O."
         (d) Poison gas - white background with a skull and crossbones.
   c. Identify flammable liquids by class or symbol.
      (1) Class 3.
      (2) Placard.
         (a) Flammable - red background with a white flame and the word "FLAMMABLE."
         (b) Combustible - red background with a white flame and the word "COMBUSTIBLE."
   d. Identify flammable solids by class or symbol.
      (1) Class 4.
      (2) Placard.
         (a) Division 4.1 - red and white vertical stripes with a black flame and the words "FLAMMABLE SOLID."
         (b) Division 4.2 - white top and red bottom with a black flame and the words "SPONTANEOUSLY COMBUSTIBLE."
         (c) Division 4.3 - blue background with a white flame and the words "DANGEROUS WHEN WET."
   e. Identify oxidizers by class or symbol.
      (1) Class 5.
      (2) Placard.
         (a) Division 5.1 - yellow background with a black flaming "O" and the word "OXIDIZER."
         (b) Division 5.2 - yellow background with a black flaming "O" and the words "ORGANIC PEROXIDE."
   f. Identify poisons by class or symbol.
      (1) Class 6.
      (2) Placard - white background with a skull and crossbones.
   g. Identify radioactive agents by class or symbol.
      (1) Class 7.
      (2) Placard - yellow top and white bottom with a black propeller.
   h. Identify corrosives by class or symbol.
      (1) Class 8.
      (2) Placard - white top and black bottom with two test tubes and a hand with a steel bar.
   i. Identify miscellaneous HAZMAT by class or symbol.
      (1) Class 9.

Performance Steps

(2) Placard - black and white vertical stripes on the top and white on the bottom.

j. Identify other regulated materials by class.
   (1) Class 10.
   (2) No placard.

k. Identify anything that is forbidden by class.
   (1) Class 11.
   (2) No placard; they are forbidden from being transported.

2. Identify the ways to obtain MSDSs.
   a. Locate the hazard communications program.
      (1) Maintain a record of the products at the location (building manager).
      (2) Maintain a record of all other products (fire department).
   b. Locate the MSDSs.
      (1) Place the MSDSs in with the products.
      (2) Phone the manufacturer.
      (3) Phone the Chemical Transportation Emergency Center (CHEMTREC) (1-800-424-9300).
      (4) Contact the Hazardous Information Transmission System (HITS) via their Web site.

3. Identify the types of stress on a container that will cause a release of material.
   a. Identify the following thermal stresses:
      (1) Radiated heat.
      (2) Convected heat.
      (3) Conducted heat.
      (4) Direct heat.
   b. Identify the mechanical stress as a result of physical force.
   c. Identify the chemical stress as a result of a reaction, interaction, or contact with another chemical.

4. Identify the following dispersion patterns:
   a. Hemisphere.
   b. Cloud.
   c. Plume.
   d. Cone.
   e. Stream.
   f. Pool.
   g. Irregular.

5. Identify the following health hazards of a HAZMAT incident:
   a. Asphyxiant.
   b. Convulsant.
   c. Allergen.
   d. Carcinogen.
   e. Corrosive agents.
   f. Highly toxic agents.
   g. Irritant.
   h. Sensitizer.
   i. Toxic agents.
   j. Target organ effects, including—
      (1) Hepatotoxins agents.
      (2) Nephrotoxins agents.
      (3) Neurotoxins.
      (4) Blood agents.
      (5) Pulmonary agents.
      (6) Reproductive toxins.
      (7) Cutaneous hazards.
      (8) Eye hazards.

Performance Steps

k. Identify the following chronic health hazards:
   (1) Carcinogen.
   (2) Mutagen.
   (3) Teratogen.

l. Identify the following types of radiation:
   (1) Alpha.
   (2) Beta.
   (3) Gamma.
   (4) Neutron.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to perform HAZMAT operations at the HAZMAT operational level.

Performance Measures	**GO**	**NO GO**
1. Identified HAZMAT by class or symbol.	____	____
2. Identified the ways to obtain MSDSs.	____	____
3. Identified the types of stress on a container that will cause a release of material.	____	____
4. Identified the dispersion patterns.	____	____
5. Identified the health hazards of a HAZMAT incident.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
IFSTA MANUALS
LO 5-4210-220-12
TM 5-4210-220-12

Control a Flammable Gas Cylinder Fire

052-249-1164

Conditions: Given a firefighting apparatus, protective gear, a self-contained breathing apparatus (SCBA), three additional firefighters, bills of lading, manifests, placards, and a gas cylinder fire trainer.

Standards: Control a flammable gas cylinder fire.

Performance Steps

1. Review safety procedures prior to combating the fire.
   a. Ensure that all personnel entering the area are wearing full protective clothing and a SCBA.
   b. Identify a safe haven prior to entry.
2. Identify the fire contents.
   a. Locate bills of lading.
   b. Locate manifests.
   c. Identify placards.
3. Assemble a foam fire stream.
   a. Place the foam concentrate at the eductor.
   b. Ensure that the eductor and nozzle are compatible.
   c. Attach the hose line and nozzle to the discharge side of the eductor.
   d. Place the eductor pickup tube in the foam concentrate container.
   e. Open the nozzle, and flow the foam.
4. Attack the fire.
   a. Attack the fire initially with both hose lines.
   b. Advance to the fire while progressively widening the nozzle patterns to fog.
   c. Position yourself between both handlines.
   d. Approach the cylinder at a right angle.
   e. Shut off the cylinder valves.
   f. Remain in the fire until it is extinguished.
   g. Continue to cool the cylinder while visually evaluating the condition of the cylinder.
5. Retreat from the fire.
   a. Back out the crew when alerted by the emergency signal or signs from the cylinder, including—
      (1) The intensity of the sound from the relief valve.
      (2) The intensity of the fire coming from the relief valve.
      (3) Firefighting apparatus horn sounds.
      (4) A fire crew member's alert of a problem.
   b. Keep the crew together while exiting the fire area.
      (1) Face the fire during the exit of the fire area.
      (2) Keep cooling streams on until all crew members are clear of the fire area.

