STP 5-21M1-SM

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

September 2010

HEADQUARTERS,
DEPARTMENT OF THE ARMY

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Soldier's Manual, MOS 21M
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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.

This publication applies to the Active Army, the Army National Guard (ARNG)/Army National Guard of the United States (ARNGUS), and the United States Army Reserve (USAR) unless otherwise stated.

The proponent of this publication is the United States Army Training and Doctrine Command (TRADOC). Send comments and recommendations on Department of the Army (DA) Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Commandant, U.S. Army Engineer School, ATTN: ATSE-DT, 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.

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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 with STP 21-1-SMCT, STP 21-24-SMCT, Army Training and Evaluation Programs (ARTEPs), and Field Manual (FM) 7-0 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 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 task number identifies each task or skill. Include this task number and title in any correspondence relating to the task.

- **Conditions.** The task conditions identify the equipment, tools, references, job aids, and supporting personnel that the Soldier needs to perform the task in wartime. This section identifies environmental conditions that could alter task performance (visibility, temperature, wind). This section also identifies specific cues or events (chemical attack, 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, evaluation preparation subsection, and/or evaluation guide. The training information outline includes detailed training information. The evaluation preparation subsection indicates the necessary modifications to task performance 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 those given in the task summary description.

1-4. Safety. Some task summaries include safety statements and notes. Safety statements (danger, warning, and caution notices) alert users to the possibility of death, personal injury, or equipment damage. 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 each 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 his 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. 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.

1-8. Training Support.

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

- **Appendix A, Metric Conversion Chart.** This appendix provides a metric measurement conversion chart.

- **Glossary.** The glossary is a comprehensive list of acronyms, abbreviations, terms, definitions, and letter symbols used in this STP.

- **References.** This section contains two lists of references, required and related, that support the training of all tasks in this STP. Required references are listed in the conditions 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). The use of this form may help preclude writing the Soldier tasks associated with the unit METL, and DA Form 5164-R 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 Soldier proficiency at the performance level. This form can be obtained electronically and may be reproduced locally. Follow these instructions when completing DA Form 5164-R:

- Enter the title and number of the task to be evaluated at the top of the form.
- Enter the number of each performance step from the evaluation guide in column A.
- 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, evaluator's name, and Soldier's name and unit before starting the evaluation.
- Enter a check in column C or column D for each performance step evaluated.
- Check the status block GO or NO-GO.

1-9. Enlisted Personnel Management System. The Enlisted Personnel Management System (EPMS) (Army Regulation [AR] 614-200) is the Army 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 (PVT) 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 CMF 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 Writer/Developer Instructor Operations/NCO Senior writer/developer Fire inspector Active Army advisor CMF 21 staff assignments					
Key leadership assignments	Firefighter driver/ operator	Lead firefighter	Station chief	Chief	1SG	CSM
Ranks	PVT/ PFC	SGT	SSG	SFC	1SG/ MSG	SGM/ CSM
Years of service	1–4	3–8	6–14	10–18	16–22	20+

Figure 1-1. CMF map

1-10. 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 Table 1-1.

Table 1-1. Career progression sequence for firefighter (CMF 21)

E9	21Z CSM
SL 5 (E8 and E9)	21X 1SG
SL 4 (E7)	21M40 Fire chief Detachment sergeant Platoon sergeant First sergeant
SL 3 (E6)	21M30 Station chief Fire inspector Platoon sergeant
SL 2 (E5)	21M20 Lead firefighter
SL 1 (E1 through E4)	21M10 Firefighter Fire truck driver/operator
Trainee	Fire protection apprentice

CHAPTER 2

Trainer's Guide

2-1 General. The trainer's guide (TG) 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 TG should be used as a guide for conducting unit training and not a rigid standard. It provides information necessary for planning training requirements for the MOS. The TG-

- Identifies subject areas in which Soldiers must be trained.
- Identifies the individual tasks for each subject area.
- Specifies where Soldiers are initially trained on each task.
- Recommends how often to train each task to sustain proficiency.

2-2. MOS 21M1 Critical Tasks. This list identifies, by general subject areas, the critical tasks to be trained in an MOS and the type of training required (resident, integration, or sustainment).

- **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 STP 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 resident course, it will be identified by brevity code (AIT, BNCOC, ANCOC). Figure 2-1 contains a list of training locations and their corresponding brevity codes.

ASI/SD	Additional Skill Identifier/Special Duty
AIT	Advanced Individual Training
UNIT	Trained in the Unit

Figure 2-1. Training locations

- **Sustainment training frequency column.** This column indicates the recommended frequency at which the tasks should be trained to ensure that the 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 that they maintain proficiency to SM standards.

- **Subject area codes.** Tasks are grouped into numbered areas and are broken down by subject area/skill level. See figure 2-3.

Skill Level 1

1 Perform Maintenance
2 Perform Common Firefighting Tasks
3 Perform Structural Firefighting
4 Perform Wildland Firefighting
5 Perform Vehicle Firefighting
6 Perform Hazmat Firefighting
7 Perform Aircraft Firefighting
8 Perform Rescue Air Mobility Squadron Missions

Figure 2-3. Subject area codes

2-3. Critical Tasks List. See table 2-1 for critical tasks for this STP.

Table 2-1. MOS 21M1 critical tasks

Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
Skill Level 1				
Subject Area 1. Maintenance Tasks				
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	UNIT	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. Common Firefighting Tasks				
052-249-1162	Perform Hose Load Finishes	AIT	QT	1-4
052-249-1169	Conduct Fire Alarm Communications Center Operations	AIT	QT	1-4
052-249-1170	Employ Ladders on an Incident Scene	AIT	QT	1-4
052-249-1172	Load Attack Hose Lines	AIT	QT	1-4
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
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

Table 2-1. MOS 21M1 critical tasks (continued)

Task Number	Title	Training Location (continued)	Sust Tng Freq (continued)	Sust Tng SL (continued)
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
052-249-1131	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
052-249-1144	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
Subject Area 3. Structural Firefighting Tasks				
052-249-1174	Conduct Search and Rescue Operations in a Structure	AIT	QT	1-4
052-249-1175	Conduct Search and Rescue Operations in a Multi-Story 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. Wildland Firefighting Tasks				
052-249-1155	Perform Wildland Firefighting	AIT	QT	1-4
Subject Area 5. Vehicle Firefighting Tasks				
052-249-1176	Perform Forcible Entry Techniques on a Ground Vehicle	AIT	QT	1-4
052-249-1177	Control a Ground Vehicle Fire	AIT	QT	1-4
Subject Area 6. Hazmat Firefighting Tasks				
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. Aircraft Firefighting Tasks				
052-249-1178	Rescue Victims from an Aircraft	AIT	QT	1-4
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
Subject Area 8. Rescue Air Mobility Squadron Missions Tasks				
052-249-1179	Respond to a Tactical Emergency as a Rescue Air Mobility Squadron Team Member	UNIT	QT	1-4

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CHAPTER 3

MOS/Skill Level Tasks

Skill Level 1

Subject Area 1: Perform Maintenance

Maintain Protective Clothing
052-249-1132

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

Standards: Maintain protective clothing.

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

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

NOTE: If holes, tears, or abrasions are found, exchange the item.

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

NOTE: If snaps or buckles are inoperable, exchange the item.

        (3) Check the outer area for discoloration, foreign matter, mildew, and dirt.
        (4) Wash the outer area with warm, soapy water if dirt or foreign materials are found; 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 the discoloration cannot be removed and the item has no tears, holes, or abrasions, continue to use the item. Watch for deterioration.

CAUTION: DO NOT USE AN ABRASIVE DETERGENT OR A HARD-BRISTLE BRUSH TO CLEAN THE OUTER AREA. THEY COULD CAUSE MATERIAL DAMAGE OR NEUTRALIZE THE FIRE-RETARDANT COATING. FAILURE TO COMPLY MAY CAUSE EQUIPMENT DAMAGE.

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

NOTE: If holes, tears, or abrasions are found, exchange the item.

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

NOTE: If snaps or buckles are inoperable, exchange the item.

        (3) Check the outer area for discoloration, foreign matter, mildew, and dirt.
        (4) Wash the outer area with warm, soapy water if dirt or foreign materials are found; 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 the discoloration cannot be removed and the item has no tears, holes, or abrasions, continue to use the item. Watch for deterioration.

CAUTION: DO NOT USE AN ABRASIVE DETERGENT OR A HARD-BRISTLE BRUSH TO CLEAN THE OUTER AREA. THEY COULD CAUSE MATERIAL DAMAGE OR NEUTRALIZE THE FIRE-RETARDANT COATING. FAILURE TO COMPLY MAY CAUSE EQUIPMENT DAMAGE.

        (5) Dry the gear completely.

Performance Steps

c. Maintain structural-protective gloves.

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

NOTE: If holes, tears, or abrasions are found, exchange the item.

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

(3) Wash the outer area with warm, soapy water if dirt or foreign materials are found; 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 the discoloration cannot be removed and the item has no tears, holes, or abrasions, continue to use the item. Watch for deterioration.

CAUTION: DO NOT USE AN ABRASIVE DETERGENT OR A HARD-BRISTLE BRUSH TO CLEAN THE OUTER AREA. THEY COULD CAUSE MATERIAL DAMAGE OR NEUTRALIZE THE FIRE-RETARDANT COATING. FAILURE TO COMPLY MAY CAUSE EQUIPMENT DAMAGE.

(4) Dry the gear completely.

d. Maintain a structural helmet.

(1) Lower the face shield.

(2) Check for cracks, holes, and other damage that could obscure vision.

(3) Fasten the chin strap to ensure that the buckle is operable.

(4) Check the outer area of the helmet for cracks, holes, and other damage.

(5) Look for dirt, foreign materials, and chemicals; and clean with mild soap and water.

CAUTION: DO NOT USE AN ABRASIVE DETERGENT OR BRUSHES TO CLEAN THE FACE SHIELD. THEY COULD CAUSE EQUIPMENT DAMAGE AND REDUCE VISION CAPABILITIES. FAILURE TO COMPLY MAY CAUSE EQUIPMENT DAMAGE.

e. Maintain rubber firefighting boots.

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

(2) Clean boot surfaces with warm, soapy water and a soft-bristle brush to remove foreign materials and dirt if necessary.

(3) Rinse boots with clean, running water, and dry them completely.

2. Maintain crash-protective clothing.

a. Maintain a crash-protective coat.

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

NOTE: If holes, tears, or abrasions are found, exchange the item.

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

NOTE: If snaps or buckles are inoperable, exchange the item.

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

(4) Wash the outer area with warm, soapy water if dirt or foreign materials are found; 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 the discoloration cannot be removed and the item has no tears, holes, or abrasions, continue to use the item. Watch for deterioration.

CAUTION: DO NOT USE AN ABRASIVE DETERGENT OR A HARD-BRISTLE BRUSH TO CLEAN THE OUTER AREA. THEY COULD CAUSE MATERIAL DAMAGE OR NEUTRALIZE THE FIRE-RETARDANT COATING. FAILURE TO COMPLY MAY CAUSE EQUIPMENT DAMAGE.

(5) Dry the gear completely.

b. Maintain crash-protective pants.

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

NOTE: If holes, tears, or abrasions are found, exchange the item.

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

NOTE: If snaps or buckles are inoperable, exchange the item.

Performance Steps

(3) Check the outer area for discoloration, foreign matter, mildew, and dirt.
(4) Wash the outer area with warm, soapy water if dirt or foreign materials are found; 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 the discoloration cannot be removed and the item has no tears, holes, or abrasions, continue to use the item. Watch for deterioration.

CAUTION: DO NOT USE AN ABRASIVE DETERGENT OR A HARD-BRISTLE BRUSH TO CLEAN THE OUTER AREA. THEY COULD CAUSE MATERIAL DAMAGE OR NEUTRALIZE THE FIRE-RETARDANT COATING. FAILURE TO COMPLY MAY CAUSE EQUIPMENT DAMAGE.

(5) Dry the gear completely.

c. Maintain crash-protective gloves.
(1) Look for holes, tears, and abrasions on the outer area.

NOTE: If holes, tears, or abrasions are found, exchange the item.

(2) Check the outer area for discoloration, foreign matter, mildew, and dirt.
(3) Wash the outer area with warm, soapy water if dirt or foreign materials are found, 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 the discoloration cannot be removed and the item has no tears, holes, or abrasions, continue to use the item. Watch for deterioration.

CAUTION: DO NOT USE AN ABRASIVE DETERGENT OR A HARD-BRISTLE BRUSH TO CLEAN THE OUTER AREA. THEY COULD CAUSE MATERIAL DAMAGE OR NEUTRALIZE THE FIRE-RETARDANT COATING. FAILURE TO COMPLY MAY CAUSE EQUIPMENT DAMAGE.

(4) Dry the gear completely.

d. Maintain a crash hood.
(1) Look through the face shield.
(2) Check for cracks, holes, and other damage that could obscure vision.
(3) Fasten the chin strap to ensure that the buckle is operable.
(4) Check the outer area of the hood for cracks, holes, and other damage.
(5) Look for dirt, foreign materials, and chemicals.

CAUTION: DO NOT USE AN ABRASIVE DETERGENT OR BRUSHES ON THE FACE SHIELD. FAILURE TO COMPLY MAY CAUSE EQUIPMENT DAMAGE.

e. Maintain rubber firefighting boots.
(1) Inspect boots for holes, dry rot, and mildew.
(2) Clean boot surfaces with warm, soapy water and a soft-bristle brush to remove foreign materials and dirt.
(3) Rinse 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 MANUAL
LO 5-4210-220-12
LO 9-2320-279-12
NFPA 1001
TM 5-4210-220-12
TM 5-4210-249-13&P-1
TM 9-2320-328-13&P-1

Maintain Firefighting Tools and Equipment

052-249-1133

Conditions: You are given clean water, soapy water, steel wool, rags, linseed oil, sandpaper, a file, the appropriate tools, applicable technical manuals (TMs) and lubrication orders (LOs), 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, and depressions.
        (2) Ensure that the head is securely fixed to the handle.
        (3) Look for oil, fuel, and chemicals on the surface.
        (4) Look for dry rot and mildew.
    b. Take action if deficiencies are found.
        (1) Wash the tool with warm, soapy water.
        (2) Rinse the tool thoroughly with clean water.
        (3) Let the tool air-dry.
        (4) Sand the handle until the surface is smooth.
        (5) Apply a light coat of boiled linseed oil.
        (6) Replace the tool if it cannot be fixed.

2. Maintain cutting-edge tools.
    a. Check for serviceability. Look for—
        (1) Rust on the blade surface.
        (2) Nicks and burrs on the blade tip.
        (3) A dull edge on the blade.
    b. Take action if deficiencies are found.
        (1) Wash the tool with warm, soapy water.
        (2) Rinse the tool thoroughly with clean water.
        (3) Dry the blade completely.
        (4) Use steel wool to remove rust.
        (5) File the blade tip until a dull edge is achieved.
        (6) Apply a light coat of linseed oil.
        (7) Replace the tool if it cannot be fixed.

3. Maintain power tools.
    a. Check for serviceability.
        (1) Check cleanliness levels.
        (2) Check fluid levels.
        (3) Ensure that tool components are accounted for and serviceable.
        (4) Ensure that connections are functional.
        (5) Check cutting edges.
    b. Take action if deficiencies are found.
        (1) Wash the tool with warm, soapy water.
        (2) Rinse the tool thoroughly with clean water.
        (3) Dry the tool thoroughly.
        (4) Refill fluid levels.
        (5) Resharpen the cutting edge, or replace the blade.
        (6) Replace missing and unserviceable components.
        (7) Replace the tool if it cannot be fixed.

Performance Steps

4. Maintain water delivery devices.
    a. Check for serviceability.
        (1) Look for bent or damaged threads.
        (2) Check for cleanliness.
        (3) Ensure that moveable parts function properly.
        (4) Check for cracks, rust, and other damage.
    b. Take action if deficiencies are found.
        (1) Wash the surface with warm, soapy water.
        (2) Rinse the device thoroughly with clean water.
        (3) Dry the device completely.
        (4) Replace missing and unserviceable components.
        (5) Use steel wool to remove rust.
        (6) Replace the device if it cannot be fixed.

5. Maintain noncutting tools and equipment.
    a. Check for serviceability. Look for—
        (1) Rust.
        (2) Cleanliness.
        (3) Cracks; rounded tips; burrs; sharp, metal edges; and 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 thoroughly with clean water.
        (3) Dry the item completely.
        (4) Replace missing or unserviceable components.
        (5) Use steel wool to remove rust and burrs.
        (6) Sharpen tips to a dull edge.
        (7) Apply a light coat of linseed oil.
        (8) Replace the tool if it cannot be fixed.

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

Brief Soldier: Direct the Soldier to maintain firefighting tools and equipment.

Performance Measures	**GO**	**NO-GO**
1. Maintained wooden-handle 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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	NFPA 1001
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Maintain Ladders

052-249-1134

Conditions: You are given a firefighting apparatus, a brush, rags, clean water, soapy water, steel wool, SAE 10 oil, tools, an extension ladder, a roof ladder, extra rope, applicable technical manuals (TMs) and lubrication orders (LOs), and an open area.

Standards: Maintain ladders.

Performance Steps

1. Remove a ladder from the firefighting apparatus.
2. Check the heat sensor label for color changes.

NOTE: If the eye on the label is dark, the ladder has been exposed to heat. The ladder must be placed out of service until a ladder performance test is executed.

3. Place the ladder on the ground, and extend it.
4. Identify deficiencies.
    a. Identify bent, cracked, and loose rungs.
    b. Identify bent, cracked, and compressed beams and truss blocks.

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

    c. Identify loose bolts, nuts, and weld joints.
    d. Identify cut or frayed pulley ropes.
    e. Identify damaged and nonmoving pulleys.
    f. Identify bent and loose hooks.
    g. Identify damaged, loose, and missing guides.
    h. Identify bent, damaged, and missing butt spurs.
    i. Identify damaged and nonmoving pawls.

DANGER: NEVER CONDUCT MAKESHIFT REPAIRS ON LADDERS. ALWAYS EXCHANGE LADDERS THAT HAVE DEFECTS OTHER THAN UNSERVICEABLE ROPES. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

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

NOTE: A solvent may be required to remove grease and oil deposits. Never allow dirt, grease, or oil to accumulate on the ladder. 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: Direct the Soldier to maintain ladders.

Performance Measures	**GO**	**NO-GO**
1. Removed a ladder from the firefighting apparatus.	____	____
2. Checked the heat sensor label for color changes.	____	____
3. Placed the ladder on the ground and extended it.	____	____
4. Identified deficiencies.	____	____

Performance Measures	GO	NO-GO
5. Lubricated 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
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	NFPA 1001
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Service Fire Extinguishers

052-249-1135

Conditions: You are given tools; rags; spare parts; a replenishing agent; a weight scale; seals; an air hose with an air supply; spare cartridges; an area in which to service 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; applicable technical manuals (TMs) and lubrication orders (LOs); and a pail of dry powder.

Standards: Service fire extinguishers.

Performance Steps

NOTE: Fire extinguishers should be service-tested annually. If the operational readiness of the fire extinguisher is uncertain or if the service test is questionable, remove the extinguisher from service and replace it.

1. Preinspect a fire extinguisher.
    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. Recharge the fire extinguisher, and ensure that its weight is within the prescribed limits for the fire extinguisher type.

NOTES:

1. Carbon dioxide fire extinguishers must be recharged if the weight loss is greater than 10 percent of the weight that is listed on the faceplate or stamped on the fire extinguisher shell.

2. For cartridge-operated fire extinguishers, the gas cartridges 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.

NOTE: The seal should be fastened to the fire extinguisher to avoid accidental operation of the fire extinguisher. The seal is normally located on an area in which the discharge handle cannot be depressed.

    e. Check the horn and nozzle for cracks, dirt, and blockage.
    f. Check the hydrostatic test date.
        (1) Check for 5-year test dates on—
            (a) Cartridge-operated water fire extinguishers.
            (b) Pressurized-water fire extinguishers.
            (c) Dry-chemical fire extinguishers.
            (d) Carbon dioxide fire extinguishers.

NOTE: Carbon dioxide fire extinguishers that have a cylinder which is made to Department of Transportation (DOT) specifications are tested according to DOT requirements.

        (2) Check for 12-year test dates on—
            (a) Cartridge-operated, dry-powder fire extinguishers.
            (b) Pressurized, dry-chemical fire extinguishers with aluminum, brazed-brass, or mild-steel shells.
            (c) Cartridge-operated, dry-chemical fire extinguishers 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 HAS PITTING FROM CORROSION AND MUST BE DESTROYED. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

Performance Steps

2. Service a pressurized-water fire extinguisher.
    a. Perform a service test.
        (1) Operate the fire extinguisher according to the manufacturer's instructions.
        (2) Operate the fire extinguisher, and discharge the agent.
        (3) Ensure that the fire extinguisher operates properly.
        (4) Stop and start discharging the agent to ensure that the nozzle works properly.
    b. Perform maintenance.
        (1) Expel remaining water, and bleed off 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 and obstructions.
        (5) Disengage the siphon tube from the neck, and inspect the neck gasket for cracks and 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 during the last 5 years. If the facilities or equipment to test the fire extinguisher are not available, replace it.

        (7) Perform a hydrostatic test.

DANGER: DO NOT USE COMPRESSED GAS OR COMPRESSED AIR TO PERFORM THE HYDROSTATIC TEST. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

NOTE: Destroy the fire extinguisher if it fails the hydrostatic test. Conditions that warrant the destruction of a fire extinguisher include large dents or creases in the shell, damaged cylinder threads, fire exposure, and pits.

            (a) Refill the fire extinguisher with water.
            (b) Use a pump to increase the liquid pressure in the shell.
        (8) Add required additives.

NOTE: If the fire extinguisher is subjected to freezing temperatures, add antifreeze. Water can also be added to increase the penetrating ability of the water.

        (9) Reassemble the siphon tube assembly, and reattach it to the fire extinguisher.
        (10) Attach a tamper seal through the hole in the handle to prevent accidental discharge 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.
        (2) Operate the fire extinguisher, and discharge the agent.
        (3) Ensure that the fire extinguisher operates properly.
        (4) Stop and start discharging the agent to ensure that the nozzle works properly.
    b. Perform maintenance.
        (1) Expel remaining carbon dioxide agents.
        (2) Unscrew the discharge horn, and inspect it for obstructions.

NOTE: Replace the horn and hose assembly if cracks are found in the hose or discharge horn.

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

NOTE: Hydrostatically test the fire extinguisher if it shows signs of physical damage or light surface corrosion or if it has not been tested during the last 5 years. If the facilities or equipment to test the fire extinguisher are not available, replace it.

        (4) Perform a hydrostatic test.

DANGER: DO NOT USE COMPRESSED GAS OR COMPRESSED AIR TO PERFORM THE HYDROSTATIC TEST. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

Performance Steps

NOTE: Destroy the fire extinguisher if it fails the hydrostatic test. Conditions that warrant the destruction of a fire extinguisher include large dents or creases in the shell, damaged cylinder threads, fire exposure, and pits.

(a) Refill the fire extinguisher with water.
(b) Use a pump to increase the liquid pressure in the shell.

(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.
(7) Attach a seal through the hole in the handle to prevent accidental discharge.
(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.
      (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 works properly.
   b. Perform maintenance.
      (1) Expel remaining dry-chemical agents.
      (2) Bleed off residual pressure, if applicable.

WARNING: BEFORE YOU REMOVE THE CAP AND REFILL THE FIRE EXTINGUISHER WITH DRY-CHEMICAL AGENT, INVERT THE FIRE EXTINGUISHER AND BLEED OFF REMAINING PRESSURE. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY.

