

CERTIFICATION CURRICULUM MANUAL

CHAPTER ONE

BASIC FIRE SUPPRESSION

NFPA 1001 2019 edition

Effective January 1, 2021



Texas Commission on Fire Protection
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REFERENCE LIST FOR THE BASIC FIRE SUPPRESSION CURRICULUM

Certified Training Facilities approved to teach this curriculum must have the following reference materials:

Certification Curriculum Manual. Austin, TX: Texas Commission on Fire Protection. Current issue.

Essentials of Fire Fighting (7 ed.) (2018). Stillwater, OK: Fire Protection Publications. International Fire Service Training Association.

Evidence-Based Practices for Strategic and Tactical Firefighting (2016). Burlington, MA: Jones & Bartlett Learning.

Fundamentals of Fire Fighter Skills and Hazardous Materials Response (4th ed.) (2019). Burlington , MA: Jones and Bartlett Publishers, Inc.

NFPA 1001: Standard for Fire Fighter Professional Qualifications (2019 ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

NFPA 1851: Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting (2020 ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

Standards Manual for Fire Protection Personnel. Austin, TX: Texas Commission on Fire Protection. Current issue.

Note to training providers:

The reference lists for Hazardous Materials Awareness and Operations are located in [Chapter 6](#) of the Certification Curriculum Manual.

CHAPTER ONE BASIC FIRE SUPPRESSION CURRICULUM OUTLINE

INTRODUCTION

The History of the Curriculum and Testing Committee

The Curriculum and Testing Committee was created and appointed by the commission to periodically review and recommend changes to the commission's testing and training programs. Testing committee members met for the first time on August 24, 1989 in response to the need for certification exams to be administered by the Commission. The intent of the exams is to verify competency for the performance of fire service duties within the State of Texas.

Upon a recommendation in December 1991, through action of the Fire Protection Personnel Advisory Committee and the Commission, approximately one-third of the original twenty-one members were asked to maintain an active role on the committee. In January 1994, there were two more members added to the testing committee. The current Curriculum and Testing Committee consists of eleven fire service professionals including fire officers, college instructors, and fire fighters from around the state.

Committee members are charged with development and review of curricula, test questions, and the testing process leading to certifications based on NFPA Professional Qualifications standards. Review and development of curricula, test questions and performance skill evaluations are integral to the accreditation process as required by the International Fire Service Accreditation Congress.

as a means for validating curriculum competencies and objectives. It is in the spirit of the fire service of Texas that these individuals contribute to the development of a meaningful testing process for fire service certifications in the state.

**CHAPTER ONE
BASIC FIRE SUPPRESSION
CURRICULUM OUTLINES**

BASIC FIRE SUPPRESSION		
SECTIONS	SUBJECT	RECOMMENDED HOURS
101-4.1; 102-5.1	General	
101-4.2; 102-5.2	Fire Department Communications	
101-4.3; 102-5.3	Fireground Operations	
102-5.4	Rescue Operations	
101-4.5	Preparedness and Maintenance	
102-5.5	Fire and Life Safety Initiatives, Preparedness and Maintenance	
601; 602; 603-6.2; 603-6.6	Hazardous Materials Awareness, Operations, Mission Specific as identified in Chapter Six	
	TOTAL RECOMMENDED HOURS	474*

*TOTAL RECOMMENDED HOURS include Fire Fighter I, Fire Fighter II, Awareness and Operations

FIREFIGHTER I CURRICULUM OUTLINE		
SECTION	SUBJECT	RECOMMENDED HOURS
101-4.1	General	
101-4.2	Fire Department Communications	
101-4.3	Fireground Operations	
101-4.4	(Reserved for future use)	
101-4.5	Preparedness and Maintenance	
	TOTAL RECOMMENDED HOURS	294

FIREFIGHTER II CURRICULUM OUTLINE		
SECTION	SUBJECT	RECOMMENDED HOURS
102-5.1	General	
102-5.2	Fire Department Communications	
102-5.3	Fireground Operations	
102-5.4	Rescue Operations	
102-5.5	Fire and Life Safety Initiatives, Preparedness and Maintenance	
	TOTAL RECOMMENDED HOURS	140