Evaluation Preparation: Setup: Provide the soldier with the items in the conditions.

Brief soldier: Tell the soldier to control a flammable gas cylinder fire.

Performance Measures	**GO**	**NO GO**
1. Reviewed safety procedures prior to combating the fire.	____	____
2. Identified the fire contents.	____	____
3. Assembled a foam fire stream.	____	____
4. Attacked the fire.	____	____

Performance Measures	GO	NO GO
5. Retreated from the fire.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
AR 420-90
DA FORM 2404
DA FORM 5376-R
DA FORM 5381-R
DA PAM 738-750
FM 5-415
IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Extinguish an Ignitable Liquid Fire

052-249-1165

Conditions: Given a firefighting apparatus, protective clothing, a self-contained breathing apparatus (SCBA), one additional firefighter, a hose line, a foam eductor, a container of foam concentrates, and an approved training fire pit.

Standards: Extinguish an ignitable liquid fire.

Performance Steps

1. Review safety procedures prior to combating the fire.
   a. Ensure that all personnel entering the area are wearing full protective clothing and a SCBA.
   b. Identify a safe haven prior to entry.
2. Identify the fire contents.
   a. Locate bills of lading.
   b. Locate manifests.
   c. Identify placards.
3. Assemble a foam fire stream.
   a. Place the foam concentrate at the eductor.
   b. Ensure that the eductor and nozzle are compatible.
   c. Attach the hose line and nozzle to the discharge side of the eductor.
   d. Place the eductor pickup tube in the foam concentrate container.
   e. Open the nozzle, and flow the foam.
4. Identify the methods used to combat a liquid fire.
   a. Identify the bank-down method.
      (1) Use this method when an elevated object is near the burning liquid.
      (2) Bank foam off of an object to allow foam to run down onto the surface of the fuel.
   b. Identify the roll-on method.
      (1) Direct the foam stream on the ground near the front edge of the liquid pool.
      (2) Flow the foam roll across the surface of the fuel.
5. Extinguish the fire.
   a. Use the bank-down or roll-on method to combat the fire according to a prior situation size-up.
   b. Apply the foam until it spreads across the entire surface of the fuel.
   c. Stop flowing the foam when the fire is extinguished.
6. Retreat from the fire.
   a. Back out the crew when alerted by the emergency signal or signs from the liquid fire, including—
      (1) The intensity of the fire coming at the crew.
      (2) Firefighting apparatus horn sounds.
      (3) A fire crew member's alert of a problem.
   b. Keep the crew together while exiting the fire area.
      (1) Face the fire during the exit of the fire area.
      (2) Keep the foam stream on until all crew members are clear of the fire area.

Evaluation Preparation: Setup: Provide the soldier with the items in the conditions.

Brief soldier: Tell the soldier to extinguish an ignitable liquid fire.

Performance Measures	**GO**	**NO GO**
1. Reviewed safety procedures prior to combating the fire.	____	____

Performance Measures	GO	NO GO
2. Identified the fire contents.	____	____
3. Assembled a foam fire stream.	____	____
4. Identified the methods used to combat a liquid fire.	____	____
5. Extinguished the fire.	____	____
6. Retreated from the fire.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
AR 420-90
FM 5-415
IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Subject Area 7: Perform Aircraft Firefighting

Gain Access to an Aircraft Using Forcible-Entry Techniques
052-249-1128

Conditions: Given a firefighting apparatus, protective clothing, a self-contained breathing apparatus (SCBA), an aircraft crash site, and a rescue path that has been opened by the turret operator.

Standards: Gain access to an aircraft using forcible-entry techniques.

Performance Steps
NOTE: When an aircraft hits the ground, openings are sometimes created. If you can use these openings, do not perform forcible entry into the aircraft. If necessary, make the openings larger or more suitable. Try to open the crew and passenger doors normally before you perform forcible entry. Often, the doors will still function normally regardless of the exterior structural damage to the door or aircraft.

1. Identify the forcible-entry points on an aircraft.
    a. Locate the doors and hatches.

NOTE: Some doors are equipped with an external or internal emergency door jettison release. When activated, the door will release from the aircraft and fall away.

(1) Pull the external-door jettison handle, and remove the door.
(2) Place a door opener alternately above and below the door handle, and pry the door away from the aircraft frame.
(3) Place a crash ax along the edge of the door window frame, and cut through the window.
(4) Open a hole large enough to reach inside, and activate the door jettison handle.

WARNING: WHEN USING THE CRASH AX OR SIMILAR CUTTING TOOL TO REMOVE THE ACRYLIC PLASTIC, DO NOT INJURE THE CREW MEMBERS OR PASSENGERS IN THE IMMEDIATE AREA.

WARNING: SOME AIRCRAFT DOORS AND CANOPIES ARE EQUIPPED WITH AN EXPLOSIVE CHARGE. BE VERY CAREFUL TRYING TO GAIN ENTRY INTO THE AIRCRAFT THROUGH THESE DOORS AND CANOPIES.

    b. Locate the canopies.

DANGER: SOME AIRCRAFT ONLY HAVE CANOPIES AS A MEANS OF ENTRY. THESE CANOPIES ARE USUALLY EQUIPPED WITH AN EXPLOSIVE CHARGE TO JETTISON THE CANOPY. IF YOU ARE IN THE PATH OF A CANOPY DURING JETTISON, SERIOUS INJURY OR DEATH MAY OCCUR.

WARNING: BE VERY CAREFUL WHEN APPROACHING AN AIRCRAFT THAT IS EQUIPPED WITH AN EXPLOSIVE CANOPY. APPROACH THE AIRCRAFT IN A CROUCHING POSITION WHILE KEEPING YOUR EYES FIXED ON THE COCKPIT. UNCONSCIOUS CREW MEMBERS COULD REGAIN CONSCIOUSNESS AND ACTIVATE THE CANOPY FIRING DEVICE.

(1) Use a crash ax.
    (a) Drive the pointed edge of a crash ax or similar cutting tool through the corner of the canopy along the edge of the frame.
    (b) Insert the cutting edge of the tool into the hole after making the hole.
    (c) Use a second tool or rubber mallet to drive the blade of the cutting tool along the frame edge and cut the acrylic plastic.
    (d) Remove the canopy after completing the cut.
(2) Use a K-12 rescue saw.