(3) Examine the exterior of the shell for foreign material.
(4) Unscrew the cap; and inspect the interior of the fire extinguisher for hardened, caked, or packed dry chemicals.
(5) Inspect the gasket for cracks and brittleness.
(6) Check the hose and nozzle for obstructions.
(7) Perform a hydrostatic test.
(a) Refill the fire extinguisher with water.
(b) Use a pump to increase the liquid pressure in the shell.
(8) Drain the water from the fire extinguisher, and let the fire extinguisher dry completely.

DANGER: WHEN THE FIRE EXTINGUISHER IS REFILLED WITH THE DRY-CHEMICAL AGENT, ENSURE THAT WATER OR MOISTURE DOES NOT MIX WITH THE DRY-CHEMICAL AGENT. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

(9) Refill the fire extinguisher with the correct amount of agent.

DANGER: ENSURE THAT THE CORRECT DRY-CHEMICAL AGENT IS USED TO REFILL THE FIRE EXTINGUISHER. MULTIPURPOSE, DRY-CHEMICAL FIRE EXTINGUISHERS MUST BE FILLED WITH A MULTIPURPOSE, AMMONIUM PHOSPHATE-BASED AGENT; AND NORMAL, DRY-CHEMICAL FIRE EXTINGUISHERS MUST BE FILLED WITH SODIUM BICARBONATE-BASED AGENTS. DO NOT MIX THE AGENTS. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

DANGER: DO NOT REFILL DRY-CHEMICAL FIRE EXTINGUISHERS WITH DRY-POWDER AGENTS. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

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

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

(13) Attach the seal to the fire extinguisher puncture plate.
(14) Reattach the hose assembly and nozzle.

Performance Steps

5. Service cartridge-operated fire extinguishers.
    a. Perform a service test.
        (1) Operate the fire extinguisher according to the manufacturer's instructions.
        (2) Operate the fire extinguisher, and discharge the agent.
        (3) Ensure that the fire extinguisher operates properly.
        (4) Stop and start discharging the agent to ensure that the nozzle works properly.
    b. Perform maintenance.

NOTE: Some types of dry-powder chemicals are stored in containers, such as sealed buckets or pails. The containers must be airtight and free of holes.

        (1) Expel remaining dry-powder agents.
        (2) Bleed off remaining pressure, if applicable.
        (3) Examine the exterior of the shell for foreign material.
        (4) Unscrew the cap; and inspect the interior of the fire extinguisher for hardened, caked, or packed dry chemicals.
        (5) Inspect the gasket for cracks and brittleness.
        (6) Check the hose and nozzle for obstructions.
        (7) Perform a hydrostatic test.
            (a) Refill the fire extinguisher with water.
            (b) Use a pump to increase the liquid pressure in the shell.
        (8) Drain the water from the fire extinguisher, and let the fire extinguisher dry completely.
        (9) Refill the fire extinguisher with the correct amount of agent.
        (10) Replace the cap, and seal the fire extinguisher.
        (11) Attach a seal through the hole in the handle to prevent accidental discharge.
        (12) Replace the gas cartridge.
        (13) Attach the seal to the fire extinguisher puncture plate to prevent premature operation of the plate and the 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: Direct the Soldier to service fire extinguishers.

Performance Measures	**GO**	**NO-GO**
1. Preinspected a fire extinguisher.	____	____
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 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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	

Maintain Rescue Power Equipment

052-249-1141

Conditions: You are given clean rags, soapy water, clean water, oil, tools, a K-12 rescue saw (in the box), a firefighting apparatus, an assistant firefighter, the manufacturer's instructions, applicable technical manuals (TMs) and lubrication orders (LOs), DA Form 2404 (Equipment Inspection and Maintenance Worksheet), and DA Form 5988-E (Equipment Inspection Maintenance Worksheet).

Standards: Maintain rescue power equipment.

Performance Steps

1. Maintain a K-12 rescue saw.
2. Check 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 proper ratio of gasoline and oil according to the manufacturer's instructions.

WARNING: ENSURE THAT THE CORRECT TYPES AND MIXTURES OF GASOLINE AND OIL ARE USED. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

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 check for carbon buildup on the tip.

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

6. Check the exterior of the saw; and ensure that 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. Ensure that the proper items are contained in the storage box.
    a. Look for spare saw blades.

NOTE: The box should contain at least one metal blade, one wood blade, and one masonry blade.

    b. Look for a spare gas can.
    c. Look for a spark plug wrench.
    d. Look for the manufacturer's operating instructions.
    e. Look for a can of 2-cycle engine oil.
    f. Look for a spare spark plug.
    g. Look for a spare air filter.
    h. Look for safety goggles.
    i. Look for DA Form 2404 and DA Form 5988-E.
10. Keep the saw on the ground to start it.

NOTE: Follow the manufacturer's instructions to start the saw.

DANGER: WHEN STARTING THE SAW, ENSURE THAT THE SAW BLADE IS NOT RESTING ON THE GROUND OR TOUCHING ANYTHING. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

11. Record deficiencies on DA Form 2404 or DA Form 5988-E.

Performance Steps

12. Place the saw in the storage box, and put the box 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. Do not use the saw if deficiencies cannot be corrected.

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

Brief Soldier: Direct the Soldier to maintain rescue power equipment.

Performance Measures	GO	NO-GO
1. Maintained a K-12 rescue saw.	____	____
2. Checked 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 checked for carbon buildup on the tip.	____	____
6. Checked the exterior of the saw and ensured that 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. Ensured that the proper items were contained in the storage box.	____	____
10. Kept the saw on the ground to start it.	____	____
11. Recorded deficiencies on DA Form 2404 or DA Form 5988-E.	____	____
12. Placed the saw in the storage box and put the box on the firefighting apparatus if the saw was operational and serviceable.	____	____
13. Did not use the saw if deficiencies could not be corrected.	____	____

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 750-8
DA FORM 5988-E	IFSTA MANUAL
LO 5-4210-220-12	
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	

Perform Operator Preventive-Maintenance Checks and Services on a Firefighting Apparatus

052-249-1143

Conditions: You are given a firefighting apparatus, tools, rags, water, oil, soap, brushes, spare parts, a pencil or pen, applicable technical manuals (TMs) and lubrication orders (LOs), DA Form 2408-14 (Uncorrected Fault Record), DA Form 5988-E (Equipment Inspection Maintenance Worksheet), and the local standing operating procedures (SOP).

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

Performance Steps

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

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

Brief Soldier: Direct the Soldier to perform operator PMCS on a firefighting apparatus.

Performance Measures	GO	NO-GO
1. Performed operator daily checks.	____	____
2. Performed operator after-mission checks.	____	____
3. Performed 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	DA PAM 750-8
DA FORM 5988-E	IFSTA MANUAL
LO 5-4210-220-12	NFPA 1001
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Perform Preventive-Maintenance Checks and Services on Fire Hydrants

052-249-1150

Conditions: You are given a firefighting apparatus, protective clothing, firefighting tools, applicable technical manuals (TMs) and lubrication orders (LOs), and fire hydrants.

Standards: Perform preventive-maintenance checks and services (PMCS) on fire hydrants.

Performance Steps

1. Identify the fire hydrant type.
    a. Identify a dry-barrel fire hydrant.

NOTE: The valve that holds the water back is located 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.

NOTE: The barrel is full of water near the discharge openings. A compression valve is usually found 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 be dirty or rust-colored. Continue to flow the water until it is clear.

        (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 of 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 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.
        (4) Close the hydrant completely.
        (5) Lubricate the threads of 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 struck by a vehicle, report the damage to the crew chief immediately. Ensure that the discharge has sufficient ground clearance for hose connections.

    b. Check the hydrant interior for obstructions. Look for—
        (1) Bottles.
        (2) Cans.
        (3) Rocks.

Performance Steps

c. Check the hydrant for mechanical damage. Look for—
   (1) Missing or frozen discharge caps.
   (2) Open-and-close nuts that will not turn or that turn without opening the valve.
   (3) Cracks or dents in the barrel.
   (4) Rust or corrosion.

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

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

Brief Soldier: Direct the Soldier to perform PMCS on fire hydrants.

Performance Measures	**GO**	**NO-GO**
1. Identified the fire hydrant type.	____	____
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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Maintain a Self-Contained Breathing Apparatus

052-249-1163

Conditions: You are given a self-contained breathing apparatus (SCBA), a water supply, mild soap, soft rags, buckets, applicable technical manuals (TMs) and lubrication orders (LOs), DA Form 5988-E (Equipment Inspection Maintenance Worksheet [EGA]), and a black ink pen.

Standards: Maintain an 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. Look for damaged—
        (1) Inner valve disks.
        (2) Speech cones.
        (3) 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. FAILURE TO COMPLY MAY CAUSE EQUIPMENT DAMAGE.

    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: The 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 the OFF position.

    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 one minute.

NOTE: The needle should not move during the one-minute time period. If the needle does move, take the unit out of service and document the problem on 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 (1,090 pounds per square inch).

    z. Turn on the positive pressure switch to bleed off the remaining pressure from the system.

Performance Steps

aa. Leave the positive pressure switch in the ON position.
ab. Document results on 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. Look for damaged—
      (1) Inner valve disks.
      (2) 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 or donning switch that is located on the top of the regulator.
   n. Open the cylinder valve.
   o. Read the cylinder gauge and the regulator pressure gauge.

NOTE: The 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) Breathe normally to ensure proper operation.
   q. Remove the facepiece from your face to allow air to flow freely.
   r. Fully depress the air saver or donning switch that is located on 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 turn counterclockwise (air will flow from the regulator).
   t. Rotate the purge valve one-half turn clockwise (airflow will stop).
   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 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 (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. Record results on DA Form 5988-E.

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

Brief Soldier: Direct the Soldier to maintain an SCBA.

Performance Measures	GO	NO-GO
1. Maintained an Interspiro SCBA.	____	____
2. Maintained a 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 2404	AR 420-1
DA FORM 5988-E	DA PAM 750-8
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	NFPA 1001
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Subject Area 2: Perform Common Firefighting Tasks

Perform Hose Load Finishes

052-249-1162

Conditions: You are 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; applicable technical manuals (TMs) and lubrication orders (LOs); and a hose strap.

Standards: Perform hose load finishes.

Performance Steps

1. Prepare a donut roll finish.

NOTE: Use the donut roll finish on straight lay loads.

a. Lay the last 50 feet of the hose line back, parallel onto itself.
b. Roll the section of hose line 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 the double-donut roll finish on forward or reverse lays.

a. Lay two 50-foot sections of hose line parallel to each other.
b. Roll the two sections of hose line into the shape of a donut.
c. Fasten a hydrant wrench or nozzle to the open end of the hose.

NOTE: The double-donut roll finish depends on the type of hose lay that is used. If a male coupling is showing, the nozzle is fastened to it with a hose strap. If a female coupling is showing, the hydrant wrench is fastened to it with a hose strap.

3. Prepare a riprap fold.

NOTE: Use the riprap fold 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 the skid load finish on reverse lays.

a. Use the last three or four 50-foot sections of hose line to form the skid load finish.
b. Extend the hose line from the rear of the hose bed.
c. Fold the hose line back, onto 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, perpendicular to the first leg.
e. Bend and turn the hose line so that it forms a second leg.
f. Lay the hose line from rear to front.
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 starts.
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 sideboards.
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 onto one of the legs to support the couplings.

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

Brief Soldier: Direct 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.	____	____
3. Prepared a riprap fold.	____	____
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
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	NFPA 1001
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Conduct Fire Alarm Communications Center Operations

052-249-1169

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

Standards: Conduct fire alarm communications center operations.

Performance Steps

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

NOTE: Immediately telephone the satellite fire stations that do 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. Include the—
            (a) Location of the emergency (building, street, 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 service.
            (c) Department of Public Safety.
            (d) Chemical, biological, radiological, and nuclear personnel.
            (e) Explosive ordnance disposal personnel.
        (7) Notify the assistant chief.
        (8) Notify the emergency operations center.
        (9) Tell the caller that you have dispatched help.
        (10) Obtain any other information.
        (11) Repeat the caller's name and phone number back to reassure the individual that you have the correct information, and let him or her hang up first.
        (12) Monitor transmissions from on-scene fire officials.
        (13) Dispatch additional equipment or other agencies as requested by the on-scene fire chief.
        (14) Annotate essential information that is relative to the emergency.

NOTE: Use a red ink pen to make emergency entries in the logbook.

    b. Monitor automatic alarm devices, including—
        (1) Automatic sprinklers.
        (2) Fire alarm pull boxes.
        (3) Smoke detectors that transmit signals 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.

Performance Steps

(c) Dispatch the appropriate engine company.
(d) Notify the assistant chief.
(e) Notify support agencies.

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

(f) Monitor the radio transmission from the responding engine company.
(g) Annotate the essential information that is relative to the emergency.

3. Maintain a logbook.

NOTE: Use a black ink pen to make entries in the logbook.

a. Record the information in the logbook.
b. Brief the incoming operator before the last shift.
c. Close out the shift by signing your name directly after the last entry.

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

Brief Soldier: Direct the Soldier to conduct fire alarm communications center operations.

Performance Measures	**GO**	**NO-GO**
1. Tested and monitored the equipment.	____	____
2. Conducted emergency procedures.	____	____
3. Maintained a 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 MANUAL
LO 5-4210-220-12
LO 9-2320-279-12
NFPA 1001
TM 5-4210-220-12
TM 5-4210-249-13&P-1
TM 9-2320-328-13&P-1

Employ Ladders on an Incident Scene

052-249-1170

Conditions: You are given a firefighting apparatus, protective clothing, a self-contained breathing apparatus (SCBA), a fire scene, applicable technical manuals (TMs) and lubrication orders (LOs), and assistant firefighters.

Standards: Employ ladders on an incident scene.

Performance Steps

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

NOTE: The firefighters who are 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 the hand that is closest to the ladder.

WARNING: LIFT AND LOWER HEAVY EQUIPMENT USING LEG MUSCLES. DO NOT USE BACK MUSCLES. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY.

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

        (4) Stand and raise the ladder straight up while rotating your body 180°, and place the ladder on your shoulder that is opposite the lifting hand when the command to lift is given.
        (5) Carry the ladder to the designated area.

NOTE: The right front firefighter will act as the safety guide and give movement commands.

        (6) Place the ladder at the designated area, as close to the structure as possible.
        (7) Lower the ladder. Ensure that the right front firefighter and the heel of the ladder face the structure.
        (8) Lower the ladder to the ground.
            (a) Grab the rung of the ladder with the hand that is opposite the shoulder on which the ladder rests.
            (b) Raise the ladder off your shoulder while rotating your body 180° when the command to lower the ladder is given by the left rear firefighter.
            (c) Lower the ladder to the ground, and assume a kneeling position.
    b. Perform a two-man carry with a 24-foot ladder.
        (1) Position yourself at one end of the ladder, and position another firefighter at the other end of the ladder.
        (2) Face the same direction as the other firefighter, and assume a kneeling position.
        (3) Reach down, and grab a rung of the ladder with the hand that is closest to the ladder.
        (4) Stand and raise the ladder straight up while rotating your body 180°, place an arm between two rungs, and rest the beam on the shoulder that is opposite the lifting hand when the command to lift is given by the rear firefighter.
        (5) Carry the ladder to the designated area.

NOTE: The right front firefighter will act as the safety guide and give movement commands.

        (6) Place the ladder at the designated area as close to the structure as possible.
        (7) Lower the ladder. Ensure that the front firefighter and the heel of the ladder face the structure.
        (8) Lower the ladder to the ground opposite the way it was lifted.
            (a) Grab the rung of the ladder with the hand that is opposite the shoulder on which the ladder rests.

Performance Steps

(b) Raise the ladder off your shoulder while rotating your body 180° when the command to lower the ladder is given by the rear firefighter.
(c) Lower the ladder to the ground, and assume a kneeling position.

c. Perform a one-man, low-shoulder carry with a 14-foot ladder.
(1) Position yourself at a lifting point near the center of the ladder.
(2) Kneel beside the ladder.
(3) Grasp the ladder rung that is opposite your knee.
(4) Stand the ladder on edge.
(5) Stand up.
(6) Reposition yourself for carrying by pivoting toward the ladder tip and inserting an arm through the rungs.
(7) Position the ladder for carrying by slightly lowering the tip.
(8) Lower the ladder to the ground.

2. Raise a ladder.
a. Raise a 35-foot extension ladder.
(1) Secure the ladder with one firefighter positioned at the heel.
(2) Position yourself at the top with one assistant firefighter.
(3) Raise the ladder.

NOTE: The two firefighters at the top kneel down, grab the ladder by the beam, and raise the ladder upward. As the firefighters raise the ladder vertically, they position themselves under the ladder.

(4) Guide and steady the ladder until it is perpendicular to the ground.
(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 one of the following methods to determine the correct climbing angle:
(a) Divide the needed length by 5 and add 2.
(b) Divide the needed length by 4.
(9) Move the ladder outward until the proper climbing angle is achieved.

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, 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 one of the following methods to determine the correct climbing angle:
(a) Divide the needed length by 5 and add 2.
(b) Divide the needed length by 4.
(9) Move the ladder outward until the proper climbing angle is achieved.

c. Raise a single ladder.
(1) Visually inspect the work area.
(2) Lower the ladder butt to the ground. Keep the butt spurs against the building wall.
(3) Position yourself to raise the ladder.
(4) Bring the ladder upright until it rests against the building by using the hand-over-hand method.
(5) Carefully move the ladder butt out from the building to the desired climbing angle.

Performance Steps

3. Climb a ladder.

NOTE: Ensure that the climbing angle is correct, the pawls are locked, and the halyard is securely fastened to the ladder before climbing it.

a. Keep one hand in contact with the ladder at all times.
b. Keep your body upright and 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. Place the balls of your feet against the rungs for leverage.

WARNING: WHEN CLIMBING THE LADDER, DO NOT REACH UP FOR A RUNG. THIS ACTION WILL PULL YOU INTO THE LADDER. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY.

WARNING: WHEN CLIMBING THE LADDER DURING WET OR ICY CONDITIONS, PLACE THE ARCH OF YOUR BOOT AGAINST THE RUNG AS AN ADDED SAFETY MEASURE. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY.

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

WARNING: ANCHOR THE LADDER TO THE STRUCTURE USING A HOSE STRAP OR ROPE. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

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

Brief Soldier: Direct the Soldier to employ a ladder.

Performance Measures	**GO**	**NO-GO**
1. Carried a ladder.	____	____
2. Raised a ladder.	____	____
3. Climbed a ladder.	____	____
4. Locked into a 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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	

Load Attack Hose Lines

052-249-1172

Conditions: You are 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; applicable technical manuals (TMs) and lubrication orders (LOs); and an assistant firefighter.

Standards: Load and deploy attack hose 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 a 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 opposite hand.
    c. Pull the load from the hose bed, and face away from the firefighting apparatus.
    d. Continue to pay out the load until the hand loop pulls tight.
    e. Drop the hand loop.
    f. 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 a 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. Keep the stack evenly distributed on your shoulder.
    c. Advance the hose, and keep 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: The triple-layer 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. Place the nozzle on the top section.
    d. Load the hose into the hose bed in the same manner as a preconnected flat load.

6. Deploy a triple-layer load.
    a. Face away from the firefighting apparatus. Keep 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 listed in the conditions.

Brief Soldier: Direct the Soldier to load and deploy attack hose lines.

Performance Measures	GO	NO-GO
1. Loaded a preconnected flat load.	____	____
2. Deployed a preconnected flat load.	____	____
3. Loaded a minuteman load.	____	____
4. Deployed a minuteman load.	____	____
5. Loaded a triple-layer load.	____	____
6. Deployed a 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
LO 5-4210-220-12	FM 5-415
LO 9-2320-279-12	IFSTA MANUAL
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	

Perform Fire Pump Operations

052-249-1102

Conditions: You are given a firefighting apparatus, a pumping apparatus, protective clothing, a fire scene, an assistant firefighter, a crew chief, applicable technical manuals (TMs) and lubrication orders (LOs), and the unit standing operating procedure (SOP).

Standards: Perform fire pump operations.

Performance Steps

NOTE: When using the model 2500L firefighting truck, steps 1–3 apply. When using the tactical firefighting truck (TFFT), steps 4–5 apply.

1. Perform structural stationary pump operations with the model 2500L firefighting truck, using the 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.
    c. Move the gear selector to the NEUTRAL position, and lock the gear selector in place.

DANGER: ENSURE THAT THE GEAR SELECTOR IS LOCKED INTO PLACE. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

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

NOTE: The panel indicator lights that are located over the TANK and PUMP switches should be red in color, which indicates that they are open.

    g. Dismount the vehicle.
    h. Remove the chocks from the storage compartment, and place one in front of the rear driver's side wheel and one behind the wheel.
    i. Proceed to the pump panel section.
    j. Move the TANK VALVE switch on the pump panel to the OPEN position.
    k. Unlock the wing nut on the governor, and adjust the governor to bring the pump pressure to the correct operational level.
    l. Open the discharge gate valves to the hose line without causing a water hammer.

WARNING: SLOWLY OPEN AND CLOSE THE GATE VALVES. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

    m. Monitor 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 shut down pumping operations.

WARNING: DO NOT PUMP THE TANK EMPTY. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

    o. Close the discharge gate valves slowly.
    p. Use the pump panel governor to throttle-down the engine, and lock the governor.
    q. Move the TANK VALVE switch on the pump panel 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 firefighting apparatus, and move to the vehicle cab.
    s. Move the PUMP switch to the OFF position.
    t. Move the TANK VALVE switch in the cab 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. Move the MODE selector switch to the EM position.

NOTE: Panel indicator lights should be off at this time.

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

Performance Steps

w. Remove the chocks from the wheels, and return them to the storage compartment.
x. Return to the vehicle cab to obtain directions from the crew chief.

2. Perform structural stationary pump operations with the model 2500L firefighting truck, using water that is supplied from a fire hydrant or other firefighting apparatus.
   a. Arrive at an emergency situation, and position the firefighting apparatus as directed by the crew chief.
   b. Set the air brakes.
   c. Move the gear selector to the NEUTRAL position, and lock the gear selector in place.

DANGER: ENSURE THAT THE GEAR SELECTOR IS LOCKED INTO PLACE. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

   d. Move the MODE selector switch to the STRUCT mode.
   e. Move the TANK VALVE switch in the cab to the OPEN position.
   f. Move the PUMP switch to the ON position.

NOTE: The panel indicator lights that are located over the TANK and PUMP switches should be red in color, which indicates that they are open.

   g. Dismount the vehicle.

NOTE: Perform a hose lay if a hydrant is available.

   h. Remove the chocks from the storage compartment, and place one in front of the rear driver's side wheel and one behind the wheel.
   i. Proceed to the pump panel section.
   j. Move the TANK VALVE switch on the pump panel to the OPEN position.
   k. Unlock the wing nut on the governor, and adjust the governor to bring the pump pressure to the correct operational level.
   l. Open the discharge gate valves to the attack lines without causing a water hammer.

WARNING: SLOWLY OPEN AND CLOSE THE GATE VALVES. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

   m. Dismount the pump panel section to retrieve the hose clamp and spanner wrenches.
   n. Pull the line from the hose bed that is connected to the hydrant or to another firefighting vehicle.
   o. Place the hose clamp on the hose. Leave enough hose to attach the clamp to the selected suction port.
   p. Signal the assistant firefighter to charge the hose line.
   q. Attach the hose 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 water from the resupply source.
      (1) Send the water directly to the tank from a water source.
         (a) Open the tank fill gate.
         (b) Open the suction gate that is attached to the water source.
         (c) Watch the water tank indicator level lights to ensure that the tank is not overfilled or emptied.
         (d) Continue the operation until the fire is extinguished or the water supply is exhausted.
      (2) Draw water directly from the supply line.
         (a) Open the suction gate to draw water from the supply source.