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**CHAPTER SIX
HAZARDOUS MATERIALS AWARENESS AND OPERATIONS
CURRICULUM OUTLINES**

HAZARDOUS MATERIALS AWARENESS CURRICULUM OUTLINE		
SECTION	SUBJECT	RECOMMENDED HOURS
601-4.1	General	
601-4.2	Recognition and Identification	
601-4.3	Initiate Protective Actions	
601-4.4	Notifications	
	TOTAL RECOMMENDED HOURS	8

HAZARDOUS MATERIALS OPERATIONS CURRICULUM OUTLINE		
SECTION	SUBJECT	RECOMMENDED HOURS
602-5.1	General	
602-5.2	Identify Potential Hazards	
602-5.3	Identify Action Options	
602-5.4	Action Plan Implementation	
602-5.5	Emergency Decontamination	
602-5.6	Progress Evaluating and Reporting Reserved – None required at this level	
603-6.2; 603-6.6	Mission Specific – PPE and Product Control	
	TOTAL RECOMMENDED HOURS	32

The recommended hours include time for skills evaluation and are based on a class size of 12 students. Hours needed depend on the actual number of students.

*The reduction in Hazardous Materials recommended training hours from 48 hours (for stand-alone delivery as listed in the Hazardous Materials curriculum) to 32 hours is due to the duplication of certain training subjects in both the Hazardous Materials and Firefighter I training curricula (i.e. ICS, Foam, SCBA, Fire Chemistry/Science).

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Course Instructor Information

Basic Fire Suppression

Overview

The Basic Fire Suppression curriculum is designed to provide clear guidance that ensures adequate presentation of the information required to meet the Job Performance Requirements (JPRs) of National Fire Protection Association (NFPA) 1001, *Standard for Fire Fighter Professional Qualifications*, 2019 edition.

The Basic Fire Suppression curriculum is found in chapter 1 of the Texas Commission on Fire Protection (TCFP) Curriculum Manual.

Certification Level	TCFP Section Number	NFPA 1001 Chapter
Fire Fighter I	101	4
Fire Fighter II	102	5

Layout

The NFPA numbering sequence is mirrored to allow easy correlation between this document and the NFPA Standard. For example, 101-4.2.1 in the TCFP Fire Fighter I curriculum corresponds to NFPA 1001 - Fire Fighter I (i.e. chapter 4), section 4.2.1.

TCFP Standards Manual

It is critical that the course instructor review the chapters in the TCFP Standards Manual that apply to this curriculum. Of primary importance are the following chapters. Chapter 421, Standards for Certification; Chapter 437, Fees; Chapter 423, Basic Fire Suppression Certification; Chapter 439, Examinations; Chapter 449, Certification as Head of a Prevention Only Department. These chapters do not address every issue that could impact this curriculum; therefore, the course instructor is encouraged to become familiar with the TCFP Standards Manual.

Supplemental Information

Instructors are expected to provide supplemental information if the text references used in the course do not provide adequate information to ensure successful completion of the JPRs as listed in the curriculum.

Components of the Curriculum

Each section of the curriculum identifies the NFPA JPR and subdivides the requisite knowledge requirements into learning components.

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For example:

View within the Curriculum	Explanation
<p>101-2.1 Initiate the response to a reported emergency, given the report of an emergency, fire department SOPs, and communications equipment, so that all necessary information is obtained, communications equipment is operated correctly, and the information is relayed promptly and accurately to the dispatch center.</p>	<p>Section Number and NFPA JPR</p>
<p>Requisite Knowledge: Procedures for reporting an emergency; departmental SOPs for taking and receiving alarms, radio codes or procedures; and information needs of dispatch center.</p>	<p>Requisite Knowledge Statement</p>
<p>a. Procedures for reporting an emergency</p>	<p>First part of Requisite Knowledge</p>
<ol style="list-style-type: none"> 1. Conventional phone 2. Cellular phone 3. Call box 4. Telecommunication Devices for the Deaf (TDD) 5. Still Alarms 6. Automatic alarms 	<p>Associated learning components</p>
<p>b. Departmental SOPs for taking and receiving alarms, radio codes or procedures</p>	<p>Second part of Requisite Knowledge</p>
<ol style="list-style-type: none"> 1. Nature of the emergency 2. Location of the emergency 3. Caller information 4. Responding units 5. Call back number 6. Clear speech-plain English 7. Emergency communications <ol style="list-style-type: none"> i. Emergency communications, per AHJ ii. Mayday iii. Evacuation order 	<p>Associated learning components</p>

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c. Information needs of dispatch center	Third part of Requisite Knowledge
<ol style="list-style-type: none"> 1. Nature of the emergency 2. Location of the emergency 3. Caller information 4. Responding units 5. Call back number 	Associated learning components
Requisite Skills: The ability to operate fire department communications equipment, relay information, and record information.	Requisite Skills Statement

Skills

NFPA Requisite Skill requirements are addressed in the corresponding skill sheets.

Instructional Skills – these training instruments are designed to be used during the instructional process to assist students in mastering requisite skills.

State Performance Evaluation Forms – these test instruments are designed to be used for Commission-designated performance skill evaluations. Refer to Texas Commission on Fire Protection Standards Manual Rule §439.11.

Descriptions of Certification Levels

Basic Structure Fire Protection Personnel are Fire Fighters who have met all the JPRs of Fire Fighter I and Fire Fighter II as defined in NFPA 1001 *Standard for Fire Fighter Professional Qualifications*. In order to satisfactorily meet these requirements, the Fire Fighter trainee must meet all the JPRs and demonstrate mastery of all the knowledge, skills, and ability requirements of the following components of the Texas Commission on Fire Protection Curriculum Manual:

- Chapter 1, Section 101 - 4 Basic Fire Suppression - Firefighter I
- Chapter 1, Section 102 - 5 Basic Fire Suppression - Firefighter II
- Chapter 6, Section 601 - 4 Hazardous Materials Awareness
- Chapter 6, Section 602 - 5 Hazardous Materials Operations
- Chapter 6, Section 603 - 6.2 Hazardous Materials Operations - Mission Specific Competencies - Using Personal Protective Equipment
- Chapter 6, Section 603 - 6.6 Hazardous Materials Operations - Mission Specific Competencies - Product Control

Training Recommendations

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The Texas Commission on Fire Protection and other State and Federal agencies, require the adoption and use of an Incident Management/Command System. It is strongly recommended that students complete the following US Department of Homeland Security National Incident Management System training programs:

- IS-100 Introduction to Incident Command System (ICS)
- IS-200 ICS for Single Resources and Initial Action Incidents
- IS-700 National Incident Management System (NIMS), An Introduction
- IS-800 National Response Framework, An Introduction

Additional information can be found at <https://training.fema.gov/nims/>

Promoting fire fighter safety is a fundamental component of any training program and one of the primary duties of the Texas Commission on Fire Protection. It is strongly recommended that all students attending a Basic Structure Fire Protection Personnel training program also complete the National Fallen Firefighters Foundation's ***Courage to Be Safe: So Everyone Goes Home*** program as a component of their Firefighter Safety training.