WARNING: COVER THE AREA IMMEDIATELY AROUND THE CANOPY WITH FOAM BEFORE USING THE K-12 SAW. A CHARGED HOSE LINE OR TURRET SHOULD ALSO BE PRE-POSITIONED AND READY TO DISCHARGE IN CASE OF FIRE.

    (a) Cut the acrylic plastic along the frame edge.
    (b) Remove the canopy after completing the cut.

Performance Steps

c. Locate the fuselage areas.

NOTE: These areas may be obscured because of the fire. You should be familiar with the aircraft at your location before an emergency occurs.

(1) Cut along three sides, and bend back the fourth side.

NOTE: If the opening is high on the fuselage, use the top portion as a hinge. After making the three cuts, bend the portion outward and upward. If the opening is low on the fuselage, use the bottom portion as a hinge. After making the three cuts, bend the portion outward and downward.

(2) After completing the opening, cover the sharp areas with a blanket or another form of covering.

2. Identify the emergency entries on an aircraft.
   a. Perform an emergency entry on an OH-6.
      (1) Cut or break the door window.
      (2) Leave the door handle in the OPEN position.
      (3) Reach inside the aircraft, and pull the internal-door jettison handle to disengage the hinge pins.
      (4) Cut the cabin enclosure if the above procedures fail.
   b. Perform an emergency entry on an OH-58.
      (1) Cut the windows in the crew doors.
      (2) Reach inside, and pull the crew door jettison handles rearward to release the door.
      (3) Pull the door out.
      (4) Cut the windows in the passenger doors.
      (5) Reach inside, and rotate the passenger door jettison handles.
      (6) Pull the door out.
      (7) Cut the windows and windshield if the above procedures fail.
   c. Perform an emergency entry on a UH-1.
      (1) Slide, break, or cut the crew door windows.
      (2) Reach inside, and pull the pilot or copilot door jettison handles rearward.
      (3) Remove the doors.
      (4) Cut the windows and windshield if the above procedures fail.
   d. Perform an emergency entry on a UH-60.
      (1) Break the window in the cockpit door, and pull the jettison lever aft to release the door hinges.
      (2) Break the window in the cabin door, rotate the emergency handle to the aft position, and then rotate the bottom of the window out to remove it.
      (3) Cut the windows and windshield if the above procedures fail.
   e. Perform an emergency entry on a CH-47.
      (1) Push the trigger button that is mounted in the center of the handle, and rotate the emergency release handle.
      (2) Pull the doors out, and remove them.
      (3) Pull out the emergency release tab that is mounted in the lower left corner of the escape hatches.
      (4) Push the panels in.
      (5) Cut in the center of the upper fuselage (portion between both windows on both sides) if the above procedures fail.
   f. Perform an emergency entry on a CH-54.
      (1) Rotate the pilot's emergency jettison release handle.
      (2) Pull the door out.
      (3) Rotate the copilot's emergency jettison release handle.
      (4) Pull the doors out.
      (5) Pull the exit release tab out.
      (6) Remove the window.
      (7) Cut around the windows and access the doors of the pod if the above procedures fail.
   g. Perform an emergency entry on an AH-1G.

Performance Steps

WARNING: THE WINDOWS OF AN AH-1G ARE EQUIPPED WITH AN EXPLOSIVE CHARGE TO BLOW THEM OUT. APPROACH THE AIRCRAFT VERY CAREFULLY.

(1) Rotate the pilot's external canopy handle downward.

NOTE: If the external canopy handles are inoperable, break the canopy to reach the jettison handle.

(2) Raise the canopy.
(3) Reach inside the cockpit, and rotate the canopy jettison release handle inboard.
(4) Pull the canopy out.
(5) Rotate the gunner's canopy handle upward.
(6) Raise the canopy.
(7) Reach inside, and rotate the canopy jettison release handle inboard.
(8) Pull the canopy out.
(9) Cut the canopy if the above procedures fail.

h. Perform an emergency entry on an AH-64.
(1) Open the access door on the nose of the aircraft directly in front of the copilot and/or gunner.
(2) Rotate the canopy jettison handle 90° counterclockwise.
(3) Push the handle in to the jettison canopy side panels.
(4) Cut the canopy if the above procedures fail.

i. Perform an emergency entry on a C-12.
(1) Pull the handle on the emergency exit hatch outward.
(2) Push in on the hatch, and remove the door from the fuselage.
(3) Cut the cabin enclosure if the above procedures fail.

j. Perform an emergency entry on a U-21.
(1) Cut or break the window in the escape hatch to gain access to the jettison handle.
(2) Pull the yellow cover over the jettison handle downward.
(3) Press the release button.
(4) Pull the jettison handle upward.
(5) Pull the hatch out.

k. Perform an emergency entry on a U-21-A and RU-21A, B, and C by cutting in the area forward of the aft window on the right-hand side of the fuselage.

l. Perform an emergency entry on a U-21G and RU-21D and E by cutting in the area behind the aft window on the right-hand side of the fuselage.

m. Perform an emergency entry on an OV-1.
(1) Lift the exit release lock ring, and rotate it to the unlock position.
(2) Push the forward end of the hatch handle inward, and pull the aft end of the handle outward.
(3) Lift the entrance hatch to the FULL OPEN position.
(4) Cut around the entrance hatch if the above procedures fail.

n. Perform an emergency entry on a C-130.

WARNING: TO AVOID THE HAZARDS IN APPROACHING A RUNNING AIRCRAFT, ENTER THROUGH THE REAR TROOP DOORS.

(1) Open the aft troop doors (right and left sides).
(2) Open the rear cargo or troop door.
(3) Lift the four hatches located in the front, in the center, on the top of the fuselage, and on the front right side.

NOTE: On an AC-130 aircraft equipped with interior electronic compartment, gain entry using the troop door on the right side aft of the aircraft.

NOTE: On an HC-130H/N/P aircraft, the right emergency entry door may be blocked by an equipment bin. On these aircraft, an identical emergency entry door is located on the left side of the aircraft.