DANGER: IF THE PUMP LOSES PRIME, THE ENGINE WILL RACE AND THE TRUCK WILL REACT VIOLENTLY. REGAIN CONTROL OF THE ENGINE BY THROTTLING DOWN. GIVE THE FIRE CREW THE EMERGENCY WITHDRAWAL SIGNAL. AFTER PRESSURE IS REGAINED, CONTINUE FIREFIGHTING OPERATIONS. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

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

NOTE: There may be 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 the fire is extinguished or the water supply is exhausted.

Performance Steps

t. Close the discharge gate valves when you are informed that firefighting operations are complete.
u. Open the tank fill valve to resupply the tank.
v. Close the tank fill gate after the tank is full.
w. Signal the assistant firefighter to cease the operation.
x. Close the suction gate.
y. Use the pump panel governor to throttle-down the engine, and lock the governor.
z. Move 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. Move 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. Move the MODE selector switch to the EM position.

NOTE: Panel indicator lights should be OFF at this time.

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

3. Pump water to resupply another firefighting apparatus, using the model 2500L firefighting truck.
   a. Arrive at an emergency situation, and position the firefighting apparatus as directed by the crew chief.
   b. Set the air brakes.
   c. Move the gear selector to the NEUTRAL position, and lock the gear selector in place.

DANGER: ENSURE THAT THE GEAR SELECTOR IS LOCKED INTO PLACE. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

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

NOTE: The panel indicator lights that are located over the TANK and PUMP switches should be red in color, which indicates that they are open.

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

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

   j. Move the TANK VALVE switch on the pump panel to the OPEN position.
   k. Unlock the wing nut on the governor, and adjust the governor to bring the pump pressure to the correct operational level.
   l. Open the selected discharge port lever slowly.
   m. Increase or decrease the water pressure as directed by the other driver or pump operator.
   n. Flow water until the one-fourth tank indicator light on the pump panel is flashing.
   o. Inform the other driver or pump operator and the crew chief that you are shutting down operations.
   p. Close the discharge gate valves slowly.
   q. Use the pump panel governor to throttle-down the engine, and lock the governor.
   r. Move the TANK VALVE switch on the pump panel 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. Move the PUMP switch to the OFF position.

Performance Steps

u. Move the TANK VALVE switch in the cab 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. Move the MODE selector switch to the EM position.

NOTES:

1. Panel indicator lights should be OFF at this time.

2. The other firefighter should have disconnected the hose from the vehicle.

w. Ensure that tools and equipment are returned to the vehicle.
x. Remove chocks from the wheel, and return them to the storage compartment.
y. Return to the vehicle cab to obtain directions from the crew chief.

4. Perform structural stationary pump operations with the TFFT, using the onboard water supply.

NOTE: Ensure that all valves, drains, and caps are closed.

a. Position the vehicle for a convenient discharge hose layout, and bring the vehicle to a complete stop.
b. Remove the chocks from the storage compartment, and place one in front of and one behind the rear driver's wheel.
c. Start the water pump engine.
d. Move the TANK TO PUMP switch to the OPEN position.

NOTE: The indicator light should come on.

e. Prime the water pump.

WARNING: CAVITATION CAN OCCUR WHEN AIR ENTERS WATER DURING PUMPING. IF THE ENGINE SPEED INCREASES WITHOUT AN INCREASE IN PRESSURE, THE PUMP MAY BE CAVITATING. AIR LEAKS CAN CAUSE ROUGH OPERATION AND AN INCREASE IN ENGINE SPEED WITHOUT AN INCREASE IN PRESSURE OR FLOW. IF AN AIR LEAK IS SUSPECTED, DISCONTINUE PUMPING AND ISOLATE THE PROBLEM. CAVITATION CAN ALSO OCCUR WITH LARGE NOZZLE TIPS. IF CAVITATION OCCURS, REDUCE THE FLOW. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

f. Set the pressure governor.

DANGER: DISCHARGE CAPS SHOULD NOT BE REMOVED IF THE WATER SYSTEM IS UNDER PRESSURE. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

WARNING: OPEN AND CLOSE VALVES SLOWLY DURING PROCEDURES. SUDDEN CHANGES IN PRESSURE MAY CAUSE EQUIPMENT TO REACT FASTER THAN PERSONNEL CAN BE ALERTED. ENSURE THAT SURROUNDING PERSONNEL ARE AWARE OF THE CHANGES THAT ARE BEING MADE TO EQUIPMENT SETTINGS. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

WARNING: IF A DISCHARGE HOSE IS USED, ENSURE THAT THE HOSE IS REMOVED FROM THE HOSE BED, THE NOZZLE IS SECURELY ATTACHED, AND THE NOZZLE IS TURNED OFF BEFORE OPENING THE DISCHARGE VALVES. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

g. Remove the NO.1 DRIVER'S SIDE DISCHARGE cap from the valve.
h. Connect the NO. 1 DRIVER'S SIDE DISCHARGE valve to the discharge hose.
i. Open the NO. 1 DRIVER'S SIDE DISCHARGE valve control. Ensure that the indicator light comes on.
j. Shut off the water pump engine.
k. Open other discharge valves to the desired settings.
l. Perform postoperation procedures.
m. Ensure that tools and equipment are returned to the vehicle.
n. Remove the chocks from the wheel, and return them to the storage compartment.
o. Return to the vehicle cab to obtain directions from the crew chief.

Performance Steps

5. Perform structural stationary pump operations with the TFFT, using the water that is supplied from a fire hydrant or other firefighting apparatus.

WARNING: DO NOT USE A HARD SUCTION HOSE FOR STEP 5. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

NOTES:

1. Pumping may be performed at the main or auxiliary inlet.

2. Ensure that valves, drains, and caps are closed.

3. Foam systems will not operate when the pump intake pressure is more than 5 psi.

a. Position the vehicle for convenient hydrant hookup and discharge hose layout. Bring the vehicle to a complete stop.
b. Park the vehicle.
c. Remove the cap from the main or auxiliary inlet.
d. Connect the 5-inch, soft suction hose to the main inlet, or connect the 2 1/2-inch discharge hose to the auxiliary inlet.
e. Open the supply valve on the positive water source.
f. Open the DRIVER'S SIDE MAIN INLET bleeder valve or the PASSENGER'S SIDE AUXILIARY INLET bleeder valve until water discharges to the ground.
g. Close the DRIVER'S SIDE MAIN INLET bleeder valve or the PASSENGER'S SIDE AUXILIARY INLET bleeder valve.
h. Open the DRIVER'S SIDE MAIN INLET valve control or the PASSENGER'S SIDE AUXIILIARY INLET valve control.

NOTE: If the water source pressure exceeds 125 psi, the intake relief valves will discharge to the ground.

i. Start the water pump engine.
j. Prime the main water pump.
k. Set the pressure governor.
l. Remove the NO.1 DRIVER'S SIDE DISCHARGE cap from the valve.
m. Connect the NO. 1 DRIVER'S SIDE DISCHARGE valve to the discharge hose.
n. Open the NO. 1 DRIVER'S SIDE DISCHARGE valve control. Ensure that the indicator light comes on.
o. Open other discharge valves to desired settings.
p. Complete the mission.
q. Shut off the water pump engine.
r. Close the DRIVER'S SIDE MAIN INLET bleeder valve or the PASSENGER'S SIDE AUXILIARY INLET bleeder valve.
s. Close the supply valve on the water source.
t. Open the DRIVER'S SIDE MAIN INLET bleeder valve or the PASSENGER'S SIDE AUXILIARY INLET bleeder valve.
u. Relieve pressure in hose.
v. Disconnect the 5-inch, soft suction hose from the DRIVER'S SIDE MAIN INLET valve, or disconnect the 2 1/2-inch discharge hose from the PASSENGER'S SIDE AUXILIARY INLET.
w. Perform postoperation procedures.

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

Brief Soldier: Direct the Soldier to deliver water to the fire scene with the firefighting apparatus using the onboard water supply or from another water source.

Performance Measures	GO	NO-GO
1. Performed structural stationary pump operations with the model 2500L firefighting truck, using the onboard water supply.	____	____
2. Performed structural stationary pump operations with the model 2500L firefighting truck, using water that is supplied from a fire hydrant or other firefighting apparatus.	____	____
3. Pumped water to resupply another firefighting apparatus, using the model 2500L firefighting truck.	____	____
4. Performed structural stationary pump operations with the TFFT, using the onboard water supply.	____	____
5. Performed structural stationary pump operations with the TFFT, using the water that is supplied from a fire hydrant or other 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
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	NFPA 1001
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	

Don Protective Clothing
052-249-1103

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

Standards: Don protective clothing.

Performance Steps

1. Don aluminized protective clothing.
    a. Ensure that the gear is serviceable (snaps can be snapped, hooks can be hooked, and fastening devices can be fastened).
    b. Lay out the gear for emergency donning.
    c. Don the protective clothing when the alarm sounds.
        (1) Remove your safety boots.
        (2) Step into the bunker boots, one foot at a time.
        (3) Don the aluminized trousers. Use the waistband to pull the trousers up.
        (4) Snap the trouser snaps, hook the hooks, and fasten the fastening devices.
        (5) Don the Nomex hood.
        (6) Don the aluminized coat.
        (7) Snap the coat snaps, hook the hooks, and fasten the 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 protective gloves.
2. Don structural protective clothing.
    a. Ensure that the gear is serviceable (snaps can be snapped, hooks can be hooked, and fastening devices can be fastened).
    b. Lay out the gear for emergency donning.
    c. Don the protective clothing when the alarm sounds.
        (1) Remove your safety boots.
        (2) Step into the bunker boots, one foot at a time.
        (3) Don the structural trousers. Use the waistband to pull the trousers up.
        (4) Snap the trouser snaps, hook the hooks, and fasten the fastening devices.
        (5) Don the Nomex hood.
        (6) Don the structural coat.
        (7) Snap the coat snaps, hook the hooks, and fasten the fastening devices.
        (8) Turn up and secure the structural coat collar.
        (9) Don the structural helmet, and ensure that with the ear covers are down.
        (10) Adjust the helmet chin strap.
        (11) Lower the helmet face shield.
        (12) Don protective gloves.

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

Brief Soldier: Direct the Soldier to don the aluminized or structural protective clothing within 60 seconds of the alarm sounding.

Performance Measures	GO	NO-GO
1. Donned aluminized protective clothing.	____	____
2. Donned 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
DA FORM 2404	AR 420-1
DA FORM 2408-14	IFSTA MANUAL
	LO 5-4210-220-12
	LO 9-2320-279-12
	TM 5-4210-220-12
	TM 5-4210-249-13&P-1
	TM 9-2320-328-13&P-1

Load a Hose

052-249-1111

Conditions: You are 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, applicable technical manuals (TMs) and lubrication orders (LOs), and two assistant firefighters to help load the hose line.

Standards: Form an accordion supply load, a flat supply load, a horseshoe supply load, a triple-layer attack load, or a preconnected attack flat load when instructed.

Performance Steps

1. Lay out the hose line, and check for deficiencies.
    a. Look for wetness.
    b. Look for mildew, mold, petroleum, or chemical stains on the hose jacket.
    c. Look for abrasions, tears, holes, cracks, or chafing on the jacket.
    d. Look for separation of the inner lining from the outer jacket.
    e. Look for heat or fire damage to the outer jacket.
    f. Look for deformities such as lumps, bubbles, or blisters.
    g. Look for damaged threads.
    h. Look for bent couplings.
    i. Look for binding swivels on female couplings.
    j. Look for broken or missing lugs.
    k. Look for cracked, broken, or poorly fitted gaskets.
    l. Look for damaged expansion rings or sleeves.
2. Replace deficient sections of the hose line.
3. Form a hose load when instructed.

NOTE: Load hose couplings so that they do not turn or flip over in the hose bed. Use a reverse bend or a 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 a Dutchman for the accordion load, place a short fold in the hose. The hose coupling should pay out straight.

    a. Form an accordion supply load.
        (1) Place a coupling in a corner of the hose bed.
        (2) Lay the hose line on its edge.
        (3) Place the hose line in the hose bed from front to rear or rear to front, depending on the type of hose lay.
        (4) Connect hose sections by threading 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 the top of the bottom load.
        (6) Continue laying the layers until complete.

NOTE: Remove the hose line from the hose bed, and reload it at least once a month.

    b. Form a flat supply load.
        (1) Place the first coupling at the front corner of either side of the hose bed.
        (2) Lay the hose flat in the hose bed in a front-to-back fashion.
        (3) Fold the hose back on itself (make a loop), and lay the hose in the opposite direction.
        (4) Repeat step 3b(3) until the hose covers the bottom of the hose bed.
        (5) Start the second layer by repeating step 3b(3) and step 3b(4).
        (6) Finish the flat supply load with a donut roll or other finish as required by local protocol.

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

Performance Steps

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

c. Form a horseshoe supply load.
   (1) Place a coupling in a corner of the hose bed.
   (2) Lay the hose against the interior of the hose bed wall.
   (3) Lay the hose line around the hose bed to the corner that is 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 the hose 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 it makes stretching the 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 checked for deficiencies.	____	____
2. Replaced deficient sections of the hose line.	____	____
3. Formed a hose load 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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	

Conduct Hose Lays

052-249-1112

Conditions: You are given a firefighting apparatus, a structural fire scene, a fire hydrant, necessary tools and equipment, protective clothing and equipment, a self-contained breathing apparatus, applicable technical manuals (TMs) and lubrication orders (LOs), and an assistant firefighter.

Standards: Conduct hose lays.

Performance Steps

1. Conduct a forward hose lay.

NOTES:

1. 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.

2. Forward lays that use hose lines which have a diameter that is 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 that is 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 that the plug man connected to the fire hydrant.
d. Signal the plug man to charge the line.
e. Remove the chocks from the storage compartment, and place one in front one of the rear wheels and one behind the wheel.
f. Remove additional hose line from the hose bed.

NOTE: Removing additional hose line will provide enough hose line to reach the supply intake port.

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 and the hydrant man are not the evaluated task positions, but their duties must be correctly performed to provide an assessment of the driver/operator task. The plug man or hydrant man will complete the following in support of the driver/operator: (1) Remove the necessary tools (hydrant and spanner wrenches) and extra hose line from the hose bed when the fire apparatus has stopped at the fire hydrant. (2) Anchor the hose line by wrapping it one full turn around the fire hydrant and stepping onto the hose line. (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 to charge the hose line. (7) Proceed to the fire scene, and tighten leaky hose couplings as needed.

2. Conduct a reverse hose lay.

NOTES:

1. 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 the full capacity of the firefighting apparatus pump is necessary, or when a reverse hose lay is used in combination with a forward lay.

Performance Steps

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

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 extra working line at the fire scene.

b. Help the plug man and crew chief remove the necessary firefighting tools, equipment, ladders, and additional attack lines.
c. Remount the firefighting apparatus, and ensure 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 to proceed to the fire hydrant.

DANGER: PROCEED TO THE FIRE HYDRANT WHEN THE CREW CHIEF SIGNALS TO DO SO. PULL AWAY SLOWLY, CONTINUOUSLY WATCHING THE NOZZLE MAN AS YOU DRIVE. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

e. Stop the firefighting apparatus at the fire hydrant.
f. Remove the chocks from the storage compartment, and place one in front of one of the rear wheels and one behind the wheel.
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.

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

Brief Soldier: Inform the Soldier which type of hose lay to conduct. If the Soldier receives a NO-GO for the selected hose lay, he will not be tested on the other 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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Advance a Hose Line

052-249-1113

Conditions: You are given a firefighting apparatus, a structural fire scene, a self-contained breathing apparatus (SCBA), protective clothing and equipment, an extension ladder, assistant firefighters, applicable technical manuals (TMs) and lubrication orders (LOs), and a hose line with a nozzle.

Standards: Advance a hose line.

Performance Steps

1. Advance an uncharged hose line up an interior stairway.
    a. Confirm the order to advance a line with a fire officer.
    b. Position for shouldering the hose line. Leave about 15 to 20 feet of hose between each firefighter.
    c. Place hose bundles on the appropriate shoulders according to the shoulder-carry.
    d. Position stationary firefighters along the route and on the stairs at critical points to help feed the hose and to keep the hose on the outside of the stairway.

NOTE: The remaining firefighters assume stationary positions after their shoulder loads have paid out.

    e. Advance the hose line up a flight of stairs against an outside wall. Avoid sharp bends and kinks, and maintain appropriate spacing between firefighters.
    f. Flake excess hose up the stairway that leads to one floor above the fire.
    g. Advance, and assist the nozzle operator in removing kinks after the hose line is depleted.
    h. Push the hose to the outside wall of the stairway.

2. Advance an uncharged hose line down an interior stairway.
    a. Confirm the order to advance a line with a fire officer.
    b. Position for shouldering the hose line. Leave about 25 to 30 feet of hose between each firefighter.
    c. Place hose bundles on the appropriate shoulders according to the shoulder-carry.
    d. Position stationary firefighters along the route at critical points and at the top of the stairs to help feed the hose and to keep the hose on the outside of the stairway.

NOTE: The remaining firefighters assume stationary positions after their shoulder loads have paid out.

    e. Advance the hose line down a flight of stairs against an outside wall. Avoid sharp bends and kinks, and maintain appropriate spacing between firefighters.
    f. Advance, and assist the nozzle operator in removing kinks after the hose line is depleted.
    g. Push the hose to the outside wall of the stairway.

3. Advance a charged hose line up an interior stairway.
    a. Confirm the order to advance a line with a fire officer.
    b. Advance the line by using the working-line drag.
    c. Position stationary firefighters along the route and on the stairs at critical points to help feed the hose and to keep the hose on the outside of the stairway.
    d. Advance up the stairs against an outside wall. Avoid sharp bends and kinks, maintain appropriate spacing between firefighters, and continue to use the working-line drag to one floor above the fire.
    e. Make a large loop of hose on the floor located above the fire to provide excess line for advancement.
    f. Advance the hose down the stairway to the fire floor by using the working-line drag.
    g. Advance, and assist the nozzle operator in removing kinks after the hose line is depleted.
    h. Push the hose to the outside wall of the stairway.

Performance Steps

4. Advance a charged hose line down an interior stairway.
    a. Confirm an order to advance a line with a fire officer.
    b. Advance the line by using the working-line drag.
    c. Position stationary firefighters along the route at critical points and at the top of the stairs to help feed the hose and to keep the hose on the outside of the stairway.
    d. Advance the hose line down a flight of stairs against an outside wall. Avoid sharp bends and kinks, maintain appropriate spacing between firefighters, and continue to use a working-line drag to advance one floor above the fire floor.
    e. Assist the nozzle operator after the hose is advanced.
    f. Push the hose to the outside wall of the stairway.

5. Advance an uncharged line up a ladder and into a window.
    a. Confirm the order to advance a line with a fire officer.
    b. Position several firefighters on the same side of the hose, facing the nozzle, with about 10 feet between each firefighter.
    c. Place the hose line over your shoulders.
    d. Climb the ladder.
    e. Lay the nozzle down in the window, and enter the window.
    f. Lock in on the ladder.
    g. Feed the hose to the nozzle firefighter until the nozzle firefighter has advanced to the desired location and signals you to stop.
    h. Secure the hose to the top rung of the ladder with a hose strap tool or utility strap. Tie a clove hitch if a utility strap is used.
    i. Advance up the ladder to back up the nozzle firefighter.

6. Advance a charged line up a ladder and into a window.
    a. Confirm the order to advance a line with a fire officer.
    b. Position one firefighter at the heel of the ladder, and position the remaining firefighters on the same side of the hose, facing the nozzle. Space the firefighters 6 to 8 feet apart.
    c. Climb the ladder.
    d. Lock in on the ladder with a leg or with a Class 1 safety harness.
    e. Advance the hose line.
    f. Unlock your leg, and enter the window.

NOTES: The assistant firefighters are not the evaluated task positions, but their duties must be correctly performed to provide an assessment of the evaluated firefighter task.

1. Firefighters on ladder: Advance up the ladder. Maintain the appropriate distance from each other. Lock in with a leg or with a Class 1 safety harness when the backup firefighter is in position.

2. Backup firefighter: Enter the window.

3. Firefighters below: Feed the hose to the nozzle firefighter and the backup firefighters until you are signaled to stop.

4. Firefighters on the ladder: Secure the hose to the ladder.

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

Brief Soldier: Direct the Soldier to advance a hose line.

Performance Measures	GO	NO-GO
1. Advanced an uncharged hose line up an interior stairway.	____	____
2. Advanced an uncharged hose line down an interior stairway.	____	____
3. Advanced a charged hose line up an interior stairway.	____	____
4. Advanced a charged hose line down an exterior stairway.	____	____
5. Advanced an uncharged line up a ladder and into a window.	____	____
6. Advanced a charged line up a ladder and into a window.	____	____

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
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	

Operate a Nozzle

052-249-1114

Conditions: You are given a firefighting apparatus, a structural fire scene, a self-contained breathing apparatus (SCBA), assistant firefighters, protective clothing and equipment, sufficient hose line, applicable technical manuals (TMs) and lubrication orders (LOs), and nozzles.

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

Performance Steps

1. Operate a solid-stream nozzle.
   a. Position yourself on the same side of the hose as the assistant firefighter.
   b. Wait for the backup firefighter to communicate that he or she is ready.
   c. Aim the nozzle at the desired target.
   d. Open the nozzle fully.
   e. Shut off the nozzle slowly.
2. Operate a fog nozzle.
   a. Position yourself on the same side of the hose as the assistant firefighter.
   b. Wait for the backup firefighter to communicate that he or she is ready.
   c. Adjust the stream pattern by twisting the stream adjustment to the desired pattern.
   d. Aim the nozzle at the desired target.
   e. Open the nozzle fully.
   f. Shut off the nozzle slowly.

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

Brief Soldier: Direct the Soldier to operate a nozzle to extinguish a fire.

Performance Measures	GO	NO-GO
1. Operated a solid-stream nozzle.	____	____
2. Operated a fog nozzle.	____	____

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
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Conduct Ventilation Procedures

052-249-1118

Conditions: You are given a firefighting apparatus, necessary firefighting tools and equipment, a hose line with a nozzle, protective clothing, a self-contained breathing apparatus (SCBA), a rope, ladders, two assistant firefighters, a simulated structure, applicable technical manuals (TMs) and lubrication orders (LOs), and ground ladders.

Standards: Conduct ventilation procedures.

Performance Steps

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

NOTE: Perform horizontal ventilation from the leeward side and then from the windward side. Perform vertical ventilation with the wind at your back. The wind direction indicates potential exposure hazards.

    f. Determine the structure layout.
    g. Determine the structure age.
    h. Identify construction material types.
    i. Locate exterior exposures.

DANGER: ESCAPING HEAT, SMOKE, OR GAS COULD CAUSE ADJACENT BUILDINGS TO CATCH FIRE. OCCUPANTS IN ADJACENT BUILDINGS COULD BE IN DANGER.

    j. Determine existing openings.
    k. Determine the evidence of a backdraft.

DANGER: TAKE EXTRA PRECAUTIONS IF BACKDRAFT CONDITIONS EXIST. IMPROPER VENTILATION COULD RESULT IN AN EXPLOSION. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

    l. Determine the roof type or pitch.

2. Conduct horizontal ventilation.

NOTES:

1. The horizontal ventilation method is most effective if the heat and smoke have been confined to one to three 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.

2. Begin horizontal ventilation at the fire floor, and move upward. The greatest concentration of heat, smoke, and gas will be on the fire floor and upper floors because of the convection cycle. Air rises as it is heated. 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 and an SCBA.
    b. Open a door or window as close as possible to the fire. (If necessary, use forcible-entry tools.)