Additional information can be found at www.everyonegoeshome.com

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**CHAPTER ONE
FIRE SUPPRESSION
SUPPLEMENTAL OUTLINE**

FIREFIGHTER I		
Section	Subject	Recommended Hours
101-4.1	General	36
4.1.1	General Knowledge <ul style="list-style-type: none"> • Organization • History • General safety • Fire behavior 	
4.1.2	General Skill Requirements <ul style="list-style-type: none"> • PPC-donning and doffing (clothing) • Hoisting equipment using ropes • Locate information in departmental documents and standard or code materials 	
101-4.2	Fire Department Communications	4
4.2.1	Initiate a response to a reported emergency	
4.2.2	Receive a telephone call	
4.2.3	Transmit and receive messages via the F.D. radio	
4.2.4	Activate an emergency call for assistance	
101-4.3	Fireground Operations	
4.3.1	SCBA use during emergency operations	32
4.3.2	Responding on apparatus to an emergency scene	2
4.3.3	Working at emergency scenes	4
4.3.4	Force entry into a structure	12
4.3.5	Exiting a hazardous area as a team	8
4.3.6	Ladders	32
4.3.7	Fire suppression - vehicle fires	8
4.3.8	Fire suppression - exterior Class A fires	8
4.3.9	Search and rescue in structures as a member of a team	16
4.3.10	Fire suppression - interior firefighting <ul style="list-style-type: none"> • Streams • Nozzles • Accident prevention • Two-in/two-out • Fire attack • Dangerous building conditions 	32
4.3.11	Horizontal ventilation	10
4.3.12	Vertical ventilation	10
4.3.13	Overhaul a fire scene	6
4.3.14	Property conservation/loss control as a member of a team	8
4.3.15	Water supply- connect to a pumper	8
4.3.16	Portable fire extinguishers	8

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4.3.17	Emergency scene lighting	4
4.3.18	Utility control	4
4.3.19	Fire suppression - wildland	8
4.3.20	Tie knots for hoisting tools	4
4.3.21	Air monitoring	2
101-4.4	Rescue Operations This duty shall involve no requirements for Fire Fighter I.	NONE
101-4.5	Preparedness and Maintenance	
4.5.1	Equipment care and maintenance-ladders, ropes, SCBA, ventilation, salvage, and hand tools	4
4.5.2	Fire service hose <ul style="list-style-type: none"> • Rolls • Loads • Cleaning 	24
	TOTAL RECOMMENDED HOURS	294
FIREFIGHTER II		
Section	Subject	Recommended Hours
102-5.1	General	
5.1.1	General knowledge requirements <ul style="list-style-type: none"> • ICS/NIMS • Safety • Role of Firefighter II 	8
5.1.2	General skills requirements <ul style="list-style-type: none"> • Utilizing ICS/NIMS • Determine need for command • Organize and coordinate in IMS until command is transferred • function within as assigned role in IMS 	4
5.2	Fire Department Communications	
5.2.1	Incident reports – NFIRS/TXFIRS	4
5.2.2	Communicate the need for team assistance	4
5.3	Fireground Operations	
5.3.1	Fire suppression – Class B fires <ul style="list-style-type: none"> • Ignitable liquids • Firefighting foam 	16
5.3.2	Fire suppression – interior fire attack <ul style="list-style-type: none"> • Hose • Nozzles and appliances • Building construction • Search and rescue • Ventilation • Forcible entry • Fire control 	40
5.3.3	Fire suppression – Class B fires <ul style="list-style-type: none"> • Flammable gases 	8

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	<ul style="list-style-type: none"> • BLEVEs 	
5.3.4	Fire origin and cause determination <ul style="list-style-type: none"> • Types of evidence • Evidence protection 	4
5.4	Rescue Operations	
5.4.1	Vehicle extrication	12
5.4.2	Assisting special rescue operations team	12
5.5	Fire and Life Safety Initiatives, Preparedness and Maintenance	
5.5.1	Fire safety surveys in occupied structures	4
5.5.2	Public fire safety education	4
5.5.3	Preincident planning	8
5.5.4	Maintaining power equipment	4
5.5.5	Hose testing	8
	TOTAL RECOMMENDED HOURS	140*
	GRAND TOTAL - FFI + FFII	434*

TOTAL RECOMMENDED HOURS only include Fire Fighter I & Fire Fighter II without Awareness and Operations

*The recommended hours includes time for skills evaluation and is based on 12 students. Hours needed depends on the actual number of students.