(4) Cut on each side of the fuselage, above and forward of each troop door, if the above procedures fail.

o. Perform an emergency entry on a C-141.

Performance Steps

(1) Press the emergency exit release triggers. Rotate the handle counterclockwise, and push the hatch (located one forward and one aft wing root side) inward.
(2) Lift the release ring, and pull it upward to open the emergency exits (located top left forward of the flight deck, top forward, and aft of the cargo compartment).

WARNING: THE AIRCRAFT MUST BE COMPLETELY DEPRESSURIZED BEFORE EITHER THE INSIDE OR OUTSIDE DOOR HANDLES ARE OPERATED. OPERATING DOORS OR HATCHES WHILE THE AIRCRAFT IS PRESSURIZED COULD CAUSE SERIOUS INJURY TO PERSONNEL.

(3) Strike the rectangular bump plate (located above and inboard of the hatch) to open.
(4) Cut in the area aft of the left forward emergency exit and aft of both troop doors if the above procedures fail.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to gain access to an aircraft using forcible-entry techniques.

Performance Measures	**GO**	**NO GO**
1. Identified the forcible-entry points on an aircraft.	____	____
2. Identified the emergency entries on an aircraft.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
FM 5-415
IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Perform Aircraft Emergency Shutdown Procedures

052-249-1129

Conditions: Given a firefighting apparatus, all necessary firefighting tools, a hose line with a nozzle, one assistant firefighter to operate the hose line, and an aircraft with an emergency.

Standards: Perform aircraft emergency shutdown procedures.

Performance Steps

DANGER: BE VERY CAREFUL WHEN PERFORMING FIREFIGHTING OPERATIONS ON A ROTARY-WING AIRCRAFT. PAY SPECIAL ATTENTION TO THE MAIN ROTOR AND THE TAIL ROTOR BLADES. ENTER FROM THE SIDE OF THE AIRCRAFT, AND APPROACH THE AIRCRAFT FROM A CROUCHING POSITION.

DANGER: DO NOT PASS IN FRONT OF THE GUNS IF THEY ARE MOUNTED ON THE AIRCRAFT UNLESS ABSOLUTELY NECESSARY. DO NOT TOUCH THE GUN BARRELS BECAUSE ANY ROTATION OF THE GUN BARRELS WILL CAUSE THE GUN TO FIRE.

1. Perform an emergency shutdown on an OH-6.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
        (1) Rotate the throttle (on the pilot's and copilot's collective levers) to FUEL CUT OFF.
        (2) Place battery switch (on the electrical control console) to OFF.
        (3) Disconnect the battery leads from the battery terminals (in the nose of the aircraft).

2. Perform an emergency shutdown on an OH-58.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
        (1) Rotate the throttle (on the pilot's collective pitch stick) to OFF.
        (2) Pull the fuel shutoff valve (on the overhead panel) aft to OFF.
        (3) Place the battery switch (on the overhead switch panel) to OFF.
        (4) Disconnect the battery leads from the battery terminals (in the nose of the aircraft).

3. Perform an emergency shutdown on a UH-1.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
        (1) Rotate the throttle (on the pilot's collective pitch stick) to OFF.

NOTE: If the throttle has a detent button, rotate the throttle until it stops. Press the detent button, and rotate the throttle to OFF.

        (2) Pull the fuel switch(es) (on the floor pedestal) to OFF.

NOTE: The procedures for placing the fuel switches to OFF on the UH-1 depends on the model. On some models, you must push the fuel switches downward to OFF while on other models you must push the fuel switches upward to OFF. Also, some UH-1s have two fuel switches that you must place to OFF when shutting down the aircraft. You should be familiar with the aircraft at your installation.

        (3) Place the battery switch (on the overhead control panel) to OFF.
        (4) Disconnect the battery leads from the battery terminals (in the nose or rear compartment of the aircraft).

4. Perform emergency shutdown on a UH-60.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
        (1) Pull the engine emergency T handles (on control quadrant) FULL AFT.
        (2) Pull the auxiliary power unit (APU) T handle (on upper console) DOWN.
        (3) Place the battery switch (on upper console) to OFF.

5. Perform an emergency shutdown on a CH-47.

Performance Steps

a. Enter the aircraft through normal openings, or use forcible entry as necessary.
b. Shut down the aircraft.
(1) Place the engine condition levers (on the floor console pedestal or the overhead switch panel) to STOP.
(2) Place the fuel valves or pump switches (on the overhead switch panel) to CLOSED or OFF.
(3) Place the battery switch (on the overhead switch panel) to OFF.
(4) Disconnect the battery leads from the battery terminals (in the left side compartment of the aircraft).

6. Perform an emergency shutdown on a CH-54.
a. Enter the aircraft through normal openings, or use forcible entry as necessary.
b. Shut down the aircraft.
(1) Place N1 levers (on the overhead control quadrant) to SHUT-OFF.

NOTE: The N1 levers have a detent in the IDLE position. To pass through the detent to SHUT-OFF, pull out on the levers.

(2) Place the fuel valve shut-off handle (on the overhead control quadrant) to CLOSED.
(3) Place the fuel booster pump switches (on the upper panel of the center console) to OFF.
(4) Place the ignition switches (on the center panel of the center console) to OFF.
(5) Place the battery switch (on the center panel of the center console) to OFF.
(6) Disconnect the battery leads from the battery terminals (in the nose of the aircraft).

7. Perform an emergency shutdown on an AH-1G aircraft.
a. Enter the aircraft through normal openings, or use forcible entry as necessary.

WARNING: DO NOT PASS IN FRONT OF THE GUNS IF THEY ARE MOUNTED ON THE AIRCRAFT UNLESS ABSOLUTELY NECESSARY. DO NOT TOUCH THE GUN BARRELS BECAUSE ANY ROTATION WILL CAUSE THE GUNS TO FIRE. ALSO, BE VERY CAREFUL WHEN PASSING IN FRONT OF THE ROCKETS MOUNTED ON THE WINGS.

b. Shut down the aircraft.
(1) Depress the idle release stop button (on the pilot collective pitch stick), and rotate the throttle to FULLY OFF.
(2) Place the fuel switch (on the engine control panel, left side) to OFF.
(3) Place the generator switch (on the power panel, left side) to OFF.
(4) Place the battery switch (beside the generator switch) to OFF.
(5) Disconnect the battery leads from the battery terminals (in the nose of the aircraft).