WARNING: IF THE OPENING IS CLOSE TO THE MAIN FIRE AREA, A PRE-POSITIONED, CHARGED HOSE LINE MUST BE READY FOR IMMEDIATE USE AGAINST THE FIRE AND FOR PROTECTION OF THE FIREFIGHTERS WHO ARE VENTILATING THE STRUCTURE. ALWAYS HAVE A CHARGED HOSE LINE BY THE VENTILATION OPENING. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

    c. Stand to the side of the window.
    d. Open the top half of the window on the leeward side of the building.

Performance Steps

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

e. Open as many windows as necessary to facilitate the removal of smoke and gas.
f. Open the bottom half of windows on the windward side of the building after the hot smoke and gases escape.

DANGER: ALWAYS OPEN A WINDOW ON THE WINDWARD SIDE AFTER A WINDOW IS OPENED ON THE LEEWARD SIDE. FAILURE TO COMPLY CAN RESULT IN A VIOLENT EXPLOSION AND MAY CAUSE PERMANENT INJURY OR DEATH.

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

WARNING: IF MECHANICAL SMOKE EJECTORS ARE USED, REMOVE CURTAINS, DRAPES, SHADES, AND BLINDS FROM AROUND WINDOW OPENINGS. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

h. Proceed to the next floor, and continue horizontal ventilation.

3. Conduct vertical ventilation.

NOTES:

1. The vertical ventilation 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.

2. Vertical ventilation openings should be directly over the fire seat or as close as possible to the fire seat to prevent the spread of heat and smoke.

a. Ascend an extension ladder to the roof.

WARNING: WHEN VERTICAL VENTILATION IS PERFORMED, A CHARGED HOSE LINE MUST BE MANNED AND POSITIONED IN AN AREA THAT PROVIDES 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 IT IS MADE. HOWEVER, THE HOSE STREAM SHOULD NEVER BE DISCHARGED DIRECTLY INTO THE OPENING. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

b. Tie a lifeline to yourself.

WARNING: IF THE ROOFTOP IS PITCHED OR ARCHED, A ROOF LADDER MUST BE LAID ON THE ROOF AND SECURED TO THE ROOFTOP. YOU WILL HAVE BETTER SUPPORT WHEN MAKING AN OPENING IF YOU ARE STANDING ON THE LADDER. NEVER OPERATE ON A PITCHED OR ARCHED ROOF UNLESS A ROOF LADDER IS USED. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

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 not so weak that they could collapse.

DANGER: IF THE ROOF SHIFTS OR SAGS, DO NOT GO OUT ON THE ROOF. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

e. Plan an escape route from the roof.
f. Use natural roof openings if they can provide the necessary degree of ventilation and are in the proper location.
g. Step on the roof, and locate the cut area.

NOTE: Make the opening directly over the fire seat if possible.

h. Determine where to make the cut by examining the—
   (1) Location of the fire.
   (2) Highest point of the roof.
   (3) Direction of the wind.
   (4) Existing property and life exposures.
   (5) Extent of the fire.
   (6) Safety precautions.

Performance Steps

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

NOTE: When the ax head is dropped between joists, the ax will noticeably bounce and a hollow sound is heard. When the ax head is dropped on or near a joist, the ax has little bounce and a solid sound is heard.

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 4 by 4 feet to provide adequate ventilation and facilitate repairs after the fire.

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 that is 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 the escape route.

DANGER: NEVER CUT THROUGH JOISTS. THE ROOF COULD BE SERIOUSLY WEAKENED, AND THE ROOF COULD COLLAPSE UNDER WEIGHT. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

m. Pry up roof boards with the pick end of the ax after making the cuts.

n. Push the blunt end of a pike pole through the roof opening to open the ceiling below.

o. Remove tools and equipment from the rooftop when the opening is complete.

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

Brief Soldier: Direct the Soldier to conduct ventilation procedures.

Performance Measures	**GO**	**NO-GO**
1. Applied the factors of ventilation.	____	____
2. Conducted horizontal ventilation.	____	____
3. Conducted 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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Protect and Preserve Evidence at a Fire Scene

052-249-1120

Conditions: You are given a firefighting apparatus, a fire scene, paper, a pen, a pencil, tape, a camera, a rope, protective clothing and equipment, containers, a self-contained breathing apparatus (SCBA), applicable technical manuals (TMs) and lubrication orders (LOs), and a hose line with a nozzle.

Standards: Protect and preserve evidence at a fire scene.

Performance Steps

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

2. Protect the evidence.

NOTES:

1. Evidence that indicates the cause of the fire may be uncovered during extinguishment and overhaul. This evidence must be protected.

2. Improperly applied hose streams can destroy valuable evidence. This could make determining the cause of the fire extremely difficult or impossible.

3. Evidence could become useless if it is not properly guarded. The fire investigator has a better chance of determining the cause of a fire with untouched, undisturbed 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 affected by the fire to keep personnel away.
   d. Lock or secure the room or structure where the evidence is located.
   e. Post a guard to prevent evidence tampering.
   f. Identify the 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 another suitable device so that the evidence will not be damaged.
   c. Place paper ash between two sections of glass.
   d. Label evidence containers. Annotate the—
      (1) Date, time, and location that the material was found.
      (2) Initials of the person who discovered the evidence.
      (3) Initials of the person who removed the evidence.
   e. Place the evidence in a safe, secure location.
   f. Maintain a record of personnel who removed evidence from the fire scene.

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

Brief Soldier: Direct 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 indicate 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
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Conduct Salvage Operations

052-249-1121

Conditions: You are given a firefighting apparatus, 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, applicable technical manuals (TMs) and lubrication orders (LOs), and a fire scene.

Standards: Conduct salvage operations.

Performance Steps

1. Determine the most valuable location in the structure.
   a. Consider the location of the fire.
   b. Consider the extent of smoke and water damage.
   c. Consider the size and quantity of the contents.
   d. Consider the available manpower.
   e. Consider the available salvage covers, smoke ejectors, sawdust, and pallets.
   f. Consider the value of the contents.
   g. Consider the location of the contents.

2. Conduct forced ventilation.

WARNING: BE VERY CAREFUL WHEN VENTILATING A STRUCTURE OR ROOM TO REDUCE SMOKE AND HEAT DAMAGE. IMPROPER VENTILATION COULD RESULT IN HEATED SMOKE AND GASES BEING DRAWN THROUGH THE STRUCTURE. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

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

WARNING: MOVE OBJECTS CLOSE TO THE SMOKE EJECTOR THAT COULD BE DRAWN INTO IT. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

   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, 2 feet from the opening where the smoke is expelled. (The hose stream should cover 85 to 90 percent of the opening.)

WARNING: HOSE STREAM VENTILATION CAN CAUSE ADDITIONAL WATER DAMAGE TO THE STRUCTURE. ONLY USE HOSE STREAM VENTILATION WHEN THE REMOVAL OF HEAT AND SMOKE FROM THE STRUCTURE IS MORE IMPORTANT THAN THE INCREASED AMOUNT OF WATER DAMAGE. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

3. Move the contents to an outside area.

NOTE: If the contents cannot be moved outside, place them in a pile. Stack the items by the degree of value (lowest to highest) 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 1 foot.
      (4) Roll the edges in toward the middle of the stairway.

Performance Steps

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 to a portion of the structure near the window opening.
   (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 another stationary object or portion of the structure.
   (4) Ensure that one end of the salvage cover extends through the window opening.

c. Construct a catch basin.
   (1) Construct a deep catch basin.

NOTE: Use the deep catch basin to catch large quantities of water that are leaking through a ceiling when the water cannot be channeled to an outside area.

   (a) Place some building contents (tables, desks, furniture, boxes) under the leak in a circle or square pattern.
   (b) Drape the salvage cover over the items, and fasten the edge of the cover to furniture, the floor, or other building contents.
   (c) Ensure that the bottom of the salvage cover is touching the floor.

   (2) Construct a shallow catch basin.

NOTE: Use the shallow catch basin to catch small quantities of water that are leaking through a ceiling when the water cannot be channeled to an outside area. The shallow catch basin is a temporary measure; it cannot hold 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 the items listed in the conditions.

Brief Soldier: Direct the Soldier to conduct salvage operations.

Performance Measures	**GO**	**NO-GO**
1. Determined the most valuable location in the structure.	____	____
2. Conducted 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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Conduct Overhaul Operations

052-249-1122

Conditions: You are given a firefighting apparatus, a fire scene, protective clothing and equipment, a self-contained breathing apparatus (SCBA), necessary firefighting tools and equipment, a rope, salvage covers, a smoke ejector, applicable technical manuals (TMs) and lubrication orders (LOs), 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.

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

NOTE: One gallon of water weighs 8.34 pounds. The excess weight of the water and the stress that it places on the floors and walls are key factors in determining structural integrity.

   c. Identify the material weight.

NOTE: Materials involved in the fire or located near the main fire area that readily absorb water can contribute to the load stress that is placed on structural members. These materials could weigh as much as three times their normal weight.

   d. Identify structural exposures.

DANGER: WALLS, CEILINGS, AND FLOORS THAT ARE LOCATED NEAR THE MAIN FIRE AREA ARE USUALLY WEAKENED BY INTENSE HEAT AND DIRECT FLAME. THE ADDED WATER WEIGHT FROM EXTINGUISHING OPERATIONS PLACES STRESS ON THESE MEMBERS AND COULD CAUSE AN IMMINENT COLLAPSE OF THE ENTIRE STRUCTURE THAT MAY RESULT IN PERMANENT INJURY OR DEATH.

   e. Identify the structural damage.

DANGER: WEIGHT AROUND CUT AREAS COULD CAUSE THE STRUCTURE TO COLLAPSE. FORCIBLE ENTRY, VENTILATION, OR ACCESS TO THE FIRE AREA COULD ALSO DAMAGE THE STRUCTURE. BE VERY CAREFUL WHEN INSPECTING AROUND CUT AREAS. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

2. Identify conditions that indicate a collapse of the structure.
   a. Look for cracks in load-bearing, concrete walls.
   b. Check for the structure leaning to one side.
   c. Check for a sagging roof, ceilings, and floors.
   d. Listen for noise.
   e. Check for floor movement as weight is applied.
   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 THAT IS BELIEVED TO BE STRUCTURALLY UNSTABLE. SECTION OFF THE AREA, AND LEAVE A FIREFIGHTING CREW TO CONTAIN FIRES THAT MAY REKINDLE. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

3. Shut off or disconnect building utilities.

Performance Steps

4. Inspect the structure and contents.

DANGER: DURING INTERIOR OVERHAUL PROCEDURES, POISONOUS AND TOXIC PROPERTIES STILL EXIST IN THE AIR. CONTINUE TO WEAR THE SCBA. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

a. Check spaces between floor joists, ceiling beams, false or hanging ceilings, walls, and partitions.
b. Check window and door casings.
c. Check airshafts, chutes, and elevators.
d. Check pipe and wire recesses.
e. Check textiles (sofas, mattresses, clothing).
f. Check piles of items (newspapers, boxes, rags).
g. Check charred lumber for deep-seated heat and sparks.
h. Check rooms adjacent to the main fire area, including the basement and attic.
i. Check hot spots.

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

j. Check for glowing embers and visible flames.
k. Check for smoke that escapes from concealed spaces.

5. Investigate areas in which hidden fires are suspected.
   a. Locate a 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 a hole to reach the seat of a fire if a smoldering or free-burning fire is located.

6. Extinguish the fire.

DANGER: BE EXTREMELY CAREFUL WHEN HANDLING BURNED MATERIALS. THEY MAY CONTAIN POISONOUS, CORROSIVE, OR EXPLOSIVE SUBSTANCES. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

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

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

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

DANGER: REMOVING FLOOR OR WALL MEMBERS CAN SEVERELY WEAKEN A STRUCTURE. BE VERY CAREFUL WHEN DETERMINING WHETHER OR NOT TO REMOVE THEM. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

7. Ensure that the building is safe.

DANGER: WHEN THE FIRE HAS BEEN COMPLETELY EXTINGUISHED, ENSURE THAT THE STRUCTURE IS SAFE FOR PERSONNEL WHO MUST REMAIN IN THE STRUCTURE. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

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

8. Clean up the structure.
   a. Move debris to an outside area.
   b. Absorb standing water by using absorbent materials, and move the absorbent materials to an outside area after use.
   c. Separate burned and unburned materials, and place unburned materials in a safe area.

Performance Steps

9. Secure the structure.
    a. Nail boards over doors and windows that were destroyed by the fire.
    b. Nail boards over holes in the roof.
    c. Install hasps and locks to doors and windows that were forced open and cannot be resecured with original locks.

NOTE: Facility engineers usually supply the necessary materials and manpower to secure the structure. If security guards are required, they are usually provided by the military police.

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

Brief Soldier: Direct 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 conditions that indicated a collapse of the structure.	____	____
3. Shut off or disconnected building utilities.	____	____
4. Inspected the structure and contents.	____	____
5. Investigated areas in which hidden fires were 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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Communicate With Hand Signals

052-249-1123

Conditions: You are given a flashlight, an assistant firefighter, applicable technical manuals (TMs) and lubrication orders (LOs), and the unit standing operating procedure (SOP).

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

Performance Steps

1. Signal to charge the hose line.
    a. Signal during the day.
        (1) Face the receiver.
        (2) Raise both arms vertically over your shoulders, and face your palms toward the receiver.
        (3) Hold your arms stationary until the receiver acknowledges the signal.
    b. Signal during the night.
        (1) Face the receiver.
        (2) Hold the flashlight in one hand, and vertically raise that arm over your head.
        (3) Point the flashlight in the direction of the receiver.
        (4) Move the flashlight horizontally over your head until the receiver acknowledges your signal.

2. Signal to shut down the hose line.

NOTE: This signal is used to indicate that the hose line is no longer needed or when the hose line needs to be depressurized so that ruptured sections can be repaired.

    a. Signal during the day.
        (1) Face the receiver.
        (2) Extend both hands and arms downward toward the front of your waist.
        (3) Swing your hands across your body until they cross each other.
        (4) Continue until the receiver acknowledges your signal.
    b. Signal during the night.
        (1) Face the receiver.
        (2) Place the flashlight in one hand, and lower that hand to the front of your waist.
        (3) Swing the light across the front of your body at waist level, and direct the light at the receiver.
        (4) Continue until the receiver acknowledges your signal.

3. Signal to increase the water pressure.

NOTE: One movement indicates an increase of 10 pounds per square inch (psi).

    a. Signal during the day.
        (1) Face the receiver.
        (2) Raise your arms horizontally to shoulder level with your palms up.
        (3) Move your arms upward to head level and return them to shoulder level while keeping your arms straight.
        (4) Continue until the receiver acknowledges your signal.
    b. Signal during the night.
        (1) Face the receiver.
        (2) Place the flashlight in one hand, and direct the beam at the receiver.
        (3) Raise your arm horizontally from waist level to shoulder level.
        (4) Continue until the receiver acknowledges your signal.

4. Signal to decrease the pressure.

NOTE: One movement indicates an increase of 10 psi.

    a. Signal during the day.
        (1) Face the receiver.
        (2) Raise your arms horizontally to shoulder level, with your palms down.

Performance Steps

(3) Move your arms downward to waist level, and return them to shoulder level while keeping your arms straight.
(4) Continue until the receiver acknowledges your signal.

b. Signal during the night.
(1) Face the receiver.
(2) Place the flashlight in one hand, and direct the beam at the receiver.
(3) Lower your arm horizontally from shoulder level to waist level.
(4) Continue until the receiver acknowledges your signal.

5. Signal to cease operations.
a. Signal during the day.
(1) Face the receiver.
(2) Extend your arm in front of your body.
(3) Rotate your arm in a circle toward the front of your body.
(4) Continue until the receiver acknowledges your signal.
b. Signal during the night.
(1) Face the receiver.
(2) Place the flashlight in one hand, and direct the beam at the receiver.
(3) Extend your arm in front of your body.
(4) Rotate your arm in a circle toward the front of your body.
(5) Continue until the receiver acknowledges your signal.

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

Brief Soldier: Direct the Soldier to communicate with hand signals during the day and during the night.

Performance Measures	**GO**	**NO-GO**
1. Signaled to charge the hose line.	____	____
2. Signaled to shut down the hose line.	____	____
3. Signaled to increase the water 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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Calculate Pump Operating Pressure

052-249-1124

Conditions: You are 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 appliances connected to the hose line, applicable technical manuals (TMs) and lubrication orders (LOs), and protective clothing.

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

Performance Steps

1. Use the pump pressure formula to calculate friction loss (engine pump operating pressure [EP] = friction loss [FL] + nozzle pressure [NP] + increase or decrease in elevation [BP]).

NOTES:

1. Friction loss is the loss of pressure that results from the friction between flowing water and the inner lining of the hose line. If the amount of water flow is increased, the friction loss is increased. The formula for computing friction loss in hose lines is based on the gallons-per-minute (GPM) flow through a 2 1/2-inch hose line (FL = 2Qý + Q or 2 * [Q * Q] + Q).

2. The quantity in hundreds of GPM is determined by the formula Q = GPM/100.

3. When the flow rate is less than 100 GPM, adjust the formula to FL = 2Qý + (1/2) Q.

4. The formula must be adjusted when the diameter of the hose line is more or less than 2 1/2 inches. 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.

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

2. Select the standard nozzle pressure.

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

   a. Determine the friction loss for a 2 1/2-inch hose line (Q: 200/100 = 2 gallon).
   b. 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).
   c. 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).
   d. 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 (Q: 100/100 = 1 gallon).
   e. 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).
   f. 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 indicates 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).

   g. Determine the total friction loss (20 + 81 + 15 [wye psi] = 116 psi friction loss).
      (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 (Q: 200/100 = 2 gallons).
      (2) 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).
      (3) Convert the friction loss from a 2 1/2-inch hose line to a 3-inch hose line.

Performance Steps

(4) Determine the conversion factor for a 3-inch hose line.
(5) 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).
(6) Multiply the friction loss by the number of 100-foot lengths (4 psi * 2 = 8 psi loss in the 3-inch hose line with 2 1/2-inch couplings).
(7) 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 (Q: 100/100 = 1 gallon).
(8) 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).
(9) Convert the friction loss from a 2 1/2-inch hose line to a 1 3/4-inch hose line.
(10) 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).
(11) 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).
(12) 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, the friction loss in the hose line will 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 that are Siamesed into one line, but the easiest method is to divide the total flow by 2 and compute the friction loss using the formula in step 2g(12).

(13) Determine the friction loss for two parallel 2 1/2-inch hose lines (divide the total flow by 2: 250 GPM/2 = 125 GPM 125/100 = 1.25 gallons).
(14) 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).
(15) Multiply the friction loss by the number of 100-foot lengths (6.25 psi * 15 = 93.75 psi friction loss in the 2 1/2-inch hose line).
(16) Determine the friction loss for a 2 1/2-inch hose line after the Siamese hose (Q: 250/100 = 2.5 hundreds of gallons).
(17) 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).
(18) Add the friction loss for the Siamese hose.
(19) Calculate the total friction loss (93.55 + 15 + 10 [Siamese] = 118.55 psi friction loss).

3. Calculate for increased or decreased elevation.
   a. Calculate for an 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.)
   b. Calculate for a 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.)

4. Add elements that affect the pump operating pressure.
   a. Add friction loss.
   b. Add nozzle pressure.
   c. Add elevation increase or decrease.

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

Brief Soldier: Direct the Soldier to calculate the pump operating pressure to within 10 psi.

Performance Measures	**GO**	**NO-GO**
1. Used the pump pressure formula to calculate friction loss.	____	____
2. Selected the standard nozzle pressure.	____	____

Performance Measures	GO	NO-GO
3. Calculated for increased or decreased elevation.	____	____
4. Added elements that affected 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
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Perform Rescue Carries

052-249-1131

Conditions: You are 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, applicable technical manuals (TMs) and lubrication orders (LOs), and an assistant firefighter.

Standards: Perform rescue carries.

Performance Steps

DANGER: BEFORE MOVING A VICTIM, QUICKLY IDENTIFY LIFE-THREATENING INJURIES. AN INITIAL SURVEY OF THE VICTIM IS CRITICAL. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

NOTE: When numerous victims are located at the same time, first rescue those who are closest to egress points and those who can be easily freed. Then, rescue trapped victims with serious injuries or victims who require more involved rescue efforts.

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

NOTES:

1. Use a back strap 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.

2. Do not perform this carry if the victim has broken bones or if you are wearing an SCBA.

        (1) Position the victim on his or her 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 or her arm against your chest with the opposite hand.
        (4) Grab the victim's clothing at the 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.

NOTES:

1. The fireman carry enables you to carry a victim a considerable distance without becoming fatigued and allows for a free hand to perform actions, such as opening doors.

2. Do not perform this carry if the victim has broken bones or if you are wearing an SCBA.

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

Performance Steps

(7) Pull the victim's right 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 or her knees.
(9) Bring the victim's wrist down to your hand, and grab the back of his or her wrist with your hand.
(10) Lift straight upward.

WARNING: RAISE TO A STANDING POSITION USING YOUR LEG MUSCLES. DO NOT TRY TO LIFT THE VICTIM WITH YOUR BACK. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY.

(11) Raise to a standing position.

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

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

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

Brief Soldier: Direct the Soldier to perform rescue carries.

Performance Measures	**GO**	**NO-GO**
1. Performed one-person rescue carries.	____	____
2. Performed two-person 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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	NFPA 1001
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Operate a Fire Extinguisher

052-249-1136

Conditions: You are given a fire scene; protective clothing and equipment; a self-contained breathing apparatus (SCBA); a carbon dioxide extinguisher; a pressurized-water extinguisher; a Halon 1211 extinguisher; a Halon 1301 extinguisher; a multipurpose, dry-chemical extinguisher; a pressurized, dry-chemical extinguisher; a cartridge-operated, dry-chemical extinguisher; a pressurized, dry-powder extinguisher; and applicable technical manuals (TMs) and lubrication orders (LOs).

Standards: Operate a fire extinguisher.

Performance Steps

1. Identify fire materials by class.
    a. Identify Class A materials (wood, paper, cotton, straw, grain, grass).
    b. Identify Class B materials (gasoline, fuel oil, lubricating oil, grease, butter, lard, tallow, shortening, margarine, butane, propane, hydrogen, acetylene).
    c. Identify Class C materials (computer equipment, electric motors, appliances, machinery).

DANGER: ELECTRICAL SHOCK IS AN ADDED DANGER IN CLASS C FIRES. 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. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

    d. Identify Class D materials (combustible metal, alloy, sodium, titanium, uranium, magnesium, sodium potassium, iron, aluminum, steel, copper, brass).

NOTE: Class D materials 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 CAUSE A VIOLENT EXPLOSION THAT MIGHT RESULT IN PERMANENT INJURY OR DEATH.

2. Identify a fire extinguisher to effectively extinguish the fire.
    a. Identify fire extinguishers (water, wet-water, aqueous film-forming foam (AFFF), multipurpose, dry-chemical, Halon 1211, Halon 1301) to extinguish Class A fires.

NOTES:

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

2. Halon agents and AFFF extinguishers are expensive to replace. Attempt to use other agents instead.

    b. Identify fire extinguishers (carbon dioxide, Halon 1211, Halon 1301, dry-chemical, multipurpose, AFFF) to extinguish Class B fires.

NOTES:

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

2. Water can be used to extinguish a Class B fire if the water is applied 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 and require larger quantities of water.

    c. Identify fire extinguishers (carbon dioxide, Halon 1211, Halon 1301, dry-chemical, multipurpose) to extinguish Class C fires.