Equipment List for the Basic Fire Suppression Curriculum

Appliances and Tools

- 1 ½" fog nozzle
- 2 ½" - 1 1/8" straight tip nozzle
- Other nozzle selection as determined by AHJ
- Cap
- Double female fittings 1 ½"
- Double female fittings 2 ½"
- Double male fittings 1 ½"
- Double male fittings 2 ½"
- Hose clamps
- Hose jacket
- Hose roller
- Hose strap, rope, or chain
- Hose test gate valve (1/4" hole drilled in the gate)
- Plug
- Reducers 2 ½" to 1 ½"
- Siamese
- Spanner wrenches (4)
- Wye
- Gated Wye (2 ½" to 1 ½")
- Hydrant Wrench (2)
- Rubber Mallet

Extinguishers and Supplies

- Dry chemical extinguisher (ordinary base or multi-purpose)
- CO₂ extinguisher
- Water extinguisher
- Class "A" fuel for live burns, such as hay
- Class "B" fuel for live burns, such as diesel fuel or propane
- Metal pan – minimum 9 square feet

Extrication/Rescue Equipment/Materials

- Blanket
- Cribbing blocks
- Electrical connectors
- Electrical (extension) cords
- Electrical power supply (portable or mounted)
- Gas and water service cut-off (water meter, gas meter, breaker box with meter head)
- Long spine board
- Vehicle
- Stokes basket

Hose – NFPA 1961 Compliant

- 1 ½" or 1 ¾" fire hose (400' minimum)
- 2 ½" or 3" fire hose (500' minimum)
- Large diameter hose (LDH) (300' minimum)
- Hard suction (intake) hose (20' minimum) and strainer
- Hose and nozzles capable of flowing a minimum of 95 GPM
- Soft suction hose (15' minimum)

Hand Tools

- Axe – Flat head
- Axe – Pick head
- Bolt cutters
- Crowbar/pry bar
- Flat head axe
- Halligan tool
- Hand saw
- Hydrant wrench
- K-tool
- Pick-head axe
- Pike pole (8')
- Sledgehammer

Ladders – NFPA 1931 Compliant

- 10' folding ladder
- 14' combination ladder
- 14' ladder with folding hooks
- 24' extension ladder
- 35' extension ladder
- Two straight ladders

Power Tools

- Chain saw
- Gasoline powered circular saw (K12)
- Electric fan
- Gasoline powered fan (PPV)
- Other gasoline or electric power tools per AHJ
- Hydraulic extrication ram
- Hydraulic extrication shears
- Hydraulic extrication spreaders

Protective Equipment/Clothing

- Full set of Protective Clothing for Structural Fire Fighting for each trainee, including:
 - Bunker pants, bunker coat, bunker boots, gloves, helmet, hood, and facepiece
 - Self-Contained Breathing Apparatus with charged air cylinder
 - One extra fully charged air cylinder
 - Personal alert safety system (PASS)
- Manufacturer approved cleaning agent (for SCBA)
- Manufacturer approved cleaning equipment (for SCBA)
- Manufacturer approved sanitizing agent (for SCBA)

Rope

- ½" rope
- Safety line (NFPA 1983 compliant)
- Various lengths and diameters of natural fiber rope
- Various lengths and diameters of synthetic rope
- Various lengths of 1-person or 2-person life safety rope (NFPA 1983 compliant)

Salvage Equipment/Materials

- Brooms
- Buckets
- Tubs
- Mops
- Objects to cover, such as straight back chairs
- Salvage covers (2 – 12'x14' minimum)
- Squeegees
- Water vacuums

Simulation Equipment/Materials

- Burn building as recommended in NFPA 1403: Standard on Live Fire Training Evolutions
- Car fire prop
- Simulated wood roof with replaceable 4' x 8' wood panels over 2' x 8" roof joists on 24" centers
- Training tower, minimum of 2 stories in height
- Approved portable fire extinguisher training devices may include but are not limited to the following:
 - Kidd P-100 Portable Fire Extinguisher Trainer
 - Lion/Bullex ITS
 - Pyrosoft fire simulator
 - Dräger Fire Extinguisher Trainer