8. Perform an emergency shutdown on an AH-64 aircraft.
a. Enter the aircraft through normal openings, or use forcible entry as necessary.

WARNING: DO NOT PASS IN FRONT OF THE GUNS IF THEY ARE MOUNTED ON THE AIRCRAFT UNLESS ABSOLUTELY NECESSARY. DO NOT TOUCH THE GUN BARRELS BECAUSE ANY ROTATION WILL CAUSE THE GUNS TO FIRE. ALSO, BE VERY CAREFUL WHEN PASSING IN FRONT OF THE ROCKETS MOUNTED ON THE WINGS.

b. Shut down the aircraft.
(1) Pull the engine fire T handles (on pilot's instrument panel).
(2) Place the engine fire extinguisher switch (below the engine fire T handles) to PRIMARY.

NOTE: The APU cannot be shut down from the copilot or gunner cockpit.

(3) Pull the APU fire T handle (located on right console).
(4) Place the APU fire extinguisher switch (behind the fire T handle) to PRIMARY.

9. Perform an emergency shutdown on a U-21.

WARNING: BE VERY CAREFUL WHEN APPROACHING FIXED-WING AIRCRAFT AND WHEN PERFORMING FIREFIGHTING OPERATIONS AROUND THE AIRCRAFT. PAY SPECIAL ATTENTION TO AIRCRAFT EQUIPPED WITH PROPELLERS. ENTER FROM THE SIDE OF THE AIRCRAFT BEHIND THE WINGS TO AVOID THE PROPELLER AREA.

a. Enter the aircraft through normal openings, or use forcible entry as necessary.
b. Shut down the aircraft.

Performance Steps

(1) Position the fuel fire wall valve switches (below the fuel management panel) downward to OFF.
(2) Push the master switch gang bar (on the left subpanel) downward to OFF.
(3) Pull the propeller levers (in the center of the control pedestal) aft to FEATHER.
(4) Disconnect the battery leads from the battery terminals (left forward compartment).

10. Perform an emergency shutdown on a C-12 aircraft.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
        (1) Retard the condition levers (on the right side of the pilot control pedestal) to FUEL CUT-OFF.
        (2) Pull the engine fire shutoff T handles (on the upper portion of the pilot instrument panel).

NOTE: If the fire T handles are illuminated, actuate the fire extinguisher push button (between the fire T handles).

        (3) Place the master switch (on the pilot overhead control panel) to OFF.

11. Perform an emergency shutdown on an OV-1 aircraft.

WARNING: BE VERY CAREFUL WHEN PASSING IN FRONT OF THE ROCKETS MOUNTED ON THE WINGS.

    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
        (1) Retard the power levers (on the control pedestal) to IDLE.
        (2) Pull the propeller levers (on the control pedestal) aft to FEATHER.
        (3) Position the engine master switches (on the overhead control panel) downward to OFF.
        (4) Position the fuel pump switches (below the master switches) to OFF.
        (5) Position the battery switch (on the left overhead control panel) to OFF.

12. Perform an emergency shutdown on a C-130 aircraft.

WARNING: TO AVOID THE HAZARDS IN APPROACHING A RUNNING AIRCRAFT, ENTER THROUGH THE REAR TROOP DOORS.

    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.

NOTE: Do not remove battery power before activating the emergency T handles.

        (1) Position the condition levers (located on the control pedestal between the forward crew seats) aft to FEATHER.
        (2) Open the safety guard of the bus tie switch.
        (3) Turn the switch to ON.

NOTE: If the switch is left OFF, pulling the T handles will only arm the fire extinguishing system and not close the valves at the engine fire walls. The bus tie is located on the overhead panel above the pilot's right seat armrest.

        (4) Pull the fire emergency shutdown T handles (located on the overhead panel) to AFT.

NOTE: On the C-130A, pull the fire emergency shutdown T handles. Depress and hold the battery engine start switch (located below and between the 1 and 2 T handles) for 5 seconds, and then release the battery engine start switch.

NOTE: If the APU/GTC is operating, pull the GTC T handle.

        (5) Disconnect the battery (located forward of the crew entrance door) or turn the battery switch (located on the overhead control panel) clockwise to OFF.

NOTE: On the C-130A, turn the switch counterclockwise to OFF.

NOTE: To reduce fire damage in the cockpit area, close the oxygen manual supply valve(s). Ensure that all occupants have been evacuated before closing the valve(s).

13. Perform emergency shutdown on a C-141 aircraft.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.

Performance Steps

DANGER: THE AIRCRAFT MUST BE COMPLETELY DEPRESSURIZED BEFORE THE INSIDE OR OUTSIDE DOOR HANDLE IS OPERATED. OPENING DOORS OR HATCHES WHILE THE AIRCRAFT IS PRESSURIZED COULD CAUSE SERIOUS INJURY TO PERSONNEL.

DANGER: FLARES ARE A SOURCE OF IGNITION FOR MANY LUBRICANTS AND FLUIDS USED IN SERVICING AIRCRAFT. SELECTED AIRCRAFT HAVE A COUNTERMEASURE DISPENSING SYSTEM OR FLARE DISPENSING CAPABILITIES. THESE DEVICES ARE LOCATED IN FIRE SUPPORT (FS) 520 AND FS 1130E ON BOTH SIDES OF THE AIRCRAFT. STRAY VOLTAGE CAN CAUSE IGNITION. PERSONNEL SHOULD GROUND THEMSELVES BEFORE APPROACHING THESE CRITICAL AREAS.

b. Shut down the aircraft.
   (1) Pull engine fire control T-handles (located upper center portion of instrument panel).
   (2) Pull APU fire T-handle (located on flight engineer's panel).
   (3) Place battery switch (located on flight engineer's electrical panel) to OFF position.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to perform emergency aircraft shutdown procedures.