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

Performance Steps

DANGER: DO NOT USE WATER OR AFFF EXTINGUISHERS TO EXTINGUISH CLASS C FIRES. SUCH AGENTS ARE EXCELLENT CONDUCTORS OF ELECTRICITY. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

WARNING: DO NOT USE DRY-CHEMICAL AGENTS TO EXTINGUISH CLASS C FIRES UNLESS ABSOLUTELY NECESSARY. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

d. Identify fire extinguishers to extinguish Class D fires.

DANGER: USE G-1 POWDER ONLY ON FIRES THAT INVOLVE MAGNESIUM AND MAGNESIUM ALLOY. MET-L-X POWDER CAN BE USED ON VARIOUS TYPES OF METAL FIRES. COMPLY WITH THE MANUFACTURER'S INSTRUCTION PLATE THAT IS FASTENED TO THE FRONT OF THE FIRE EXTINGUISHER. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

DANGER: DO NOT CONFUSE THE DRY-CHEMICAL FIRE EXTINGUISHER WITH THE DRY-POWDER FIRE EXTINGUISHER. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

(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 that is 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.

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

NOTE: If the fire extinguisher is a cartridge-operated extinguisher, 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, GRASP THE DISCHARGE HORN BY THE WOODEN OR INSULATED HANDLE. CARBON DIOXIDE IS EXTREMELY COLD WHEN IT IS DISCHARGED. DO NOT PLACE BARE HANDS ON NONINSULATED AREAS OF THE HORN. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY.

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

CAUTION: WHEN USING A CARBON DIOXIDE FIRE EXTINGUISHER ON A CLASS C FIRE, ENSURE THAT THE FIRE EXTINGUISHER REMAINS IN CONTACT WITH THE GROUND. THIS WILL REDUCE THE POSSIBILITY OF STATIC ELECTRICITY BUILDUP. FAILURE TO COMPLY MAY CAUSE EQUIPMENT DAMAGE.

   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 areas that contain glowing embers or smoldering hot spots.

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

Brief Soldier: Direct the Soldier to operate a fire extinguisher.

Performance Measures	GO	NO-GO
1. Identified fire materials by class.	____	____
2. Identified a fire extinguisher to effectively extinguish the fire.	____	____
3. Selected the fire extinguisher that was 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
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Operate a Self-Contained Breathing Apparatus
052-249-1137

Conditions: You are given a self-contained breathing apparatus (SCBA), spare bottles, applicable technical manuals (TMs) and lubrication orders (LOs), and a set of protective clothing.

Standards: Operate an SCBA in 60 seconds.

Performance Steps

1. Identify and operate an SCBA.

NOTES:

1. Positive-pressure SCBA units are activated by opening the cylinder valve. SCBA 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.

2. Some SCBA models are equipped with a switch. These SCBA models can be used in DEMAND or POSITIVE-PRESSURE mode.

a. Identify and operate an Interspiro® SCBA.
   (1) Activate the positive pressure by closing the hatch.
   (2) Use the bypass valve on the unit to relieve the pressure for doffing.
b. Identify and operate a 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 the straps.

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

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

4. Check the seal of the mask. Cover the breathing tube with your thumb, and inhale slowly.

NOTE: The mask should collapse against your face. Readjust the mask if leaks are detected.

5. Check the exhalation valve. Inhale, cover the end of the breathing tube, and then exhale.

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.

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

7. Connect the hose to the regulator.

8. Open the main line valve that is 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: Direct the Soldier to operate an SCBA in 60 seconds.

Performance Measures	GO	NO-GO
1. Identified and operated an SCBA.	____	____
2. Placed the SCBA unit on his or her back and adjusted the straps.	____	____

Performance Measures	GO	NO-GO
3. Donned the mask and tightened the head harness.	____	____
4. Checked the seal of the mask.	____	____
5. Checked the exhalation valve.	____	____
6. Opened the cylinder valve.	____	____
7. Connected the hose to the regulator.	____	____
8. Opened the main line valve that was 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
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	NFPA 1001
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Use Firefighting Tools and Equipment

052-249-1138

Conditions: You are given a firefighting apparatus, protective clothing and equipment, an assistant firefighter, applicable technical manuals (TMs) and lubrication orders (LOs), and 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) Tighten and loosen hose couplings.
        (2) Remove door hinge pins with the long, tapered end.
        (3) Pry open light objects.
        (4) Close gas cocks.
    b. Use a hydrant wrench.
        (1) Open or close the fire hydrant.
        (2) Remove or replace hydrant caps.
        (3) Tighten or loosen hose coupling connections.
    c. Use a rubber mallet.
        (1) Tighten hard suction hose lines on pumper intake connections.
        (2) Loosen hard suction hose lines on pumper intake connections.
    d. Use a pike pole.
        (1) Pull down plaster or lath from the ceiling.
        (2) Open a window.
        (3) Punch holes through subceilings for ventilation.
        (4) Separate burned or burning materials.
    e. Use bolt cutters to cut a bolt or rod up to 5/8 inch in diameter.

DANGER: DO NOT USE BOLT CUTTERS ON MATERIALS THAT CARRY A LIVE ELECTRICAL LOAD. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

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

WARNING: THE TAPERED HOOK OF A CLAW TOOL IS VERY SHARP. EXERCISE CAUTION WHEN IT IS BEING USED. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY.

        (1) Pry open doors.
        (2) Pry open windows.
        (3) Remove door hinge pins.
        (4) Knock down doors.
        (5) Remove nails and spikes.
    h. Use a crowbar.
        (1) Tear down lath or plaster.
        (2) Remove metal composition roofs and ceilings.
    i. Use a K-12 rescue saw.
    j. Use a hose strap.
        (1) Move a charged hose line.
        (2) Anchor the hose line to a stationary object.

Performance Steps

(3) Assist in holding a nozzle.

k. Use a hose clamp to stop or start the water flow by using a smooth, steady motion.

l. Use a wye connection.
   (1) Use a gated connection.
   (2) Use a nongated connection.

m. Use a Siamese.
   (1) Attach a Siamese with a clapper valve.
   (2) Attach a Siamese without a clapper valve.

n. Use a double-male or double-female coupling to connect hoses together.

o. 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 metal objects.
   b. Use lineman pliers to cut small wires.
   c. Use cable cutters to cut charged electrical cables up to 3/8 inch in diameter.
   d. Use a harness cutter to cut seat belts and harnesses.
   e. Use a hacksaw frame and blades to cut light metal objects and rods.
   f. Use a dzus key (wrench).
      (1) Open compartments on an aircraft.
      (2) Access various panels on an aircraft.
   g. Use a crash ax to cut the metal skin on an aircraft.
   h. Use a K-12 rescue saw.
   i. Use 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, and moss.
   b. Use a brush hook to cut down small trees, heavy brush, bushes, and 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 fires.
   e. Use a mattock to chop, cut, clear, or dig.
   f. Use a fire rake to remove leaves, grass, and weeds from the fire area.

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

Brief Soldier: Direct 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
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Operate the Turret(s) of a Firefighting Apparatus

052-249-1144

Conditions: You are given a firefighting apparatus, an aircraft crash scene, applicable technical manuals (TMs) and lubrication orders (LOs), and protective clothing.

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

Performance Steps

1. Operate the roof or bumper turret using the model 2500L firefighting truck in a stationary position.

DANGER: NEVER POINT THE TURRET AT PERSONNEL. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

WARNING: ENSURE THAT THE AIR BRAKES HAVE BEEN SET AND THAT THE GEAR SELECTOR IS LOCKED INTO THE NEUTRAL POSITION. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

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

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

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

NOTES:

1. 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.

2. Use the roof turret when creating a rescue path for firefighters.

e. Move the PUMP switch to the ON position.

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

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

NOTE: If the FOAM METERING VALVE switch on the STRUCTURAL PUMP PANEL VALVE switch is also set at 6 percent, the flow will be 12 percent water and foam solution. Always set the STRUCTURAL PUMP PANEL VALVE switch to 0 percent when it is 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 BRAKE PEDAL WHILE OPERATING THE FIREFIGHTING APPARATUS. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

WARNING: DO NOT ENGAGE THE GOVERNOR. IT HAS A MECHANICAL DEFECT THAT WILL RACE THE ENGINE UNCONTROLLABLY. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

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

NOTES:

1. There are 660 gallons of water available for operation with the turret. If the roof turret is used for more than 60 seconds, the water reserve will be depleted. The turret will be ineffective for the firefighting operation.

2. Reapply foam as necessary to maintain the rescue path. Foam will dissipate in about 20 to 40 minutes, or sooner if there is a strong wind.

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

Performance Steps

2. Operate the roof or bumper turret from the pump-and-roll with the model 2500L firefighting truck.
   a. Arrive on the scene, and position the apparatus to where it will be most effective.
   b. Move the MODE selector switch to the CFR position.
   c. Move the TANK VALVE switch to the OPEN position.
   d. Open the roof or bumper turret valve.

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

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

NOTES:

1. 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.

2. Use the roof turret when creating a rescue path for firefighters.

   f. Move the PUMP switch to the ON position.

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

   g. Move the WATER EDUCTOR switch to the OPEN position.
   h. Move the FOAM VALVE switch to the OPEN position.
   i. Adjust the FOAM METERING VALVE to 6 PERCENT.
   j. Operate the apparatus accelerator, and throttle-up the engine to the required gallons per minute.

DANGER: KEEP YOUR LEFT FOOT FIRMLY ON THE BRAKE PEDAL WHILE OPERATING THE FIREFIGHTING APPARATUS. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

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

DANGER: THE APPARATUS IS IN A FORWARD DRIVE GEAR DURING THIS OPERATION. NEVER REMOVE YOUR LEFT FOOT FROM THE BRAKE PEDAL. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

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

3. Operate the roof or bumper turret using the tactical firefighting truck (TFFT) in a stationary position.

NOTE: The bumper turret is controlled from inside the cab by using a joystick control box.

   a. Operate the bumper turret.
      (1) Lift the power switch guard, and move the POWER switch to the ON position.

NOTE: The indicator light should come on.

      (2) Push and release the AGENT DISCHARGE button on the front of the joystick control handle to begin discharge.

NOTE: The PATTERN CONTROL button is located on top of the joystick and controls the nozzle discharge pattern. Moving the switch to the left changes the nozzle pattern to a fog pattern. Moving the switch to the right changes the nozzle pattern to a straight stream.

      (3) Move the PATTERN CONTROL button to the desired pattern.
      (4) Move the OSCILLATION switch to the ON position.

NOTE: The joystick control handle is designed to override automatic oscillation. Moving the joystick to the left or right will disengage automatic oscillation. If the bumper turret nozzle is elevated or depressed during automatic oscillation, the automatic oscillation will not disengage.

      (5) Set the OSCILLATION LIMITS control knob to the desired position.
      (6) Set the HORIZONTAL SPEED control knob to the desired position.
      (7) Complete the mission.
      (8) Push and release the DISCHARGE control button on the front of the joystick to stop the discharge.
      (9) Move the OSCILLATION switch to the OFF position.
      (10) Point the bumper turret straight ahead.
      (11) Lift the power switch guard, and move the POWER switch to the OFF position.

Performance Steps

NOTE: The indicator light should go out.

b. Operate the roof turret.

DANGER: NEVER POINT THE TURRET AT PERSONNEL. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

(1) Remove the pin from the handle yoke and drive socket.
(2) Unthread the threaded rod from the handle yoke and drive socket.

NOTE: Do not completely remove the threaded rod from the handle yoke and drive socket. Remove the threaded rod approximately 1 inch.

(3) Move the PATTERN CONTROL button UP to select the straight stream pattern, or pull it DOWN to select the fog pattern.

WARNING: MAINTAIN A FIRM GRIP ON THE ROOF TURRET CONTROL HANDLE WHILE THE ROOF TURRET IS DISCHARGING WATER. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

NOTE: Pulling the turret control handle down will raise the roof turret nozzle. Pushing the handle up will lower the roof turret nozzle. Pushing the handle to the left will move the roof turret to the right. Pushing the handle to the right will move the roof turret to the left.

(4) Maintain a firm grip on the roof turret control handle, and push and release the AGENT DISCHARGE button to engage the roof turret.
(5) Ensure that the indicator light illuminates on the roof turret control handle.
(6) Complete the mission.
(7) Push and release the AGENT DISCHARGE button on the roof turret control handle to disengage the roof turret.
(8) Ensure that the indicator light goes out on the roof turret control handle.
(9) Return the roof turret to the center position.
(10) Push up on the roof turret control handle.
(11) Thread the threaded rod onto the handle yoke and drive socket.
(12) Install the pin on the handle yoke and drive socket.

4. Operate the roof or bumper turret from the pump-and-roll with the TFFT.

WARNING: OPEN AND CLOSE VALVES SLOWLY. SUDDEN CHANGES IN PRESSURE MAY CAUSE EQUIPMENT TO REACT FASTER THAN PERSONNEL CAN BE ALERTED. ENSURE THAT SURROUNDING PERSONNEL ARE AWARE OF THE CHANGES BEING MADE TO THE SETTINGS ON THE EQUIPMENT. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

DANGER: PUMP-AND-ROLL PROCEDURES MUST BE PERFORMED FROM THE TRUCK CAB. DO NOT USE THE PUMP OPERATOR PANEL FOR PUMP-AND-ROLL PROCEDURES. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

WARNING: DUE TO POOR DRIVER VISIBILITY ON THE CURB SIDE OF THE VEHICLE, A CREW MEMBER MUST BE SEATED IN THE PASSENGER SEAT WHILE THE VEHICLE IS IN MOTION. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

NOTE: For maximum bumper and roof turret performance, maintain 225–235 pounds per square inch (psi) on the pump discharge gauge.

a. Ensure that the roof hatch is closed and secured.
b. Move the TANK TO PUMP switch to the ON position.

NOTE: The indicator light should come on.

c. Start the water pump engine.
d. Prime the water pump until the pressure registers on the pump discharge gauge.

CAUTION: DAMAGE TO THE WATER PUMP WILL OCCUR IF THE WATER TANK RUNS OUT OF WATER. MONITOR THE WATER LEVEL GAUGE. FAILURE TO COMPLY MAY CAUSE EQUIPMENT DAMAGE.

e. Monitor the water level gauge during the mission.

Performance Steps

f. Complete the mission.
g. Shut off the water pump engine.
h. Perform postoperation procedures.

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

Brief Soldier: Direct the Soldier to operate the turret(s) of a firefighting apparatus.

Performance Measures	**GO**	**NO-GO**
1. Operated the roof or bumper turret using the model 2500L firefighting truck in a stationary position.	____	____
2. Operated the roof or bumper turret from the pump-and-roll with the model 2500L firefighting truck.	____	____
3. Operated the roof or bumper turret using the TFFT in a stationary position.	____	____
4. Operated the roof or bumper turret from the pump-and-roll with the TFFT.	____	____

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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	NFPA 1001
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	

React to Various Fire Behaviors

052-249-1149

Conditions: You are given a training environment, applicable technical manuals (TMs) and lubrication orders (LOs), and reference materials.

Standards: React to various fire behaviors.

Performance Steps

1. Identify methods of heat transfer.

NOTE: A natural law is the law of heat flow. Heat tends to flow from a hot substance to a cold substance. The colder of the two objects absorbs heat until both objects are the same temperature.

a. Identify conduction.

NOTES:

1. In the early stages of fire, heat transfer is primarily a result of conduction. Fire spreads slowly during conduction.

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

b. Identify convection.

NOTE: During convection, heated air and 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. Identify heat transfer.

NOTE: 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 elements of fire tetrahedron.
   a. Identify oxygen.
   b. Identify fuel.
   c. Identify heat.
   d. Identify self-sustained chemical reactions.

3. Identify fuel-reducing agent forms.
   a. Identify solids.

NOTE: Pyrolysis is the chemical decomposition of a substance through heat and is the process of solids producing gases that burn.

b. Identify liquids.

NOTES:

1. Vaporization is the change from a liquid to a gaseous state. The rate of vaporization depends on the liquid involved and the amount of heat incurred.

2. Fuel gases are evolved from liquids by vaporization.

c. Identify gases.

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

4. Define combustion processes.
   a. Define the flash point (the minimum temperature at which a liquid emits enough vapor to form an ignitable mixture with air near the liquid surface).
   b. Define the fire point (the temperature at which a liquid fuel produces sufficient vapor to support combustion after the fuel is ignited).

Performance Steps
NOTES:

1. The fire point is a few degrees above the flash point.

2. The fire point is also called the burning point.

c. Define the ignition temperature (the minimum temperature to which a fuel in the air must be heated to begin a self-sustained combustion that is independent of the heating source).
d. Define the British thermal unit (BTU) (the amount of heat energy that is required to raise the temperature of 1 pound of water by 1°).

5. Recognize the phases of a fire, and apply corrective actions as necessary.
   a. Recognize the fire ignition phase.

NOTE: Ignition is the earliest phase of a fire. It can be a result of a flame (piloted) or can be caused when the material reaches the ignition temperature (nonpiloted).

(1) Recognize hazards during the ignition phase.
(a) Determine if the oxygen content is high.
(b) Determine if the fire is producing water vapor.
(c) Determine if carbon dioxide is present.
(d) Determine if small quantities of sulfur dioxide are present.
(e) Determine if carbon monoxide is present.
(2) Perform the following actions during the ignition phase:
(a) Attack the seat of the fire.
(b) Ventilate to eliminate smoke and hot gases.

b. Recognize the fire growth phase.
(1) Recognize that there is sufficient oxygen and fuel for the fire to grow due to oxygen being drawn into the room and heat being carried to the uppermost regions of the confined area.
(2) Recognize hazards during the growth phase.
(a) Recognize that heat and fire spread out laterally from the top down and ignite all materials in the upper levels of the room.
(b) Recognize that phase flame spread is predominant in the early portion of fire growth.
(c) Recognize that temperatures in upper regions can exceed 1,300°F.
(3) Perform actions during the growth phase.
(a) Ventilate overhead to relieve the structure of superheated smoke and gas.
(b) Use a hose line to extinguish or control the fire and to protect firefighters.
(c) Use a combination attack to advance, and make a direct attack on the seat of the fire.

c. Recognize the flashover phase.

NOTE: The transition between the growth phase and the fully developed phase is not a specific event.

(1) Recognize that during the flashover phase, flames flash over the entire surface of a room due to heat buildup, ignition temperature, and simultaneous ignition.
(2) Recognize hazards during the flashover phase.
(a) Recognize high temperatures.
(b) Recognize total room or area fire involvement.
(3) Perform actions during the flashover phase.
(a) Ventilate overhead to relieve the structure of superheated smoke and gas.
(b) Use a hose line to extinguish or control the fire and protect firefighters.

d. Recognize the fully developed phase.

NOTE: The fully developed phase occurs when all combustible materials in the compartment are involved in the fire.

(1) Recognize hazards during the fully developed phase.
(a) Remember that burning fuels are released during the highest heat.
(b) Remember that heat which is released depends on the number and size of ventilation openings.

Performance Steps

(c) Remember that hot, unburned gases are likely to begin flowing from the compartment of origin into adjacent spaces or compartments.

(2) Perform actions during the fully developed phase.

(a) Ventilate overhead.

(b) Coordinate hose streams.

e. Recognize the decay phase.

NOTE: This is the last phase of a fire.

(1) Remember that the rate of heat released begins to decline as available fuel is consumed.

(2) Remember that the fire becomes fuel-controlled.

(3) Remember that temperatures within the compartment begin to decline.

6. Recognize the conditions of a fire.

a. Recognize flameover and rollover conditions.

NOTE: Flame over and rollover conditions occur when flames move through unburned gases during fire progression.

(1) Recognize that fire involvement is limited to fire gases.

(a) Remember that a hot gas layer forms at the ceiling during the growth phase.

(b) Remember that superheated vapors ignite.

(c) Remember that a flame front rolls across the ceiling.

(d) Remember that flames move through or across unburned gases.

(2) Perform actions during a flame over and rollover.

(a) Ventilate to relieve the structure of unburned gases.

(b) Remain low to the floor or ground (12 to 24 inches above).

(c) Cool heated products and gases by advancing hose lines to attack the fire seat.

(d) Avoid a flame over or rollover by directing water toward the ceiling and at the room contents to cool materials below ignition temperatures.

b. Recognize back draft conditions.

DANGER: BACK DRAFT IS THE MOST HAZARDOUS CONDITION FOR FIREFIGHTERS. PERSONAL INJURY OR DEATH MAY OCCUR.

NOTES:

1. Back draft is the result of a confined fire that is late in the fully developed or decay phase.

2. Unburned carbon particles and other flammable products are available for combustion.

(1) Recognize indicators of a back draft.

(a) Recognize pressurized smoke exiting small openings.

(b) Recognize black smoke becoming dense gray or yellow.

(c) Recognize confinement and excessive heat.

(d) Recognize little or no visible flame.

(e) Recognize smoke escaping the building in puffs or at intervals.

(f) Recognize smoke-stained windows.

(2) Recognize hazards of a back draft.

NOTE: Do not introduce oxygen to the fire.

(3) Perform actions during a back draft.

(a) Evaluate the scene prior to action.

(b) Wear proper protective clothing and a self-contained breathing apparatus (SCBA).

(c) Ventilate at the highest point to release fire gases and smoke prior to entry.

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

Brief Soldier: Direct the Soldier to react to various fire behaviors.

Performance Measures	GO	NO-GO
1. Identified methods of heat transfer.	____	____
2. Identified elements of fire tetrahedron.	____	____
3. Identified fuel-reducing agent forms.	____	____
4. Defined combustion processes.	____	____
5. Recognized the phases of a fire and applied corrective actions as necessary.	____	____
6. Recognized the conditions of a 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
LO 5-4210-220-12	FM 5-415
LO 9-2320-279-12	IFSTA MANUAL
TM 5-4210-220-12	NFPA 1001
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Utilize Airlifting Bags and Cribbing

052-249-1154

Conditions: You are given a firefighting apparatus, protective clothing, airlifting bags, cribbing, applicable technical manuals (TMs) and lubrication orders (LOs), and an assistant firefighter.

Standards: Utilize airlifting bags and cribbing.

Performance Steps

1. Identify types of airlifting bags.
    a. Use a high-pressure bag.
        (1) Look for a tough, neoprene rubber exterior that is reinforced with steel wire or Kevlar®.
        (2) Check for deflated bags that lie flat and are about 1 inch thick.
        (3) See 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. Use a medium-pressure bag.
        (1) See if the bag is smaller than a high-pressure bag.
        (2) Use the bag to lift or stabilize large vehicles or objects.
        (3) Check the lifting distance. (It should be capable of lifting objects 6 feet.)
    c. Use a low-pressure bag.
        (1) See if the bag is smaller than a high-pressure bag.
        (2) Use the bag to lift or stabilize large vehicles or objects.
        (3) Check the lifting distance. (It should be capable of lifting objects 6 feet.)
2. Exercise safety when using airlifting bags.

NOTE: Operators should follow applicable manufacturer recommendations for the specific system used.

    a. Ensure that adequate air supplies and cribbing are available prior to starting the 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 the bag for shifting.
    e. Do not work underneath a load that is supported by airlifting bags.
    f. Stabilize the lifted load with cribbing.

WARNING: CONTINUOUSLY SHORE UP AND STABILIZE THE LOAD WITH BOX CRIBBING. THE TOP LAYER SHOULD BE SOLID. DO NOT LEAVE A HOLE IN THE CENTER. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

    g. Keep the bags away from objects and materials that are hotter than 220°F.
    h. Do not stack the bags more than two high.
        (1) Place the smaller bag on top of the larger bag.
        (2) Inflate the bottom bag first.

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

Brief Soldier: Direct the Soldier to utilize airlifting bags and cribbing.