Other Supplies/Equipment Needed

- First Aid supplies/kit
- Air monitoring instruments/equipment
- Apparatus or hose testing device
- Equipment necessary for developing a foam stream – Foam eductors, foam nozzles or fog nozzles, and training foam
- Fire hydrant
- Pitot tube and gauge
- Portable radios
- Pumper - NFPA 1901 compliant
- Safety can with proper fuel mixture and funnel
- Scene tape
- Fire apparatus equipped with pump (NFPA 1901 compliant) or pumping system
- Two portable tanks with water transfer equipment and appliances
- Water sources (NFPA 1403 compliant)

Note: If the program is teaching Hazardous Materials Awareness and Operations as part of their course, they must refer to the Hazard Materials Equipment List located in Chapter 6 of the TCFP Curriculum Manual.

CERTIFICATION CURRICULUM MANUAL – CHAPTER ONE

FIRE FIGHTER I

SECTION 101

BASIC FIRE SUPPRESSION – FIREFIGHTER I

A Basic Structure Fire Protection Personnel is a fire fighter who has met all the job performance requirements (JPRs) of Fire Fighter I and Fire Fighter II as defined in NFPA 1001, *Standard for Fire Fighter Professional Qualifications*. In order to satisfactorily meet these requirements, the fire fighter trainee must meet all the JPRs and demonstrate mastery of all the knowledge, skills and ability requirements of the following components of the Texas Commission on Fire Protection Curriculum Manual:

- Chapter 1, Section 101 – 4 Basic Fire Suppression – Firefighter I
- Chapter 1, Section 102 – 5 Basic Fire Suppression – Firefighter II
- Chapter 6, Section 601 – 4 Hazardous Materials Awareness
- Chapter 6, Section 602 – 5 Hazardous Materials Operations
- Chapter 6, Section 603 – 6.1 Hazardous Materials Operations – Mission Specific Competencies – Using Personal Protective Equipment
- Chapter 6, Section 603 – 6.6 Hazardous Materials Operations – Mission Specific Competencies – Product Control

101-4.1 General

101-4.1.1 General Knowledge Requirements

The organization of the fire department; the role of the Fire Fighter I in the organization; the mission of fire service; the fire department's standard operating procedures (SOPs) and rules and regulations as they apply to the Fire Fighter I; the value of life safety initiatives in support of the fire department mission and to reduce fire fighter line-of-duty injuries and fatalities; the role of other agencies as they relate to the fire department; the signs and symptoms of behavioral and emotional distress; aspects of the fire department's member assistance program; the importance of physical fitness and a healthy lifestyle to the performance of the duties of a fire fighter; the critical aspects of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*.

101-A.4.1.1 A fire fighter should be able to identify the signs and symptoms associated with behavioral and emotional distress, as well as strategies and policies to address those stressors.

a. Organization of the fire department

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1. History
2. Organizational structure
- b. The role of the Fire Fighter I
- c. Mission of the fire service
 1. Emergency activities
 2. Non-emergency activities
- d. The value of life safety initiatives in support of the fire department mission and to reduce fire fighter line-of-duty injuries and fatalities
- e. Role of other agencies as they relate to the fire department
- f. Firefighter safety, health and wellness
- g. Aspects of the fire department's member assistance program
- h. Importance of physical fitness and a healthy lifestyle to the performance of duties of a fire fighter
- i. The critical aspects of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*

101-4.1.2 General Skill Requirements

The ability to don personal protective clothing, doff personal protective clothing, perform field reduction of contaminants and prepare for reuse, hoist tools and equipment using ropes and the correct knot, and locate information in departmental documents and standard or code materials.