Performance Measures	**GO**	**NO GO**
1. Performed an emergency shutdown on an OH-6.	____	____
2. Performed an emergency shutdown on an OH-58.	____	____
3. Performed an emergency shutdown on a UH-1.	____	____
4. Performed an emergency shutdown on a UH-60.	____	____
5. Performed an emergency shutdown on a CH-47.	____	____
6. Performed an emergency shutdown on a CH-54.	____	____
7. Performed an emergency shutdown on an AH-1G.	____	____
8. Performed an emergency shutdown on an AH-64.	____	____
9. Performed an emergency shutdown on a U-21.	____	____
10. Performed an emergency shutdown on a C-12.	____	____
11. Performed an emergency shutdown for an OV-1.	____	____
12. Performed an emergency shutdown for a C-130.	____	____
13. Performed an emergency shutdown for a C-141.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
FM 5-415
IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

Rescue Survivors from an Aircraft

052-249-1130

Conditions: Given a firefighting apparatus, protective clothing, the necessary firefighting tools, an aircraft with an emergency, survivors onboard, a hose line with a nozzle, and one assistant firefighter to operate the hose line.

Standards: Rescue survivors from an aircraft.

Performance Steps

DANGER: BE VERY CAREFUL WHEN APPROACHING A ROTARY-WING AIRCRAFT. PAY SPECIAL ATTENTION TO THE MAIN AND TAIL ROTOR BLADES. ENTER FROM THE SIDE OF THE AIRCRAFT, AND APPROACH THE AIRCRAFT FROM A CROUCHING POSITION.

DANGER: DO NOT PASS IN FRONT OF THE GUN UNLESS ABSOLUTELY NECESSARY. THE GUNNER'S HELMET CONTROLS THE MOVEMENT OF THE WEAPON. IF THE GUNNER STARTS TO REGAIN CONSCIOUSNESS, THE GUN BARREL WILL MOVE AS HIS HEAD MOVES. YOU COULD BE KNOCKED DOWN AND SEVERELY INJURED IF HIT BY THE BARREL. ALWAYS KEEP THE CREW MEMBERS IN SIGHT.

1. Perform a rescue on an AH-64.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue the survivors.
        (1) Turn the harness release knob one-fourth turn in either direction to release the crew member restraints.
        (2) Unplug the helmet cord.
        (3) Lift the survivor from the seat, and place him on the frame of the aircraft.
        (4) Lower the survivor onto your shoulder, and carry the survivor to safety.

NOTE: This aircraft may not require the use of a ladder due to the impact with the ground. If this is the case, use your best judgment to remove the survivors safely.

        (5) Return to the aircraft to rescue the additional crew members.

2. Perform a rescue on an AH-1G.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue the survivors.
        (1) Turn the harness release knob one-fourth turn in either direction to release the crew member restraints.
        (2) Unplug the helmet cord.
        (3) Lift the survivor from the seat, and place him on the frame of the aircraft.
        (4) Lower the survivor onto your shoulder, and carry the survivor to safety.

NOTE: This aircraft may not require the use of a ladder due to the impact with the ground. If this is the case, use your best judgment to remove the survivors safely.

        (5) Return to the aircraft to rescue the additional crew members.

3. Perform a rescue on a UH-1.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue the survivors.
        (1) Unlatch the lap belt, and remove the shoulder harness.
        (2) Unplug the helmet cord.
        (3) Rotate the survivor from the seat to your arms.
        (4) Carry the survivor to safety.
        (5) Return to the aircraft to rescue the additional crew members.

Performance Steps

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should be performing rescues simultaneously.

4. Perform a rescue on an OH-6.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue the survivors.
        (1) Unlatch the lap belt, and remove the shoulder harness.
        (2) Unplug the helmet cord.
        (3) Rotate the survivor from the seat to your arms.
        (4) Carry the survivor to safety.
        (5) Return to the aircraft to rescue the additional crew members.

5. Perform a rescue on an OH-58.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue the survivors.
        (1) Unlatch the lap belt, and remove the shoulder harness.
        (2) Unplug the helmet cord.
        (3) Rotate the survivor from the seat to your arms.
        (4) Carry the survivor to safety.
        (5) Return to the aircraft to rescue the additional crew members.

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should be performing rescues simultaneously.

6. Perform a rescue on a CH-47.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue the survivors.
        (1) Unlatch the lap belt, and remove the shoulder harness.
        (2) Unplug the helmet cord.
        (3) Lift the survivor from the seat, and place him on the frame of the aircraft.
        (4) Lower the survivor onto your shoulder, and carry the survivor to safety.

NOTE: The aircraft may not require the use of a ladder due to the impact with the ground. If this is the case, use your best judgment to remove the survivors safely.

        (5) Return to the aircraft to rescue the additional crew members.

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should be performing rescues simultaneously.

7. Perform a rescue on a CH-54.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue the survivors.
        (1) Unlatch the lap belt, and remove the shoulder harness.
        (2) Remove the headset, or unplug the helmet cord.
        (3) Rotate the survivor from the seat to the floor of the aircraft.
        (4) Drag the survivor to the closest emergency exit.
        (5) Carry the survivor to safety.
        (6) Return to the aircraft to rescue the additional crew members.

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should be performing rescues simultaneously.

8. Perform a rescue on a UH-60.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue the survivors.

Performance Steps

(1) Turn the harness release knob one-fourth turn in either direction to release the crew member restraints.
(2) Unplug the helmet cord.
(3) Rotate the survivor from the seat to your arms.
(4) Carry the survivor to safety.
(5) Return to the aircraft to rescue the additional crew members.

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should be performing rescues simultaneously.

9. Perform a rescue on a C-12.

CAUTION: ALWAYS STAY A SAFE DISTANCE FROM MOVING PROPELLERS.

a. Enter the aircraft through normal openings, or use forcible entry as necessary.
b. Shut down the aircraft.
c. Rescue the survivors.
(1) Unlatch the lap belt, and remove the shoulder harness.
(2) Remove the headset, or unplug the helmet cord.
(3) Rotate the survivor from the seat to the floor of the aircraft.
(4) Drag the survivor to the closest emergency exit.
(5) Carry the survivor to safety.
(6) Return to the aircraft to rescue the additional crew members.