Performance Measures	GO	NO-GO
1. Identified types of airlifting bags.	____	____
2. Exercised safety when using airlifting 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

LO 5-4210-220-12
LO 9-2320-279-12
TM 5-4210-220-12
TM 5-4210-249-13&P-1
TM 9-2320-328-13&P-1

Related

IFSTA MANUAL
NFPA 1001

Perform Hoisting Operations With Ropes

052-249-1156

Conditions: You are 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, applicable technical manuals (TMs) and lubrication orders (LOs), and an 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 a 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 from the top of the ladder.
    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 of the ladder.
    e. Use a separate rope to tie a clove hitch with an overhand safety on the bottom rung of the ladder.

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 open 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 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.

Performance Steps

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.

    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.

WARNING: WHEN PERFORMING HOISTING OPERATIONS, THE FIREFIGHTER STANDING ON THE GROUND SHOULD EITHER FACE THE UPPER LEVEL OF THE STRUCTURE AS 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 TOOLS OR EQUIPMENT FALL TO THE GROUND. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

NOTE: Life safety rope must conform to National Fire Protection Association (NFPA) standards.

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

Brief Soldier: Tell the Soldier that he has 30 minutes to hoist seven 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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
NFPA 1001	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Perform a Fire Prevention Education Brief

052-249-1159

Conditions: You are given a target audience; access to fire department manuals; and a classroom with a podium, a 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. Include—
        (1) Children.
        (2) Young adults.
        (3) Adults.
    b. Identify special interest groups as a target audience. Include—
        (1) Seniors and retirees.
        (2) Preschoolers.
        (3) Men's and women's groups.
    c. Identify homeowners and 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" 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. Establish the—
        (1) Introduction.
        (2) Body.
        (3) Conclusion.
    b. Review the lesson to ensure that the information is pertinent.
    c. Rehearse the lesson to build self-confidence.
    d. Inspect the room in which the briefing will be conducted. Check the—
        (1) Lighting.
        (2) Seating.
        (3) 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. Include—
        (1) Positive comments.
        (2) Suggestions for improvement.

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

Brief Soldier: Direct the Soldier to perform a fire prevention education brief.

Performance Measures	GO	NO-GO
1. Identified the target audience.	____	____
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
DA FORM 5376	AR 420-1
DA FORM 5377	IFSTA MANUAL
	LO 5-4210-220-12
	LO 9-2320-279-12
	TM 5-4210-220-12
	TM 5-4210-249-13&P-1
	TM 9-2320-328-13&P-1

Subject Area 3: Perform Structural Firefighting

Conduct Search and Rescue Operations in a Structure

052-249-1174

Conditions: You are given a firefighting apparatus, a structural fire scene, protective clothing and equipment, a self-contained breathing apparatus (SCBA) with spare air bottles, a rope, applicable technical manuals (TMs) and lubrication orders (LOs), and forcible-entry tools.

Standards: Conduct search and rescue operations in a structure.

Performance Steps

1. Don protective clothing.
2. Don the SCBA.

WARNING: ENSURE THAT FULL PROTECTIVE GEAR IS WORN AND THAT THE SCBA BOTTLE IS FULL. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

3. Confirm the order to conduct a primary search with the fire officer.
4. Evaluate the structure to be searched.
5. Gain entry to the structure by using forcible-entry methods.
6. Conduct a primary search.

NOTE: The main objective of a primary search is to rescue easily located victims. Rescuers must quickly cover the entire fire area. Time is the most critical factor when conducting a primary search.

a. Begin the search on the fire floor as close as possible to the fire.
b. Proceed to the floor that is located above the fire after searching the fire floor.

NOTE: If you cannot see your feet while standing, search on your hands and knees until visibility improves.

c. Search in one direction, and maintain contact with a wall using an established search pattern.

WARNING: MAINTAIN CONTACT WITH A WALL. MAINTAINING CONTACT WITH A WALL ASSISTS IN QUICKLY SEARCHING UNFAMILIAR AREAS, IDENTIFYING SEARCHED AREAS, LOCATING DOORS AND WINDOWS FOR VENTILATION, AND KEEPING A SENSE OF DIRECTION. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

d. Search the entire structure. Check—

NOTE: Be especially alert in common areas in which victims might be located.

(1) Under and on beds.
(2) Inside closets and storage rooms.
(3) Bathtubs and shower stalls.
(4) Inside toy chests.
(5) Behind and on furniture.
(6) Under tables and behind curtains.
(7) Near doors and windows.

NOTE: Periodically pause to listen for cries for help, coughing, and other sounds.

e. Identify rooms that have been searched by using marking systems.
f. Locate victims.
g. Remove victims to an outside area, and inform the incident commander (IC) of the victims that are present.
h. Exit the building when the search is complete.
i. Report to the fire officer after the primary search is complete.

Performance Steps

7. Conduct a secondary search.
    a. Confirm the order to conduct a secondary search with the fire officer and coordinate with the fire officer to establish a search pattern to be used.
    b. Evaluate the structure to be searched.
    c. Search the structure using an established search pattern.
    d. Identify searched rooms.
    e. Remove victims to an outside area, and inform the IC of victims that are present.
    f. Exit the building when the search is complete.
    g. Report to the fire officer after the secondary search is complete.

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

Brief Soldier: Direct the Soldier to search for victims in a structure.

Performance Measures	**GO**	**NO-GO**
1. Donned protective clothing.	____	____
2. Donned the SCBA.	____	____
3. Confirmed the order to conduct a primary search with the fire officer.	____	____
4. Evaluated the structure to be searched.	____	____
5. Gained entry to the structure by using forcible-entry methods.	____	____
6. Conducted a primary search.	____	____
7. Conducted a secondary search.	____	____

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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Conduct Search and Rescue Operations in a Multistory Structure

052-249-1175

Conditions: You are 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, applicable technical manuals (TMs) and lubrication orders (LOs), and victims.

Standards: Conduct search and rescue operations in a multistory structure.

Performance Steps

NOTE: When performing search and rescue operations in a multistory structure, three rescuers should be dedicated to the task. Two rescuers should be inside the structure to assist the victim on the ladder, and one rescuer should be on the ladder to escort the victim down the ladder.

1. Rescue a conscious victim from a multistory structure.
    a. Raise the ladder to a point just below the window.
    b. Check the four points of contact. Ensure that the—
        (1) Pawls are locked.
        (2) Halyard is secured.
        (3) Heeler is in place.
        (4) Climbing angle is correct.
    c. Place a carabineer under the bottom rung, front to back and to the outside section of the rung.
    d. Ascend the ladder.
    e. Carry haul and tag lines with attached carabiners around your thumb.
    f. Reach the bottom of the window, and pass the haul line, back to front, between the ladder rungs.
    g. Count up three or four rungs, and pass the haul line through the rungs, front to back.

NOTE: The rescuers who are inside the structure will place the victim into Class III harnesses at this time.

    h. Hand the rescuer at the window enough haul line to attach to the upper D-ring of the victim's harness.
    i. Hand the rescuer at the window the tag line to attach to the lower D-ring of the victim's harness.
    j. Descend the ladder.
    k. Place one foot on the bottom rung, and take up the slack from the haul line.

NOTES:

1. The rescuers inside lower the victim from the window by using the hand-under-hand technique.

2. When the victim reaches the shoulder height of the rescuer, an assistant 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. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

    l. Use the appropriate carry to take the victim to safety.

2. Rescue an unconscious victim from a multistory structure.
    a. Raise the ladder to the point just below the window.
    b. Check the four points of contact. Ensure that the—
        (1) Pawls are locked.
        (2) Halyard is secured.
        (3) Heeler is in place.
        (4) Climbing angle is correct.
    c. Ascend the ladder.

NOTE: The victim is lowered to the rescuer by firefighters who are inside the building.

Performance Steps

d. Place your arms under the victim's arms.
e. Grasp the rungs that are adjacent to the victim.
f. Place one knee between the victim's legs for support.
g. Descend with the victim, moving the victim from one knee to the other while descending.

NOTE: Monitor the victim while descending the ladder. The victim may regain consciousness and be startled by what is happening. If this happens, reassure the victim and continue to descend the ladder.

h. Ensure that the victim's feet do not get entangled in the ladder rungs.
i. Kneel when the ground is reached.

NOTE: Rescuers on the ground will hold the victim by the armpits and lower him or her across your back.

j. Return to the standing position, and use the fireman carry to take the victim to safety.

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

Brief Soldier: Direct the Soldier to rescue a victim from a multistory structure.

Performance Measures	**GO**	**NO-GO**
1. Rescued a conscious victim from a multistory structure.	____	____
2. Rescued an unconscious victim from a multistory 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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Gain Access to a Structure by Using Forcible-Entry Techniques
052-249-1151

Conditions: You are given a firefighting apparatus, protective clothing, a self-contained breathing apparatus (SCBA), tools, applicable technical manuals (TMs) and lubrication orders (LOs), and a structure.

Standards: Gain access to a structure by using forcible-entry techniques.

Performance Steps

1. Determine the basic categories of forcible-entry tools.
    a. Identify cutting tools.
        (1) Axes and hatchets.
        (2) Handsaws.
        (3) Power saws.
        (4) Metal-cutting devices and torches.
    b. Identify prying tools.
        (1) Identify manual prying tools.
            (a) Crowbars.
            (b) Halligan tools.
            (c) Pry bars.
            (d) Hux Bars™.
            (e) Claw tools.
            (f) Kelly Tools™.
            (g) Pry axes.
            (h) Flat bars.
        (2) Identify hydraulic prying tools.
            (a) Rescue tools.
            (b) Hydraulic door openers.
    c. Identify pushing and/or pulling tools.
        (1) Standard pike poles.
        (2) Clemens Hooks™.
        (3) Plaster hooks.
        (4) Drywall hooks.
        (5) San Francisco Hooks™.
        (6) Multipurpose hooks.
        (7) Roofman hooks.
    d. Identify striking tools.
        (1) Sledgehammers.
        (2) Mauls.
        (3) Battering rams.
        (4) Picks.
        (5) Flat-head axes.
        (6) Mallets.
        (7) Hammers.
        (8) Punches.
        (9) Chisels.
2. Use forcible entry on a wooden check rail window.
    a. Evaluate the situation. Check the—
        (1) Construction type.
        (2) Wind direction.
        (3) Locking mechanism.
        (4) Hazard potential.
    b. Attempt to open the window before applying force.

Performance Steps

c. Select a forcible-entry tool.
d. Insert the prying 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. Evaluate the situation. Check the—
      (1) Construction type.
      (2) Wind direction.
      (3) Locking mechanism.
      (4) Hazard potential.
   b. Attempt 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 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. Evaluate the situation. Check the—
      (1) Construction type.
      (2) Wind direction.
      (3) Locking mechanism.
      (4) Hazard potential.
   b. Attempt 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 other striking tool.
   f. Drive the prying tool past the interior doorjamb.
   g. Exert pressure on the tool toward the door, forcing it open.

5. Use forcible entry on an outward swinging door without glass.
   a. Evaluate the situation. Check the—
      (1) Construction type.
      (2) Wind direction.
      (3) Locking mechanism.
      (4) Hazard potential.
   b. Attempt 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 other striking tool.
   f. Drive the prying tool past the interior doorjamb.
   g. Exert pressure on the tool toward the door, forcing it open.

6. Breach wood-framed walls.
   a. Evaluate the situation. Check the—
      (1) Construction type.
      (2) Wind direction.
      (3) Hazard potential.
   b. Use the head of 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. Watch for hidden obstructions.

Performance Steps

7. Breach masonry walls.
    a. Evaluate 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. Watch for hidden obstructions.

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

Brief Soldier: Direct the Soldier to gain access to a structure using forcible-entry techniques.

Performance Measures	GO	NO-GO
1. Determined the 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 wood-framed 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
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	NFPA 1001
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Perform Sprinkler System Applications
052-249-1153

Conditions: You are given a firefighting apparatus, protective clothing, a self-contained breathing apparatus (SCBA), wedges or tongs, lock keys, a charged hose line, applicable technical manuals (TMs) and lubrication orders (LOs), and an assistant 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.
   b. Position a ladder beneath the sprinkler head.
   c. Insert a 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) Slowly turn the stem nut slowly clockwise.
      (2) Turn the stem nut until the target window reads SHUT.
   e. Open the PIV.
      (1) Slowly turn the stem nut slowly counterclockwise.
      (2) Turn the stem nut until the target window reads OPEN.

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

Brief Soldier: Direct 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
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	NFPA 1001
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Perform Fire Prevention Inspection

052-249-1158

Conditions: You are given a pen, a note pad, a building to inspect, an assistant firefighter acting as a building occupant, the building prefire plan, DA Form 5382 (Hazard/Deficiency Inspection Record), and 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, National Fire Protection Association (NFPA) standards, and International Fire Service Training Association (IFSTA) standards.
2. Conduct a fire prevention inspection.
    a. Schedule the appointment.
        (1) Tell the building occupant of the purpose of the inspection.
        (2) Perform the inspection during normal duty or business hours.
    b. Observe the property while approaching the building.
        (1) Look for fire hydrant locations.
        (2) Look for road names or numbers.
        (3) Check building address visibility.
        (4) Check fire alarm box locations.
        (5) Check accessibility from all sides of the building.
        (6) Look for overhead obstructions.
        (7) Check for possible problems with forcible entry.
    c. Enter the building.
        (1) Tell the building occupant that you are a member of the fire department.
        (2) Request that a building representative accompany you during the inspection.
        (3) Ensure that the building representative possesses the keys for locked doors.
    d. Conduct the inspection.
        (1) Take a systematic and thorough route.
        (2) Annotate adjacent exposures and terrain features.
        (3) Note the locations of firefighting appliances.
            (a) Hydrants.
            (b) Standpipes.
            (c) Sprinklers.
            (d) Fire alarm boxes.
        (4) Note areas that are labeled "SECRET" and have not been inspected.
    e. Conduct the final interview.
        (1) Discuss the results with the building occupant.
            (a) Provide closing comments with the building manager.
            (b) Comment on good conditions prior to violations.
        (2) Discuss violations in general terms, and indicate that a written report with specific details will be sent later.
        (3) Express appreciation for courtesies that have been extended to the fire department, and state that a representative from the fire department will make a return visit to note corrective actions.
    f. Conduct the follow-up.
        (1) Conduct the follow-up a couple of weeks after the building occupant has received the written report.
        (2) Reinspect only the problem areas from the report.

Performance Steps

3. Record a fire prevention inspection.
    a. Complete DA Form 5382.

NOTE: Formal reports are warranted when firefighters identify life-threatening hazards, major renovations, or extensive minor violations.

        (1) Ensure that the completed DA Form 5382 is not opinionated, biased, emotional, or unfair.
        (2) State facts.

NOTE: Firefighters should answer questions and refer the occupant to the fire marshal's office for further assistance.

        (3) Provide evidence to prove a point, draw a conclusion, or justify a recommendation.
    b. Maintain a written report at the fire department.
        (1) File the finished report so that it can be retrieved upon request.
        (2) Ensure that the report describes the occupancy condition.

4. Prepare a building prefire plan after the inspection is conducted.
    a. Draw a map or sketch of the area. Use—
        (1) A plot plan to indicate how the building is situated with respect to other buildings and streets in the area.
        (2) A floor plan to show the layout of individual floors.
        (3) An elevation drawing to show the number of floors and the grade surrounding the building.
    b. Add basic information to the prefire plan. Include 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 to which fire could spread.
        (2) Show utility shutoff locations.
        (3) Show alarm and detection equipment locations.
        (4) Identify special features, such as—
            (a) Fire walls.
            (b) Fire doors.
        (5) Identify fire suppression systems, including—
            (a) Sprinklers.
            (b) Standpipes.
        (6) Show the location of special hazards (for example, explosive materials).
        (7) Identify fire alarm equipment.
        (8) Note the types of construction, including—
            (a) Steel.
            (b) Timber.
            (c) Masonry.
    d. Prepare a legend to identify standard plan symbols.

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

Brief Soldier: Direct the Soldier to perform a fire prevention inspection.

Performance Measures	**GO**	**NO-GO**
1. Prepared for a fire prevention inspection.	____	____
2. Conducted a fire prevention inspection.	____	____
3. Recorded a fire prevention inspection.	____	____
4. Prepared a building prefire plan after the inspection was conducted.	____	____

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 5382	AR 420-1
DA FORM 5383	IFSTA MANUAL
	LO 5-4210-220-12
	LO 9-2320-279-12
	NFPA 1001
	TM 5-4210-220-12
	TM 5-4210-249-13&P-1
	TM 9-2320-328-13&P-1

Subject Area 4: Perform Wildland Firefighting

Perform Wildland Firefighting

052-249-1155

Conditions: You are given a firefighting apparatus; protective clothing; a self-contained breathing apparatus (SCBA); a wildland, controlled fire; applicable technical manuals (TMs) and lubrication orders (LOs); and assistant firefighters.

Standards: Perform wildland firefighting.

Performance Steps

1. Identify wildland fire fuels.
    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, patchy).
    d. Identify the volume.
    e. Identify the fuel moisture content.

3. Identify weather conditions that affect a wildland fire.
    a. Identify wind.
    b. Identify temperature.
    c. Identify relative humidity.
    d. Identify precipitation.

4. Identify the topography that affects a wildland fire.

NOTE: Topography can result in increased wind speed, creating a chimney affect.

    a. Identify slopes.

NOTE: The southern exposure of a hill or mountain that is north of the equator receives the most sunlight and heat. Fires burn faster on the southern exposure.

    b. Identify local terrain features.

NOTE: Local terrain affects fire movement. Ridges, trees, rock formations, and homes affect air currents. The result is the erratic spread of the fire.

    c. Identify canyons.

NOTE: Fires in these areas are very dangerous and unpredictable.

5. Identify components of a wildland fire.
    a. Identify the head of the fire. Remember that the head of the fire—
        (1) Moves in the direction of the wind.

Performance Steps

(2) Burns intensely and does the most damage.
(3) Moves more rapidly than the rest of the fire.

b. Identify the finger of the fire. Remember that the finger of the fire—
(1) Is a strip that extends out from the main fire.
(2) May form a new head.
(3) Occurs where the fuel load is patchy.

c. Identify the heel of the fire. Remember that the heel of the fire—
(1) Is opposite the head of the fire.
(2) Burns downhill or against the wind.
(3) Is slow-moving.

d. Identify the flanks of the fire. Remember that the flanks—
(1) Are the sides of the fire.
(2) May form fingers.
(3) Are identified when facing the head.

NOTE: A wind shift can change the flanks of a fire into the head of a fire.

e. Identify the perimeter of the fire. Remember that the perimeter—
(1) Is the boundary line of the fire.
(2) Changes as the fire burns.

f. Identify spot fires. Remember that a spot fire—
(1) Is a small fire that is located outside the perimeter.
(2) Is caused by flying embers or sparks.

DANGER: SPOT FIRES MAY TRAP FIREFIGHTERS IF THE FIRES ARE NOT QUICKLY EXTINGUISHED, WHICH MAY RESULT IN PERMANENT INJURY OR DEATH.

g. Identify islands. Remember that an island—
(1) Is an unburned area that is located inside the fire perimeter.
(2) Must be watched.

h. Identify greens. Remember that a green—
(1) Is an unburned area that is next to the fire.
(2) Does not indicate a safe area.

i. Identify blacks, which are areas 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 of the fire 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.

7. Determine wildland fire exposures.
a. Evaluate considerations.
(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 immediate danger.
(2) Determine the location of greatest value.

c. Protect exposures.
(1) Fire lines.
(2) Water streams.

Performance Steps

(3) The head.
(4) Fingers.

8. Select wildland firefighting tools.
   a. Look for axes.
   b. Look for rakes.
   c. Look for brush hooks.
   d. Look for Pulaski tools.
   e. Look for swatters.
   f. Look for fire shelters.
   g. Look for round-tipped shovels.
   h. Look for backpack pumps.

9. Construct a fire line.
   a. Select a location of the fire line.
   b. Determine the size of the construction line crew. Consider 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: Fight the fire aggressively, but provide for safety first. Initiate all action based on current and expected fire behavior. Recognize current weather conditions, and obtain forecasts. Ensure that the instructions are given and understood. Obtain current information on the fire status. Remain in communication with crew members, your supervisor, and 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 the items listed in the conditions.

Brief Soldier: Direct the Soldier to perform wildland firefighting.

Performance Measures	**GO**	**NO-GO**
1. Identified wildland fire fuels.	____	____
2. Identified the characteristics of a wildland fire.	____	____
3. Identified weather conditions that affect a wildland fire.	____	____
4. Identified the topography that affects a wildland fire.	____	____
5. Identified components 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
LO 5-4210-220-12	AR 420-1
LO 9-2320-279-12	FM 5-415
TM 5-4210-220-12	IFSTA MANUAL
TM 5-4210-249-13&P-1	NFPA 1001
TM 9-2320-328-13&P-1	

Subject Area 5: Perform Vehicle Firefighting

Perform Forcible-Entry Techniques on a Ground Vehicle
052-249-1176

Conditions: You are given a firefighting apparatus, necessary firefighting tools, protective clothing, a self-contained breathing apparatus (SCBA), an assistant firefighter, applicable technical manuals (TMs) and lubrication orders (LOs), and a simulated ground vehicle incident.

Standards: Perform forcible-entry techniques on a ground vehicle.

Performance Steps

1. Stabilize the vehicle.
    a. Stabilize the vehicle horizontally.
        (1) Place chocks on the downhill side of the vehicle if it is on a grade.
        (2) Place chocks on both ends of the vehicle if it is on level ground.
    b. Stabilize the vehicle vertically.
        (1) Stabilize a vehicle with inflated tires.
            (a) Build the cribbing up under the vehicle frame.
            (b) Pull out valve stems.
        (2) Stabilize a vehicle with flat tires.
            (a) Position the cribbing by the vehicle frame.
            (b) Lift the vehicle slowly by the fender or wheel well.
            (c) Slide the cribbing under the frame.
            (d) Set the vehicle down slowly until it rests on the cribbing.

2. Attempt the simplest entry first.

NOTE: Try before you pry.

    a. Enter through normal-operating doors.
    b. Enter through windows.
    c. Enter through compromises in the vehicle body.

3. Remove the tempered glass.

NOTE: Tempered glass is designed to shatter into small pieces and is usually located in the side and rear windows.

    a. Remove the glass that is farthest from the victims.

WARNING: USE A BLANKET, TARP, OR SIMILAR ITEM BEFORE BREAKING GLASS TO PROTECT THE VICTIM IF POSSIBLE. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY.

    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 the safety glass.

NOTE: Safety glass is normally located in the windshield.

    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 vehicle 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, toward the hood.

NOTE: Place the removed windshield in a safe location away from the vehicle.

5. Remove the vehicle doors.
    a. Use an ax and a halligan tool to make purchase points.
    b. Wedge the halligan tool close to the door operating mechanism.
    c. Pry the door open.

Performance Steps

NOTE: Prying a door open is extremely difficult with a halligan tool. If you become fatigued during a real emergency, hand the tool off so that an assistant firefighter can continue the extrication process.

6. Remove the vehicle roof.

NOTE: Head protection systems deploy from a narrow opening between the headliner and the top of the doorframe. These bags remain rigidly inflated after inflation. Inflators are usually located in the C posts.

a. Cut roof door posts as low as possible.
b. Make relief cuts in the roof near the point at which the roof folds.
c. Place a pike pole or other long bar over the roof near the relief cuts.
d. Apply pressure to the pike pole or bar, and flap the roof over toward the trunk.
e. Secure the roof so that it does not flip back over.