- a. Types of personal protective equipment (PPE) ensembles
 1. Station/work uniforms
 2. Structural firefighting
 3. Wildland firefighting
 4. Emergency medical service (EMS)
 5. Specialized ensembles (i.e. ARFF, technical rescue)
- b. Donning
- c. Doffing/preparing for re-use
- d. Care and maintenance
 1. Basic inspection
 2. Advanced inspection
 3. Record keeping
 4. Familiarization with NFPA 1851
- e. Hoisting tools and equipment using ropes

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1. Types of knots and hitches
 - i. Overhand safety
 - ii. Clove hitch
 - iii. Figure-eight
 - iv. Figure-eight on a bight
 - v. Figure-eight follow through
 - vi. Water knot
2. Department Standard Operating Procedures, AHJ

101-4.2 Fire Department Communications

This duty shall involve initiating responses, receiving telephone calls, and using fire department communications equipment to correctly relay verbal or written information, according to the JPRs in 4.2.1 through 4.2.4.

101-4.2.1 Initiate the response to a reported emergency, given the report of an emergency, fire department SOPs, and communications equipment, so that all necessary information is obtained, communications equipment is operated correctly, and the information is relayed promptly and accurately to the dispatch center.

101-A.4.2.1 The Fire Fighter I should be able to receive and accurately process information received at the station. Fire Fighters used as telecommunicators (dispatchers) should meet the requirements of NFPA 1061 for qualification standards and JPRs.

Requisite Knowledge:

- a. Procedures for reporting an emergency
 1. Conventional phone
 2. Cellular phone
 3. Call box
 4. Telecommunication Devices for the Deaf (TDD)
 5. Still alarms or walk-ins
 6. Automatic alarms
- b. Departmental SOPs for taking and receiving alarms, radio codes, or procedures
 1. Nature of emergency
 2. Location of emergency
 3. Caller information

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4. Responding units
 5. Call back number
 6. Clear speech – plain English
 7. Emergency communications
 - i. Emergency communications per AHJ
 - ii. Mayday
 - iii. Evacuation order
- c. Information needs of dispatch center
1. Nature of emergency
 2. Location of emergency
 3. Caller information
 4. Responding units
 5. Call back number

Requisite Skills. The ability to operate fire department communications equipment, relay information, and record information.

- 101-4.2.2 Receive a telephone call, given a fire department phone, so that procedures for answering the phone are used and the caller's information is relayed.

Requisite Knowledge:

- a. Fire department procedures for answering nonemergency telephone calls

Requisite Skills. The ability to operate fire station telephone and intercom equipment.

- 101-4.2.3 Transmit and receive messages via the fire department radio, given a fire department radio and operating procedures, so that the information is accurate, complete, clear, and relayed within the time established by the AHJ.

Requisite Knowledge:

- a. Departmental radio procedures and etiquette routine traffic, emergency traffic, and emergency evacuation signals

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Requisite Skills. The ability to operate radio equipment and discriminate between routine and emergency traffic.

101-4.2.4 Activate an emergency call for assistance, given vision-obscured conditions, PPE, and department SOPs, so that the fire fighter can be located and rescued.

101-A.4.2.4 An emergency call for assistance can be initiated by the use of a radio, pass device, or other means to alert others to a fire fighter's need of emergency assistance. This should also include the term *mayday*, *fire fighter down*, or such other terminology as determined by the AHJ.

Requisite Knowledge:

- a. Personnel accountability systems
 - 1. Passport
 - 2. Tag system
 - 3. Electronic system
- b. Emergency communication procedures
 - 1. Radio
 - 2. Face-to-face
 - 3. Tagline
 - 4. Evacuation signal
- c. Emergency evacuation methods
 - 1. Roof escape
 - 2. Balcony escape
 - 3. Self rescue
 - 4. Ladder escape
 - 5. Room escape

Requisite Skills. The ability to initiate an emergency call for assistance in accordance with the AHJ's procedures, the ability to use other methods of emergency calls for assistance.

101-4.3 **Fireground Operations**

This duty shall involve performing activities necessary to ensure life safety, fire control, and property conservation, according to the JPRs in 4.3.1 through 4.3.21.