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should be performing rescues simultaneously.

10. Perform a rescue on a U-21.

CAUTION: ALWAYS STAY A SAFE DISTANCE FROM MOVING PROPELLERS.

a. Enter the aircraft through normal openings, or use forcible entry as necessary.
b. Shut down the aircraft.
c. Rescue the survivors.
(1) Unlatch the lap belt, and remove the shoulder harness.
(2) Remove the headset, or unplug the helmet cord.
(3) Rotate the survivor from the seat to the floor of the aircraft.
(4) Drag the survivor to the closest emergency exit.
(5) Carry the survivor to safety.
(6) Return to the aircraft to rescue the additional crew members.

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should be performing rescues simultaneously.

11. Perform a rescue on an OV-1.

CAUTION: ALWAYS STAY A SAFE DISTANCE FROM MOVING PROPELLERS.

a. Enter the aircraft through normal openings or use forcible entry as necessary.
b. Shut down the aircraft.
c. Rescue the survivors.
(1) Perform the emergency procedures for the ejection seat.
(a) Lift the red tab of the face blind locking mechanism (located on the top of the seat).
(b) Lift the lower firing handle safety guard (located on the front center of the seat) and install the safety pin.

NOTE: If the safety pin is not available, a metal pin the diameter of a tenpenny nail can be used.

(c) Insert the safety pin in the ejection gun sear (located on top of the seat, directly aft of the face blind-locking mechanism).
(d) Remove the safety pin from drogue gun trip rod (located on the left rear of the seat back), and insert this pin in the drogue gun container (located above the trip rod).
(2) Unlatch the lap belt, and remove the shoulder harness.
(3) Unplug the helmet cord.
(4) Lift the survivor from the seat, and place the survivor on the frame of the aircraft.
(5) Lower the survivor onto your shoulder, and carry the survivor to safety.

Performance Steps

NOTE: The aircraft may not require the use of a ladder due to the impact with the ground. If this is the case, use your best judgment to remove the survivors safely.

(6) Return to the aircraft to rescue the additional crew members.

12. Perform a rescue on a C-130.

CAUTION: ALWAYS STAY A SAFE DISTANCE FROM MOVING PROPELLERS.

a. Enter the aircraft through normal openings, or use forcible entry as necessary.
b. Shut down the aircraft.
c. Rescue the survivors.
   (1) Unlatch the lap belt, and remove the shoulder harness.
   (2) Unplug the helmet cord.
   (3) Rotate the victim from the seat to the floor of the aircraft.
   (4) Drag the survivor to the closest emergency exit.
   (5) Carry the survivor to safety.
   (6) Return to the aircraft to rescue the additional crew members.

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should be performing rescues simultaneously.

13. Perform a rescue on a C-141.

CAUTION: APPROACH THE AIRCRAFT FROM THE REAR WHEN ENGINES ARE RUNNING.

NOTE: The aircraft must be depressurized before the doors or hatches can be opened.

a. Enter the aircraft through normal openings, or use forcible entry as necessary.
b. Shut down the aircraft.
c. Rescue the survivors.
   (1) Raise the seat armrests.
   (2) Unlatch the lap belt, and remove the shoulder harness.
   (3) Unplug the helmet cord.
   (4) Rotate the victim from the seat to the floor of the aircraft.
   (5) Drag the survivor to the closest emergency exit.
   (6) Carry the survivor to safety.
   (7) Return to the aircraft to rescue the additional crew members.

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should be performing rescues simultaneously.

Evaluation Preparation: Setup: Provide the soldier with all the items listed in the conditions.

Brief soldier: Tell the soldier to rescue survivors from the aircraft.

Performance Measures	**GO**	**NO GO**
1. Performed a rescue on an AH-64.	____	____
2. Performed a rescue on an AH-1G.	____	____
3. Performed a rescue on a UH-1.	____	____
4. Performed a rescue on an OH-6.	____	____
5. Performed a rescue on an OH-58.	____	____
6. Performed a rescue on a CH-47.	____	____
7. Performed a rescue on a CH-54.	____	____
8. Performed a rescue on a UH-60.	____	____
9. Performed a rescue on a C-12.	____	____

Performance Measures	GO	NO GO
10. Performed a rescue on a U-21.	____	____
11. Performed a rescue on an OV-1.	____	____
12. Performed a rescue on a C-130.	____	____
13. Performed a rescue on a C-141.	____	____

Evaluation Guidance: Score the soldier GO if all measures are passed (P). Score the soldier NO-GO if any measure is failed (F). If the soldier fails any measure, show him how to do it correctly.

References

Required

Related
FM 5-415
IFSTA MANUALS
LO 5-4210-220-12
NFPA 1001
TM 5-4210-220-12

APPENDIX A - METRIC CONVERSION CHART

Table A-1. Metric Conversion Chart

US Units	Multiplied By	Equals Metric Units
Length		
Feet	0.30480	Meters
Inches	2.54000	Centimeters
Inches	0.02540	Meters
Inches	25.40010	Millimeters
Miles (statute)	1.60930	Kilometers
Miles (nautical)	1.85320	Kilometers
Yards	0.91400	Meters
Area		
Square inches	6.45160	Square centimeters
Square feet	0.09290	Square meters
Square yards	0.83610	Square meters
Volume		
Cubic inches	16.38720	Cubic centimeters
Cubic feet	0.02830	Cubic meters
Cubic yards	0.76460	Cubic meters
Gallons	3.78540	Liters
Fluid ounces	29.57300	Milliliters
Quarts	0.94600	Liters
Weight		
Ounces	28.34900	Grams
Pounds	453.59000	Grams
Pounds	0.45359	Kilograms
Short tons	0.90700	Metric tons
Long tons	1.01600	Metric tons
Foot-pounds	1.38300	Newton-meters
Pressure		
Pounds per square inch	6.90000	Kilopascals