7. Displace the vehicle dashboard.

DANGER: SOME AIRBAGS MAY DEPLOY UP TO 10 MINUTES AFTER THE BATTERY IS DISCONNECTED. 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 TO THE VICTIMS IF THE AIRBAGS DEPLOY DURING THE EXTRICATION. A SAFE WORKING DISTANCE FOR SIDE IMPACT BAGS IS 5 INCHES; DRIVER'S SIDE BAGS, 10 INCHES; AND PASSENGER'S SIDE BAGS, 20 INCHES.

a. Cut a relief notch in 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 and prevents it from falling back into place.

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

Brief Soldier: Direct the Soldier to perform forcible-entry techniques on a ground vehicle.

Performance Measures	**GO**	**NO-GO**
1. Stabilized the vehicle.	____	____
2. Attempted the simplest entry first.	____	____
3. Removed the tempered glass.	____	____
4. Removed the safety glass.	____	____
5. Removed the vehicle doors.	____	____
6. Removed the vehicle roof.	____	____
7. Displaced the vehicle 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
LO 5-4210-220-12
LO 9-2320-279-12
TM 5-4210-220-12
TM 5-4210-249-13&P-1
TM 9-2320-328-13&P-1

Related
IFSTA MANUAL

Control a Ground Vehicle Fire

052-249-1177

Conditions: You are given a firefighting apparatus, protective clothing, a self-contained breathing apparatus (SCBA), an assistant firefighter, a hose line, a fire extinguisher, applicable technical manuals (TMs) and lubrication orders (LOs), and a ground vehicle fire.

Standards: Control a ground vehicle fire.

Performance Steps

1. Review safety procedures before combating the fire.
   a. Ensure that personnel entering the area are wearing full protective gear and an 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 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 area.
      (4) Open the hood mechanically or manually.
         (a) Attempt to release the hood by 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) Use a circular motion to knock down the fire.
      (5) Control fuel leaks.
      (6) Overhaul the compartment.
4. Retreat from the fire.
   a. Instruct the crew to retreat when alerted by an emergency signal or by 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 listed in the conditions.

Brief Soldier: Direct the Soldier to control a ground vehicle fire.

Performance Measures	GO	NO-GO
1. Reviewed safety procedures before combating the fire.	____	____
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
LO 5-4210-220-12	AR 420-1
LO 9-2320-279-12	FM 5-415
TM 5-4210-220-12	IFSTA MANUAL
TM 5-4210-249-13&P-1	NFPA 1001
TM 9-2320-328-13&P-1	

Subject Area 6: Perform Hazmat Firefighting

Perform Hazmat Operations at the Hazmat Operational Level

052-249-1147

Conditions: You are given a hazmat scene, material safety data sheets (MSDSs), hazmat placards, applicable technical manuals (TMs) and lubrication orders (LOs), 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) Identify Class 1 hazmat.
        (2) Identify Class 1 hazmat placards.

NOTE: A Class 1 placard is characterized by an orange background with a bursting ball and the words "EXPLOSIVES" or "BLAST AGENTS."

    b. Identify compressed gases by class or symbol.
        (1) Identify Class 2 hazmat.
        (2) Identify Class 2 hazmat placards.

NOTE: A Class 2 flammable placard is characterized by a red background with a white flame; a Class 2 nonflammable placard is characterized by a green background with a white cylinder; a Class 2 oxidizer placard is characterized by a yellow background with a flaming "O;" and a Class 2 poison gas placard is characterized by a white background with a skull and crossbones.

    c. Identify flammable liquids by class or symbol.
        (1) Identify Class 3 hazmat.
        (2) Identify Class 3 hazmat placards.

NOTE: A Class 3 flammable placard is characterized by a red background with a white flame and the word "FLAMMABLE;" a Class 3 combustible placard is characterized by a red background with a white flame and the word "COMBUSTIBLE."

    d. Identify flammable solids by class or symbol.
        (1) Identify Class 4 hazmat.
        (2) Identify Class 4 hazmat placards.

NOTE: A Class 4, Division 4.1 placard is characterized by red and white vertical stripes with a black flame and the words "FLAMMABLE SOLID;" a Division 4.2 placard is characterized by a white top and red bottom with a black flame and the words "SPONTANEOUSLY COMBUSTIBLE;" a Division 4.3 placard is characterized by a blue background with a white flame and the words "DANGEROUS WHEN WET."

    e. Identify oxidizers by class or symbol.
        (1) Identify Class 5 hazmat.
        (2) Identify Class 5 hazmat placards.

NOTE: A Class 5, Division 5.1 placard is characterized by a yellow background with a black flaming "O" and the word "OXIDIZER;" and a Division 5.2 placard is characterized by a yellow background with a black flaming "O" and the words "ORGANIC PEROXIDE."

    f. Identify poisons by class or symbol.
        (1) Identify Class 6 hazmat.
        (2) Identify Class 6 hazmat placards.

NOTE: A Class 6 placard is characterized by a white background with a skull and crossbones.

    g. Identify radioactive agents by class or symbol.
        (1) Identify Class 7 hazmat.
        (2) Identify Class 7 hazmat placards.

NOTE: A Class 7 placard is characterized by a yellow top and white bottom with a black propeller.

    h. Identify corrosives by class or symbol.
        (1) Identify Class 8 hazmat.

Performance Steps

(2) Identify Class 8 hazmat placards.

NOTE: A Class 8 placard is characterized by a 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) Identify Class 9 hazmat.
   (2) Identify Class 9 hazmat placards.

NOTE: A Class 9 placard is characterized by black and white vertical stripes on the top and white on the bottom.

j. Identify other regulated materials by class (Class 10 hazmat).
k. Identify forbidden materials by class (Class 11 hazmat).

2. Identify methods of obtaining MSDSs.
   a. Locate the hazard communications program.
      (1) Maintain a record of the hazmat products at the location.
      (2) Maintain a record of all other products in the building preincident plan.
   b. Locate the MSDSs.
      (1) Place the MSDSs with the products.
      (2) Phone the manufacturer.
      (3) Phone the Chemical Transportation Emergency Center.
      (4) Contact the Hazardous Information Transmission System (HITS) by using their Web site.

3. Identify the types of container stress that can cause a release of material.
   a. Identify thermal stresses, including—
      (1) Radiated heat.
      (2) Convected heat.
      (3) Conducted heat.
      (4) Direct heat.
   b. Identify mechanical stresses that result from physical force.
   c. Identify chemical stresses that result from a reaction, interaction, or contact with another chemical.

4. Identify dispersion patterns.
   a. Identify hemisphere patterns.
   b. Identify cloud patterns.
   c. Identify plume patterns.
   d. Identify cone patterns.
   e. Identify stream patterns.
   f. Identify pool patterns.
   g. Identify irregular patterns.

5. Identify the health hazards of a hazmat incident.
   a. Identify asphyxiants.
   b. Identify convulsants.
   c. Identify allergens.
   d. Identify carcinogens.
   e. Identify corrosive agents.
   f. Identify highly toxic agents.
   g. Identify irritants.
   h. Identify sensitizers.
   i. Identify toxic agents.
   j. Identify target organ effects, including—
      (1) Hepatotoxins agents.
      (2) Nephrotoxins agents.
      (3) Neurotoxins.
      (4) Blood agents.
      (5) Pulmonary agents.

Performance Steps

(6) Reproductive toxins.
(7) Cutaneous hazards.
(8) Eye hazards.

k. Identify chronic health hazards, including—
(1) Carcinogens.
(2) Mutagens.
(3) Teratogens.

l. Identify types of radiation, including—
(1) Alpha.
(2) Beta.
(3) Gamma.
(4) Neutron.

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

Brief Soldier: Direct 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 methods of obtaining MSDSs.	____	____
3. Identified the types of container stress that can cause a release of material.	____	____
4. Identified 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**
LO 5-4210-220-12	IFSTA MANUAL
LO 9-2320-279-12	
TM 5-4210-220-12	
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Control a Flammable Gas Cylinder Fire

052-249-1164

Conditions: You are given a firefighting apparatus, protective gear, a self-contained breathing apparatus (SCBA), three assistant firefighters, bills of lading, manifests, placards, applicable technical manuals (TMs) and lubrication orders (LOs), and a gas cylinder fire trainer.

Standards: Control a flammable gas cylinder fire.

Performance Steps

1. Review safety procedures before combating the fire.
   a. Ensure that personnel entering the area are wearing full protective clothing and an SCBA.
   b. Identify a safe haven before entry.
2. Identify the fire contents.
   a. Locate bills of lading.
   b. Locate manifests.
   c. Identify placards.
3. Assemble a foam proportioning system.
   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 hose lines.
   d. Approach the cylinder at a right angle.
   e. Shut off cylinder valves.
   f. Continue to attach 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. Instruct the crew to retreat when alerted by an emergency signal or by 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 listed in the conditions.

Brief Soldier: Direct the Soldier to control a flammable gas cylinder fire.

Performance Measures	GO	NO-GO
1. Reviewed safety procedures before combating the fire.	____	____
2. Identified the fire contents.	____	____
3. Assembled a foam proportioning system.	____	____

Performance Measures	GO	NO-GO
4. Attacked the fire.	____	____
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
LO 5-4210-220-12	AR 420-1
LO 9-2320-279-12	DA FORM 2404
TM 5-4210-220-12	DA FORM 5376
TM 5-4210-249-13&P-1	DA FORM 5381
TM 9-2320-328-13&P-1	DA PAM 750-8
	FM 5-415
	IFSTA MANUAL
	NFPA 1001

Extinguish an Ignitable Liquid Fire

052-249-1165

Conditions: You are given a firefighting apparatus, protective clothing, a self-contained breathing apparatus (SCBA), an assistant firefighter, a hose line, a foam eductor, a container of foam concentrates, applicable technical manuals (TMs) and lubrication orders (LOs), and an approved training fire pit.

Standards: Extinguish an ignitable liquid fire.

Performance Steps

1. Review safety procedures before combating the fire.
    a. Ensure that personnel entering the area are wearing full protective clothing and an SCBA.
    b. Identify a safe haven before entry.
2. Identify the fire contents.
    a. Locate bills of lading.
    b. Locate manifests.
    c. Identify placards.
3. Assemble a foam proportioning system.
    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 the liquid fire.
    a. Identify the bank-down method.
        (1) Use the bank-down method when an elevated object is near the burning liquid.
        (2) Bank foam off of an object to allow the foam to run down onto the fuel surface.
    b. Perform the roll-on method.
        (1) Direct the foam stream onto the ground, near the front edge of the liquid pool.
        (2) Roll the foam 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 an emergency signal or by 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 listed in the conditions.

Brief Soldier: Direct the Soldier to extinguish an ignitable liquid fire.

Performance Measures	GO	NO-GO
1. Reviewed safety procedures before combating the fire.	____	____
2. Identified the fire contents.	____	____
3. Assembled a foam proportioning system.	____	____
4. Identified the methods used to combat the 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
LO 5-4210-220-12	AR 420-1
LO 9-2320-279-12	FM 5-415
TM 5-4210-220-12	IFSTA MANUAL
TM 5-4210-249-13&P-1	NFPA 1001
TM 9-2320-328-13&P-1	

Subject Area 7: Perform Aircraft Firefighting

Rescue Victims from an Aircraft

052-249-1178

Conditions: You are given a firefighting apparatus, protective clothing, necessary firefighting tools, an aircraft with an emergency, onboard survivors, a hose line with a nozzle, applicable technical manuals (TMs) and lubrication orders (LOs), and assistant firefighters to operate the hose line.

Standards: Rescue victims from an aircraft.

Performance Steps

DANGER: EXERCISE EXTREME CAUTION 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. 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. ALWAYS KEEP CREW MEMBERS IN SIGHT. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

1. Perform rescue operations on an AH-64 aircraft.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue victims.
        (1) Turn the HARNESS-RELEASE knob one-fourth turn in either direction to release crew member restraints.
        (2) Unplug the helmet cord.
        (3) Lift the victim from the seat, and place him or her on the frame of the aircraft.
        (4) Lower the victim onto your shoulder, and carry him or her to safety.

NOTE: This aircraft may require the use of a ladder because of the impact with the ground. If this is the case, use your best judgment to safely remove victims.

        (5) Return to the aircraft to rescue additional crew members.

2. Perform rescue operations on an AH-1G aircraft.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue victims.
        (1) Turn the HARNESS-RELEASE knob one-fourth turn in either direction to release crew member restraints.
        (2) Unplug the helmet cord.
        (3) Lift the victim from the seat, and place him or her on the frame of the aircraft.
        (4) Lower the victim onto your shoulder, and carry him or her to safety.

NOTE: This aircraft may require the use of a ladder because of the impact with the ground. If this is the case, use your best judgment to safely remove victims.

        (5) Return to the aircraft to rescue additional crew members.

3. Perform rescue operations on a UH-1 aircraft.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue victims.
        (1) Unlatch the lap belt, and remove the shoulder harness.
        (2) Unplug the helmet cord.
        (3) Rotate the victim from the seat to your arms.
        (4) Carry the victim to safety.
        (5) Return to the aircraft to rescue additional crew members.

Performance Steps

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should perform rescues simultaneously.

4. Perform rescue operations on an OH-6 aircraft.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue victims.
        (1) Unlatch the lap belt, and remove the shoulder harness.
        (2) Unplug the helmet cord.
        (3) Rotate the victim from the seat to your arms.
        (4) Carry the victim to safety.
        (5) Return to the aircraft to rescue additional crew members.

5. Perform rescue operations on an OH-58 aircraft.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue victims.
        (1) Unlatch the lap belt, and remove the shoulder harness.
        (2) Unplug the helmet cord.
        (3) Rotate the victim from the seat to your arms.
        (4) Carry the victim to safety.
        (5) Return to the aircraft to rescue additional crew members.

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should perform rescues simultaneously.

6. Perform rescue operations on a CH-47 aircraft.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue victims.
        (1) Unlatch the lap belt, and remove the shoulder harness.
        (2) Unplug the helmet cord.
        (3) Lift the victim from the seat, and place him or her on the frame of the aircraft.
        (4) Lower the victim onto your shoulder, and carry him or her to safety.

NOTE: This aircraft may require the use of a ladder because of the impact with the ground. If this is the case, use your best judgment to safely remove the victims.

        (5) Return to the aircraft to rescue additional crew members.

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should perform rescues simultaneously.

7. Perform rescue operations on a UH-60 aircraft.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
    c. Rescue victims.
        (1) Turn the HARNESS-RELEASE knob one-fourth turn in either direction to release crew member restraints.
        (2) Unplug the helmet cord.
        (3) Rotate the victim from the seat to your arms.
        (4) Carry the victim to safety.
        (5) Return to the aircraft to rescue additional crew members.

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should perform rescues simultaneously.

8. Perform rescue operations on a C-12 aircraft.

WARNING: ALWAYS MAINTAIN A SAFE DISTANCE FROM MOVING PROPELLERS. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

    a. Enter the aircraft through normal openings, or use forcible entry as necessary.

Performance Steps

b. Shut down the aircraft.
c. Rescue victims.
(1) Unlatch the lap belt, and remove the shoulder harness.
(2) Remove the headset, or unplug the helmet cord.
(3) Rotate the victim from the seat to the floor of the aircraft.
(4) Drag the victim to the nearest emergency exit.
(5) Carry the victim to safety.
(6) Return to the aircraft to rescue additional crew members.

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should perform rescues simultaneously.

9. Perform rescue operations on a U-21 aircraft.

CAUTION: ALWAYS MAINTAIN A SAFE DISTANCE FROM MOVING PROPELLERS. FAILURE TO COMPLY MAY CAUSE EQUIPMENT DAMAGE.

a. Enter the aircraft through normal openings, or use forcible entry as necessary.
b. Shut down the aircraft.
c. Rescue victims.
(1) Unlatch the lap belt, and remove the shoulder harness.
(2) Remove the headset, or unplug the helmet cord.
(3) Rotate the victim from the seat to the floor of the aircraft.
(4) Drag the victim to the nearest emergency exit.
(5) Carry the victim to safety.
(6) Return to the aircraft to rescue additional crew members.

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should perform rescues simultaneously.

10. Perform rescue operations on a C-130 aircraft.

CAUTION: ALWAYS MAINTAIN A SAFE DISTANCE FROM MOVING PROPELLERS. FAILURE TO COMPLY MAY CAUSE EQUIPMENT DAMAGE.

a. Enter the aircraft through normal openings, or use forcible entry as necessary.
b. Shut down the aircraft.
c. Rescue victims.
(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 victim to the nearest emergency exit.
(5) Carry the victim to safety.
(6) Return to the aircraft to rescue additional crew members.

NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should perform rescues simultaneously.

11. Perform rescue operations on a C-141 aircraft.

WARNING: APPROACH THE AIRCRAFT FROM THE REAR WHEN ENGINES ARE RUNNING. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY.

NOTE: The aircraft must be depressurized before 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 victims.
(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 victim to the nearest emergency exit.
(6) Carry the victim to safety.
(7) Return to the aircraft to rescue additional crew members.

Performance Steps
NOTE: This aircraft may have additional crew members in the rear of the aircraft. Additional rescue team members should perform rescues simultaneously.

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

Brief Soldier: Direct the Soldier to rescue victims from the aircraft.

Performance Measures	GO	NO-GO
1. Performed rescue operations on an AH-64 aircraft.	____	____
2. Performed rescue operations on an AH-1G aircraft.	____	____
3. Performed rescue operations on a UH-1 aircraft.	____	____
4. Performed rescue operations on an OH-6 aircraft.	____	____
5. Performed rescue operations on an OH-58 aircraft.	____	____
6. Performed rescue operations on a CH-47 aircraft.	____	____
7. Performed rescue operations on a UH-60 aircraft.	____	____
8. Performed rescue operations on a C-12 aircraft.	____	____
9. Performed rescue operations on a U-21 aircraft.	____	____
10. Performed rescue operations on a C-130 aircraft.	____	____
11. Performed rescue operations on a C-141 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
LO 5-4210-220-12	FM 5-415
LO 9-2320-279-12	IFSTA MANUAL
TM 5-4210-220-12	NFPA 1001
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Gain Access to an Aircraft Using Forcible-Entry Techniques

052-249-1128

Conditions: You are given a firefighting apparatus, protective clothing, tools, a self-contained breathing apparatus (SCBA), an aircraft crash site, applicable technical manuals (TMs) and lubrication orders (LOs), 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: Openings are sometimes created when an aircraft hits the ground. If these openings can be used, do not perform forcible entry into the aircraft. If necessary, make the openings larger or more suitable. Try to open crew and passenger doors normally before using forcible entry. The doors will often still function normally, regardless of the exterior structural damage to the door or aircraft.

1. Identify forcible-entry points on an aircraft.
    a. Locate doors and hatches.

NOTE: Some doors are equipped with an external or internal emergency door jettison release. When the release is activated, the door will release from the aircraft and fall away.

    b. Perform forcible-entry techniques.
        (1) Pull the external-door jettison handle, and remove the door.
        (2) Place a prying tool 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.
    c. Locate canopies.

DANGER: SOME AIRCRAFT HAVE CANOPIES THAT USED STRICTLY 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.

DANGER: EXERCISE EXTREME CAUTION 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. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

    d. Perform forcible-entry techniques.
        (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 to create a hole.
            (b) Insert the cutting edge of the tool into the hole.
            (c) Use a rubber mallet or similar tool to drive 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.

DANGER: USE FOAM TO COVER THE AREA IMMEDIATELY AROUND THE CANOPY 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. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

            (a) Cut the acrylic plastic along the frame edge.
            (b) Remove the canopy after completing the cut.
    e. Locate the fuselage areas.

NOTE: Fuselage areas may be obscured because of the fire. Be familiar with mission-assigned aircraft at the location.

Performance Steps

(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 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 three cuts, bend the portion outward and downward.

(2) Cover the sharp areas with a blanket or another covering after completing the cut.

2. Perform forcible entry on an aircraft.
   a. Perform forcible entry on an AH-64.
      (1) Open the access door on the nose of the aircraft directly in front of the copilot or gunner.
      (2) Rotate the canopy jettison handle 90° counterclockwise.
      (3) Push the handle into the jettison canopy side panels.
      (4) Cut the canopy if the above procedures fail.
   b. Perform forcible entry on an AH-1G.

DANGER: THE WINDOWS OF AN AH-1G ARE EQUIPPED WITH AN EXPLOSIVE CHARGE TO BLOW THEM OUT. APPROACH THE AIRCRAFT VERY CAREFULLY. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

(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.

   c. Perform forcible 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 handle rearward.
      (3) Remove the doors.
      (4) Cut the windows and windshield if the above procedures fail.
   d. Perform forcible 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 hinge pins.
      (4) Cut the cabin enclosure if the above procedures fail.
   e. Perform forcible entry on an OH-58.
      (1) Cut the windows in the crew doors.
      (2) Reach inside, and pull the crew door jettison handle 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.
   f. Perform forcible 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 (the portion between both windows on both sides) if the above procedures fail.

Performance Steps

g. Perform forcible 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.

h. Perform forcible 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.

i. Perform forcible 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.

j. Perform forcible entry on a C-130.

DANGER: ENTER THROUGH THE REAR TROOP DOORS TO AVOID HAZARDS IN APPROACHING A RUNNING AIRCRAFT. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

   (1) Open the aft troop doors (right- and left-hand sides).
   (2) Open the rear cargo or troop door.
   (3) Lift the four hatches that are located in front of, in the center of, on top of, and on the front right-hand side of the fuselage.

NOTE: On an AC-130 aircraft that is equipped with an interior electronic compartment, gain entry by using the troop door that is located on the right-hand, aft side of the aircraft.

NOTE: On an HC-130H/N/P aircraft, the emergency entry door that is located on the right-hand side of the aircraft may be blocked by an equipment bin. On these aircraft, an identical emergency entry door is located on the left-hand side of the aircraft.

   (4) Cut on each side of the fuselage (above and forward of each troop door) if the above procedures fail.

k. Perform forcible entry on a C-141.
   (1) Press the emergency exit release triggers. Rotate the handle counterclockwise, and push the hatches inward.
   (2) Lift the release ring, and pull it upward to open emergency exits.

DANGER: THE AIRCRAFT MUST BE COMPLETELY DEPRESSURIZED BEFORE INSIDE OR OUTSIDE DOOR HANDLES ARE OPERATED. OPERATING DOORS OR HATCHES WHILE THE AIRCRAFT IS PRESSURIZED MAY CAUSE PERMANENT INJURY OR DEATH.

   (3) Strike the rectangular bump plate that is located above and inboard of the hatch.
   (4) Cut in the area that is aft of the left-hand forward emergency exit and aft of both troop doors if the above procedures fail.

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

Brief Soldier: Direct the Soldier to gain access to an aircraft using forcible-entry techniques.

Performance Measures	**GO**	**NO-GO**
1. Identified forcible-entry points on an aircraft.	____	____
2. Performed forcible entry 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

LO 5-4210-220-12
LO 9-2320-279-12
TM 5-4210-220-12
TM 5-4210-249-13&P-1
TM 9-2320-328-13&P-1

Related

FM 5-415
IFSTA MANUAL
NFPA 1001

Perform Aircraft Emergency Shutdown Procedures

052-249-1129

Conditions: You are given a firefighting apparatus, necessary firefighting tools, a hose line with a nozzle, an assistant firefighter to operate the hose line, applicable technical manuals (TMs) and lubrication orders (LOs), and an aircraft with an emergency.

Standards: Perform aircraft emergency shutdown procedures.

Performance Steps

DANGER: BE EXTREMELY CAUTIOUS 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. DO NOT PASS IN FRONT OF WEAPONS SYSTEMS THAT ARE MOUNTED ON THE AIRCRAFT UNLESS ABSOLUTELY NECESSARY. DO NOT TOUCH THE GUN BARRELS; THE ROTATION OF THE GUN BARRELS WILL CAUSE THE GUN TO FIRE. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

1. Perform emergency shutdown procedures on an AH-64 aircraft.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
        (1) Pull the engine fire T handles that are located on the pilot's instrument panel.
        (2) Move the ENGINE FIRE EXTINGUISHER switch that is located below the engine fire T handles to the PRIMARY position.