Metric Units	Multiplied By	Equals US Units
Length		
Centimeters	0.39370	Inches
Meters per second	2.23700	Miles per hour
Millimeters	0.03937	Inches
Kilometers	0.62137	Miles (statute)
Kilometers	0.53960	Miles (nautical)
Meters	3.28080	Feet
Meters	39.37000	Inches
Meters	1.09360	Yards
Area		
Square centimeters	0.15500	Square inches
Square meters	10.76400	Square feet
Square meters	1.19600	Square yards
Volume		
Cubic centimeters	0.06100	Cubic inches
Cubic meters	35.314 40	Cubic feet
Cubic meters	1.30790	Cubic yards
Milliliters	0.03380	Fluid ounces
Liters	1.05700	Quarts
Liters	0.26420	Gallons
Weight		
Grams	0.03527	Ounces
Kilograms	2.20460	Pounds
Metric tons	1.10200	Short tons
Metric tons	0.98400	Long tons
Newton-meters	0.73800	Foot-pounds
Pressure		
Kilopascals	0.14493	pounds per square inch

GLOSSARY

Section I
Acronyms & Abbreviations

1SG	first sergeant
AC	active component; alternating current
ACCP	Army correspondence course program
AIT	advanced individual training
AN	annually
ANCOC	Advanced Noncommissioned Officers Course
AR	Army regulation; armor; angle of repose
AR	Army regulation; armor; angle of repose
ARNG	Army National Guard
ARTEP	Army Training and Evaluation Program
ATTN	attention
BA	biannually
BNCOC	Basic Noncommissioned Officers Course
BW	biweekly; biological warfare
CMF	career management field
CTT	common task test; common task training
DA	Department of the Army; Denmark; direct action
DA	Department of the Army; Denmark; direct action
DD	Department of Defense
DPW	Department of Public Works
EDITH	exit drills in the home
EPMS	Enlisted Personnel Management System
F	frequency; fail; failed; Fahrenheit; full
FM	field manual; frequency modulated; frequency modulation
FM	field manual; frequency modulated; frequency modulation

HAZMAT	hazardous material
HQ	headquarters
IFSTA	International Fire Service Training Association
LO	learning objective; low; lubrication order, liaison officer
MANSCEN	Maneuver Support Center
METL	mission-essential task list
MO	Missouri; monthly
MOS	military occupational specialty; minimum operating strip
MSDS	material safety data sheet
MTP	mission training plan; MOS training plan
NCO	noncommissioned officer
NCOES	Noncommissioned Officer Education System
NFPA	National Fire Protection Association
OJT	On-The-Job Training
ops	operational procedures; operations
P	needs practice; pass; passed; barometric pressure; mean radius of curvature
PIV	positive infinite variable
PLDC	Primary Leadership Development Course
PMCS	preventive-maintenance checks and services
PMCS	preventive-maintenance checks and services
QT	quarterly
RC	rapid cure; reserve component
SA	semiannually; situational awareness
SCBA	self-contained breathing apparatus
SGM	sergeant major
SL	skill level; side lap
SM	soldier's manual
SOP	standing operating procedure

SR	Scale of Reproduction; supply route
STP	soldier training publication
TM	team; technical manual; trademark
TRADOC	United States Army Training and Doctrine Command
US	United States
USASMA	United States Army Sergeants Major Academy

REFERENCES

Required Publications

Required publications are sources that users must read in order to understand or to comply with this publication.

Army Regulations

AR 614-200	Enlisted Assignments and Utilization Management. 30 April 2003

Department of Army Forms

DA FORM 2404	Equipment Inspection and Maintenance Worksheet. 1 April 1979
DA FORM 2408-14	Uncorrected Fault Record (This Item is Included on EM 0001). 1 June 1994
DA FORM 5164-R	Hands-On Evaluation. 1 September 1985
DA FORM 5988-E	Equipment Inspection Maintenance Worksheet. 1 March 1991

Department of Army Pamphlets

DA PAM 350-59	Army Correspondence Course Program Catalog. 1 October 2002
DA PAM 738-750	Functional Users Manual for the Army Maintenance Management System (TAMMS). 1 August 1994

Field Manuals

FM 25-4	How to Conduct Training Exercises. 10 September 1984
FM 25-5	Training for Mobilization and War. 25 January 1985
FM 7-0	Training the Force. 22 October 2002
FM 7-1	Battle Focused Training. 15 September 2003

Lubrication Orders

LO 5-4210-220-12	Truck, Firefighting, 1000 GPM, Multipurpose, Model 2500L (Detroit Diesel V92 Engine). 15 January 1992

Soldier Training Publications

STP 21-1-SMCT	Soldier's Manual of Common Tasks Skill Level 1. 31 August 2003
STP 21-24-SMCT	Soldier's Manual of Common Tasks (SMCT) Skill Levels 2-4. 31 August 2003

Technical Manuals

TM 5-4210-220-12	Operator's and Unit Maintenance Manual for Truck, Firefighting, 1000 GPM Multipurpose, Model 2500L (Reprinted w/Basic Incl C1-8). 30 October 1987

Related Publications

Related publications are sources of additional information. They are not required in order to understand this publication.

Army Regulations

AR 420-90	Fire and Emergency Services 10 September 1997

Department of Army Forms

DA FORM 2028	Recommended Changes to Publications and Blank Forms. 1 February 1974
DA FORM 2404	Equipment Inspection and Maintenance Worksheet. 1 April 1979
DA FORM 2408-14	Uncorrected Fault Record (This Item is Included on EM 0001). 1 June 1994
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Department of Army Pamphlets

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FM 5-415	Fire-Fighting Operations 9 February 1999

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Other Product Types

IFSTA MANUALS	Essentials (4th Edition). 1 January 2001
NFPA 1001	Standard for Fire Fighter Professional Qualifications. 1 January 1997

Technical Manuals

TM 5-4210-220-12	Operator's and Unit Maintenance Manual for Truck, Firefighting, 1000 GPM Multipurpose, Model 2500L (Reprinted w/Basic Incl C1-8). 30 October 1987

STP 5-21M1-SM
16 AUGUST 2004

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

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Secretary of the Army
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