NOTE: The APU cannot be shut down from the copilot's or gunner's cockpit.

        (3) Pull the APU fire T handle that is located on the right-hand console.
        (4) Move the APU FIRE EXTINGUISHER switch that is located behind the fire T handle to the PRIMARY position.

2. Perform emergency shutdown procedures on an AH-1G aircraft.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
        (1) Depress the IDLE RELEASE STOP button that is located on the pilot's collective pitch stick, and rotate the throttle to the FULLY OFF position.
        (2) Move the FUEL switch that is located on the left-hand side of the engine control panel to the OFF position.
        (3) Move the GENERATOR switch that is located on the left-hand side of the power panel to the OFF position.
        (4) Move the BATTERY switch that is located beside the GENERATOR switch to the OFF position.
        (5) Disconnect the battery leads from the battery terminals that are located in the nose of the aircraft.

3. Perform emergency shutdown procedures on a UH-1 aircraft.
    a. Enter the aircraft through normal openings, or use forcible entry as necessary.
    b. Shut down the aircraft.
        (1) Rotate the throttle that is located on the pilot's collective pitch stick to the OFF position.

NOTE: If the throttle has a detent button, rotate the throttle until it stops. Press the detent button, and rotate the throttle to the OFF position.

        (2) Pull the FUEL switch(es) that are located on the floor pedestal to the OFF position.

NOTE: The procedures for moving FUEL switches to the OFF position on the UH-1 depends on the model. On some models, FUEL switches must be pushed downward to the OFF position. On other models, the FUEL switches must be pushed upward to the OFF position. Also, some UH-1s have two FUEL switches that must be moved to the OFF position when shutting down the aircraft. Be familiar with mission-assigned aircraft at the location.

Performance Steps

(3) Move the BATTERY switch that is located on the overhead control panel to the OFF position.
(4) Disconnect the battery leads from the battery terminals that are located in the nose or rear compartment of the aircraft.

4. Perform emergency shutdown procedures on an OH-6 aircraft.
   a. Enter the aircraft through normal openings, or use forcible entry as necessary.
   b. Shut down the aircraft.
      (1) Rotate the throttle that is located on the pilot's and copilot's COLLECTIVE levers to the FUEL CUT OFF position.
      (2) Move the BATTERY switch that is located on the electrical control console to the OFF position.
      (3) Disconnect the battery leads from the battery terminals that are located in the nose of the aircraft.

5. Perform emergency shutdown procedures on an OH-58 aircraft.
   a. Enter the aircraft through normal openings, or use forcible entry as necessary.
   b. Shut down the aircraft.
      (1) Rotate the throttle that is located on the pilot's collective pitch stick to the OFF position.
      (2) Pull the FUEL SHUTOFF valve that is located on the overhead panel aft to the OFF position.
      (3) Move the BATTERY switch that is located on the overhead switch panel to the OFF position.
      (4) Disconnect the battery leads from the battery terminals that are located in the nose of the aircraft.

6. Perform emergency shutdown procedures on a CH-47 aircraft.
   a. Enter the aircraft through normal openings, or use forcible entry as necessary.
   b. Shut down the aircraft.
      (1) Move the engine condition levers that are located on the floor console pedestal or the overhead switch panel to the STOP position.
      (2) Move the FUEL valves or PUMP switches that are located on the overhead switch panel to the CLOSED or OFF position.
      (3) Move the BATTERY switch that is located on the overhead switch panel to the OFF position.
      (4) Disconnect the battery leads from the battery terminals that are located in the left-hand side compartment of the aircraft.

7. Perform emergency shutdown procedures on a UH-60 aircraft.
   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 that are located on the control quadrant to the FULL AFT position.
      (2) Pull the auxiliary power unit (APU) T handle that is located on the upper console to the DOWN position.
      (3) Move the BATTERY switch that is located on the upper console to the OFF position.

8. Perform emergency shutdown procedures 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 that are located on the right side of the pilot control pedestal to the FUEL CUTOFF position.
      (2) Pull the engine fire T handles that are located on the upper portion of the pilot instrument panel.

NOTE: If the fire T handles are illuminated, actuate the fire extinguisher push button that is located between the handles.

Performance Steps

(3) Move the MASTER switch that is located on the pilot overhead control panel to the OFF position.

9. Perform emergency shutdown procedures on a U-21 aircraft.

DANGER: 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. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

a. Enter the aircraft through normal openings, or use forcible entry as necessary.
b. Shut down the aircraft.
(1) Move the FUEL FIRE WALL valve switches that are located below the fuel management panel downward to the OFF position.
(2) Push the MASTER switch gang bar that is located on the left subpanel downward to the OFF position.
(3) Pull the propeller levers that are located in the center of the control pedestal aft to the FEATHER position.
(4) Disconnect the battery leads from the battery terminals that are located in the left forward compartment.

10. Perform emergency shutdown procedures on a C-130 aircraft.

DANGER: TO AVOID THE HAZARDS IN APPROACHING A RUNNING AIRCRAFT, ENTER THROUGH THE REAR TROOP DOORS. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

a. Enter the aircraft through normal openings, or use forcible entry as necessary.
b. Shut down the aircraft.

NOTE: Do not shut down the battery power before activating the emergency T handles.

(1) Position the condition levers that are located on the control pedestal between the forward crew seats aft to the FEATHER position.
(2) Open the safety guard of the bus tie switch.
(3) Turn the switch to the ON position.

NOTE: If the switch is left in the OFF position, 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-hand armrest.

(4) Pull the fire emergency shutdown T handles that are located on the overhead panel to the AFT position.

NOTE: On the C-130A, pull the fire emergency shutdown T handles. Depress and hold the BATTERY ENGINE START switch that is located below and between the two handles for 5 seconds, and then release the BATTERY ENGINE start switch.

NOTE: If the APU/gas turbine compressor (GTC) is operating, pull the GTC T handle.

(5) Disconnect the battery that is located forward of the crew entrance door, or turn the BATTERY switch that is located on the overhead control panel clockwise to the OFF position.

NOTE: On the C-130A, turn the battery switch counterclockwise to the OFF position.

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).

11. Perform emergency shutdown procedures on a C-141 aircraft.

a. Enter the aircraft through normal openings, or use forcible entry as necessary.

DANGER: THE AIRCRAFT MUST BE COMPLETELY DEPRESSURIZED BEFORE THE INSIDE OR OUTSIDE DOOR HANDLE IS OPERATED. ALSO, FLARES ARE A SOURCE OF IGNITION FOR MANY LUBRICANTS AND FLUIDS THAT ARE USED IN SERVICING AIRCRAFT. SELECTED AIRCRAFT HAVE A COUNTERMEASURE DISPENSING SYSTEM OR FLARE DISPENSING CAPABILITIES. STRAY VOLTAGE CAN CAUSE IGNITION. PERSONNEL SHOULD GROUND

Performance Steps

THEMSELVES BEFORE APPROACHING THESE CRITICAL AREAS. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

b. Shut down the aircraft.
   (1) Pull engine fire control T handles that are located on the upper center portion of the instrument panel.
   (2) Pull the APU fire T handle that is located on the flight engineer's panel.
   (3) Move the BATTERY switch that is located on the flight engineer's electrical panel to the OFF position.

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

Brief Soldier: Direct the Soldier to perform aircraft emergency shutdown procedures.

Performance Measures	**GO**	**NO-GO**
1. Performed emergency shutdown procedures on an OH-6 aircraft.	____	____
2. Performed emergency shutdown procedures on an OH-58 aircraft.	____	____
3. Performed emergency shutdown procedures on a UH-1 aircraft.	____	____
4. Performed emergency shutdown procedures on a UH-60 aircraft.	____	____
5. Performed emergency shutdown procedures on a CH-47 aircraft.	____	____
6. Performed emergency shutdown procedures on an AH-1G aircraft.	____	____
7. Performed emergency shutdown procedures on an AH-64 aircraft.	____	____
8. Performed emergency shutdown procedures on a U-21 aircraft.	____	____
9. Performed emergency shutdown procedures on a C-12 aircraft.	____	____
10. Performed emergency shutdown procedures on a C-130 aircraft.	____	____
11. Performed emergency shutdown procedures for a C-141 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**
LO 5-4210-220-12	FM 5-415
LO 9-2320-279-12	IFSTA MANUAL
TM 5-4210-220-12	NFPA 1001
TM 5-4210-249-13&P-1	
TM 9-2320-328-13&P-1	

Subject Area 8: Perform Rescue Air Mobility Squadron Missions

Respond to a Tactical Emergency as a Rescue Air Mobility Squadron Team Member
052-249-1179

Conditions: You are given a rescue equipment set, personal protective equipment, an individual weapon, field equipment, aviation transportation, an up-armored ground vehicle, a security element, applicable technical manuals (TMs) and learning objectives (LOs), and the local standing operating procedures (SOP).

Standards: Respond to a ground vehicle or aircraft emergency. Effect a rescue of entrapped or endangered personnel, and provide basic emergency medical care at a remote emergency scene within a theater of operations in a tactical environment.

Performance Steps

1. Receive notification of an emergency incident.
    a. Confirm essential mission information with the supervisor, including the—
        (1) Type of emergency (vehicle type and armor status).
        (2) Location of the emergency.
        (3) Status of the victims.
        (4) Security at the emergency scene.
        (5) Special equipment that is needed.
    b. Prepare to execute the mission when guidance from the senior fire official (SFO) is received.
        (1) Perform precombat checks (PCCs) and precombat inspections (PCIs) according to the unit SOP.
        (2) Board transportation, and respond to an emergency incident.

2. Respond to a tactical emergency scene by using an air medical evacuation operation.
    a. Receive applicable mission updates from the squad leader while en route to the emergency.
    b. Disembark the aircraft, and perform a team carry of the rescue equipment set to the designated staging area.

3. Respond to a tactical emergency scene by using an up-armored vehicle in a ground convoy.
    a. Receive and acknowledge an order from the squad leader to mount up and meet the security element. When the element is notified and in place, the convoy will begin movement to the emergency scene.
    b. Receive applicable mission updates from the squad leader while en route to the emergency.
    c. Disembark the vehicle, and perform a team carry of the rescue equipment set to the designated staging area.

DANGER: IN HOSTILE ENVIRONMENTS, IT MAY BE NECESSARY FOR A SECURITY ELEMENT TO SWEEP THE AREA OF THE EMERGENCY SCENE AND ESTABLISH A SECURE PERIMETER BEFORE FIREFIGHTERS ENGAGE IN RESCUE EFFORTS. FIREFIGHTER PERSONNEL WHO ARE ASSIGNED TO RESCUE AIR MOBILITY SQUAD (RAMS) MISSIONS CARRY MINIMAL WEAPONS FOR SELF-PROTECTION. THE NECESSITY TO LOCK AND LOAD LIVE AMMUNITION IN INDIVIDUAL WEAPONS DURING RAMS OPERATIONS IS LIKELY IN HOSTILE ENVIRONMENTS. EXERCISE EXTREME CAUTION WHILE DOING SO ONBOARD AN AIRCRAFT. TEAM MEMBERS SHOULD REHEARSE THIS PRACTICE ON A REGULAR BASIS TO PREVENT WEAPON MISHAPS. FAILURE TO COMPLY MAY CAUSE PERMANENT INJURY OR DEATH.

    d. Assist in conducting a rapid, 360° scene survey as directed by the squad leader.
    e. Receive work assignments from the squad leader.

4. Rescue victims.
    a. Control fires, and prevent additional fires from starting while working at the emergency scene.
    b. Enter damaged vehicles.

Performance Steps

WARNING: ENTRY INTO DAMAGED VEHICLES CAN USUALLY BE ACCOMPLISHED THROUGH THE GUNNER HATCH, BUT IT IS DIFFICULT TO REMOVE VICTIMS THROUGH THE HATCH. RESCUE MEMBERS CAN ENTER, GIVE MEDICAL AID, AND OPEN LOCKED DOORS FROM THE INSIDE. THE VEHICLE MUST BE STABLE. FAILURE TO COMPLY MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

c. Use existing openings and/or normal points of entry.
d. Use compromises in the vehicle body.
e. Use forcible-entry tools and techniques as necessary.

NOTE: Armored tactical vehicles represent a time-consuming effort when making forcible entry. Rescuers will likely become fatigued during the operation. All rescue team members should practice at least bimonthly to ensure proficiency. No one member will be assigned to make forcible entry.

DANGER: NORMAL POINTS OF ENTRY AND THE MAIN BODIES OF ARMORED VEHICLES ARE COMPRISED OF HEAVY MATERIALS. EXERCISE CAUTION WHEN PERFORMING FORCIBLE ENTRY AND WHEN CUTTING AWAY DOORS, WINDOWS, BOLTS, HINGES, AND BODY PARTS. FALLING MATERIALS COULD CAUSE SERIOUS INJURY TO RESCUERS. ADDITIONALLY, TACTICAL VEHICLES CONTAIN NUMEROUS HAZARDOUS OBJECTS. THIS INCLUDES LOADED, INDIVIDUAL, AND CREW-SERVED WEAPONS; AMMUNITION; FUEL CONTAINERS; ENERGIZED COMMUNICATIONS EQUIPMENT; TOOLS; AND OTHER SHARP OBJECTS. RESCUERS MUST TAKE PRECAUTIONS AGAINST INJURING THEMSELVES AND FURTHER INJURING VICTIMS WHEN DISENTANGLING CASUALTIES FROM ARMORED TACTICAL VEHICLES. FAILURE TO COMPLY COULD CAUSE PERMANENT INJURY OR DEATH.

f. Stabilize victims, and perform primary medical assessment.
g. Disentangle victims, and move them to a safe area away from the wreckage.
h. Secure sensitive items, and submit them to the squad leader or proper authority as required.

5. Stabilize victims for medical evacuation (MEDEVAC) by ground or air ambulance.
   a. Assist medics in evaluating casualties and providing immediate, life-saving emergency medical care.

NOTE: There will not be enough time to thoroughly evaluate and treat all injuries in a hostile work environment. It is critical that victims be stabilized and evacuated out of the danger area as soon as possible after disentanglement from the wreckage. More thorough evaluation and treatment will be accomplished en route to the medical treatment facility.

   b. Designated team combat life saver or national registry-emergency medical technician-basic (NR-EMT-B) will backbrief MEDEVAC personnel on the primary evaluation of the victim's status.
   c. Assist in loading the victims onto MEDEVAC or the ground ambulance as required.

6. Depart the emergency scene after termination of the incident by the SFO.
   a. Recover all rescue equipment, and package it for departure.
   b. Account for all personal equipment, including individual weapons.
   c. Board the aircraft with required equipment, and depart the emergency scene.

NOTE: Under certain circumstances, the number of victims in need of transportation to a medical treatment facility may preclude the RAMS team from departing the scene by aircraft. Team members should be prepared to be transported back to their base of operations by using ground transportation. In this instance, teams will be required to participate in the defense of the transportation element and should ensure that they have an adequate amount of personal equipment (weapons, ammunition, body armor) to sustain defensive operations for at least 24 hours while en route to their base of operations. If possible, the RAMS team will be transported back to their base of operations in the second aircraft.

7. Prepare the team and required equipment for the next mission.
   a. Perform preventive-maintenance checks and services on team rescue equipment.
   b. Reservice spent agent, fuel, and compressed air supplies.
   c. Replenish expended medical equipment.

Performance Steps

d. Replenish spent ammunition and personal equipment (drinking water, batteries).
e. Perform PCC/PCI on all equipment, and stage equipment in preparation for the next mission.

8. Report injuries or illnesses incurred during the rescue operation to the squad leader as required.

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

Brief soldier: Direct the soldier to respond to a tactical emergency as a RAMS team member.

Performance Measures	**GO**	**NO-GO**
1. Received notification of an emergency incident.	____	____
2. Responded to a tactical emergency scene by using an air medical evacuation operation.	____	____
3. Responded to a tactical emergency scene by using an up-armored vehicle in a ground convoy.	____	____
4. Rescued victims.	____	____
5. Stabilized victims for MEDEVAC by ground or air ambulance.	____	____
6. Departed the emergency scene after termination of the incident by the SFO.	____	____
7. Prepared the team and required equipment for the next mission.	____	____
8. Reported injuries or illnesses incurred during the rescue operation to the squad leader as required.	____	____

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 420-1
	FM 5-415
	IFSTA MANUAL

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APPENDIX A

Metric Conversion Chart

This appendix complies with AR 25-30 which states that weights, distances, quantities, and measures contained in Army publications will be expressed in U.S. standard and metric units (table A-1).

Table A-1. Metric conversion chart

U.S. 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

Table A-1. Metric conversion chart (continued)

Metric Units	Multiplied By	Equals U.S. 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	35.31440	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

1SG	first sergeant
AC	active component; alternating current
ACCP	Army Correspondence Course Program
AFFF	aqueous film-forming foam
AIT	advanced individual training
AN	annually; Army Navy
ANCOC	Advanced Noncommissioned Officer Course
APU	auxiliary power unit
AR	angle of repose; armor; Army regulation
ARNG	Army National Guard
ARTEP	Army Training and Evaluation Program
attn	attention
BA	biannually
BNCOC	Basic Noncommissioned Officer Course
BTU	British thermal unit
BW	biweekly; biological warfare
CMF	career management field
CSM	command sergeant major
CTT	common task test; common task training
DA	Department of the Army; data adapter; data administrator; direct action; directorate for administration; double agent; aerospace drift
DD	Department of Defense
DOT	Department of Transportation
DPW	Department of Public Works
EDITH	exit drills in the home
EPMS	Enlisted Personnel Management System
F	Fahrenheit; fail; failed; frequency; full

FM	field manual; flare multiunit; force module; frequency-modulated; frequency modulation
GED	general education degree
HAZMAT	hazardous material
HITS	hazardous information transmission system
HQ	headquarters
IC	indicator code, indicator control, incident commander
IFSTA	International Fire Service Training Association
LO	law and order; learning objective; liaison officer; low; lubrication order
MANSCEN	Maneuver Support Center
MEDEVAC	medical evacuation
METL	mission-essential task list
MO	Missouri; monthly; month; medical officer; maintenance and operations
MOS	military occupational specialty; minimum operating strip; minimal operational strip
MSDS	material safety data sheet; mission-specific data set
MSG	master sergeant
MTP	mission training plan; military occupational specialty (MOS) training plan; mission tasking packet
NCO	noncommissioned officer
NCOES	Noncommissioned Officer Education System
NFIRS	National Fire Incident Reporting 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
PCC	precombat check
PCI	photo coverage indexes; precombat inspection
PFC	private first class

PIV	post indicator valve
PLDC	Primary Leadership Development Course
PMCS	preventive-maintenance checks and services
psi	pounds per square inch
PVT	private
QT	quart; quarterly; qualification test
RAMS	rescue air mobility squadron
RC	rapid cure; Reserve Component; regional command
SA	Secretary of the Army; semiannually; situational awareness; security assistance; staging area; security agreement
SAE	Society of Automotive Engineers
SCBA	self-contained breathing apparatus
SFC	sergeant first class
SFO	senior fire officer
SGM	sergeant major
SGT	sergeant
SL	skill level; side lap; switch locator; slow curing (asphalt)
SM	Soldier's manual; service member
SOP	standing operating procedure
SR	scale of reproduction; special reconnaissance; supply route
SSG	staff sergeant
STP	Soldier training publication
TFFT	tactical fire-fighting truck
tm; TM	team; technical manual; theater missile; trademark
TRADOC	United States Army Training and Doctrine Command
US	United States
USASMA	United States Army Sergeants Major Academy
VA	Virginia

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REFERENCES

Required Publications

Required publications are sources that users must read in order to understand or to comply with this publication.

Army Regulations

AR 25-30	The Army Publishing Program. 27 March 2006.
AR 614-200	Enlisted Assignments and Utilization Management. 26 February 2009.

Department of Army Forms

DA Forms are available on the APD web site (www.apd.army.mil).

DA FORM 2028	Recommended Changes to Publications and Blank Forms.
DA FORM 2404	Equipment Inspection and Maintenance Worksheet.
DA FORM 2408-14	Uncorrected Fault Record.
DA FORM 5164-R	Hands-On Evaluation.
DA FORM 5376	Individual Training Evaluation Record.
DA FORM 5377	Fire and Emergency Services Training Record.
DA FORM 5381	Building - Fire Risk Management Survey.
DA FORM 5382	Hazard/Deficiency Inspection Record.
DA FORM 5383	Hot Work Permit.
DA FORM 5988-E	Equipment Inspection and Maintenance Worksheet.

Field Manuals

FM 7-0	Training for Full Spectrum Operations. 12 December 2008.

Lubrication Orders

LO 5-4210-220-12	Truck, Firefighting, 1000 GPM, Multipurpose, Model 2500L (Detroit Diesel V92 Engine). 15 January 1992.
LO 9-2320-279-12	M977 Series, 8X8 Heavy Expanded Mobility Tactical Trucks (HEMTT) Truck, Cargo, with Winch M977 (NSN 2320-01-097-0260) Truck, Cargo, without Winch M977 (2320-01-099-6426) Truck, Tank, Fuel with Winch M978 (2320-01-097-0249) Truck, Tank, Fuel without Winch M978 (2320-01-100-7672) Truck, Tractor, with Winch, without Crane M983 (2320-01-097-0247) Truck Wrecker-Recovery M984 (2320-01-097-0248) Truck Wrecker-Recovery M984A1 Truck, Wrecker-Recovery M984A1 (2320-01-195-7641) Truck, Cargo, with Winch M985 (2320-01-097-0261) Truck Cargo, with Winch M985E1 (2320-01-194-7032) Truck, Cargo, without Winch (2320-01-100-7673) Truck, Cargo, with Winch M985E1 (2320-01-194-7032) Truck, Cargo, without Winch M985E1 M985E1, (2320-01-194-7031). 15 December 1998.

Other Product Types

Local SOP	Standard Operating Procedures.
NFPA 1001	Standard for Fire Fighter Professional Qualifications, 2008 Edition. 30 December 2002.

Soldier Training Publications

STP 21-1-SMCT	Soldier's Manual of Common Tasks Skill Level 1. 18 June 2009.
STP 21-24-SMCT	Soldier's Manual of Common Tasks (SMCT) Skill Level Warrior Leader 2, 3 and 4. 9 September 2008.

Technical Manuals

TM 5-4210-220-12	Operator's and Unit Maintenance Manual for Truck, Firefighting, 1000 GPM Multipurpose, Model 2500L (NSN 4210-01-193-3621). 30 October 1987.
TM 5-4210-249-13&P-1	Operators and Field Level Maintenance Manual with Repair Parts and Special Tools List (Including Depot Repair Parts and Special Tools) for Tactical Fire Fighting Truck (TFFT) Model 1142 (NSN 4210-01-486-1035). 20 February 2009.
TM 9-2320-328-13&P-1	Operator's and Field Level Maintenance Manual (Including Repair Parts and Special Tools List) for HEMTT-Based Water Tender (HEWATT) Model M1158 (NSN 2320-01-528-6294). 15 March 2009.

Related Publications

Related publications are sources of additional information. They are not required in order to understand this publication.

Army Regulations

AR 420-1	Army Facilities Management. 12 February 2008.

Department of Army Pamphlets

DA PAM 750-8	The Army Maintenance Management System (TAMMS) Users Manual. 22 August 2005.

Field Manuals

FM 5-415	Fire-Fighting Operations. 9 February 1999.

Other Product Types

IFSTA MANUAL	Essentials of Fire Fighting (4th Edition). 30 January 2004.

STP 5-21M1-SM
22 September 2010

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