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101-4.3.1 Use self-contained breathing apparatus (SCBA) during emergency operations, given SCBA and other personal protective equipment, so that the SCBA is correctly donned, the SCBA is correctly worn, controlled breathing techniques are used, emergency procedures are enacted if the SCBA fails, all low-air warnings are recognized, respiratory protection is not intentionally compromised, and hazardous areas are exited prior to air depletion.

101-A.4.3.1 The Fire Fighter I should already be wearing full protective clothing prior to the beginning of the SCBA-donning procedure. In addition to fully donning and activating the SCBA, the Fire Fighter I should also replace any personal protective clothing (i.e., gloves, protective hood, helmet, etc.) displaced during the donning procedure and activate the personal alert safety system (PASS) device.

Requisite Knowledge:

- a. Conditions that require respiratory protection
 - 1. Oxygen deficiency
 - 2. Elevated temperatures
 - 3. Toxic environments
 - 4. Smoke (by-products of combustion)

- b. Uses and limitations of SCBA
 - 1. Wearer
 - i. Facial and long hair
 - ii. Protective clothing
 - iii. Donning
 - a) Properly donned
 - b) SCBA correctly worn
 - iv. Eyeglasses or contact lenses
 - v. Use in high or low temperatures
 - vi. Communication
 - vii. Personal alert safety system (PASS)
 - viii. Physical conditioning
 - 2. Equipment
 - 3. Air supply
 - 4. Types of SCBA
 - i. Open circuit

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- ii. Closed circuit
 - iii. Supplied air respirators (SARs)
- c. Components of SCBA
- 1. Backpack and harness assembly
 - 2. Air cylinder assembly
 - 3. Regulator assembly
 - 4. Face piece assembly
 - 5. PASS device
 - 6. Rapid Intervention Crew/Universal Air Connection (RIC/UAC)
- d. Donning procedures
- 1. Over-the-head method
 - 2. Coat method
 - 3. Seat mounted
 - 4. Compartment mounted
- e. Breathing techniques
- 1. Controlled breathing
 - 2. Skip breathing
 - 3. Reilly Emergency Breathing Method
- f. Indications for and emergency procedures used with SCBA
- 1. Use of emergency by-pass or purge valve
 - 2. Rapid Intervention Crew/Universal Air Connection (RIC/UAC)
 - 3. Conservation of air
- g. Physical requirements of the SCBA wearer
- 1. Cardiovascular conditioning
 - 2. Respiratory conditioning
 - 3. Psychological/emotional stability
- h. Maintenance and inspections
- 1. Replacing a cylinder
 - 2. Refilling a cylinder
 - 3. Cleaning
 - 4. Inspections
 - i. Daily
 - ii. Monthly
 - iii. Annually

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Requisite Skills. The ability to control breathing, replace SCBA air cylinders, use SCBA to exit through restricted passages, initiate and complete emergency procedures in the event of SCBA failure or air depletion, and complete donning procedures.

101-4.3.2 Respond on apparatus to an emergency scene, given personal protective clothing and other necessary personal protective equipment, so that the apparatus is correctly mounted and dismounted, seat belts are used while the vehicle is in motion, and other PPE is correctly used.

101-A.4.3.2 Other personal protective equipment might include hearing protection in cabs that have a noise level in excess of 90 dBA, eye protection for fire fighters riding in jump seats that are not fully enclosed, and SCBAs for those departments that require fire fighters to don SCBAs while en route to the emergency.

Requisite Knowledge:

- a. Mounting and dismounting procedures for riding fire apparatus
 1. Hand grip
 2. Footing
 3. Seatbelt
- b. Hazards and ways to avoid hazards associated with riding apparatus
 1. Seated and utilizing safety restraints
 2. Secure loose objects in cab
 3. Close cab doors securely
- c. Prohibited practices
 1. Seated and utilizing safety restraints
 2. Hearing protection, if required
 3. Secure loose objects in cab
- d. Types of department and the means for usage
 1. Hearing protection, if required
 2. Safety bars/gates for unenclosed apparatus

Requisite Skills. The ability to use each piece of provided safety equipment.

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101-4.3.3 Establish and operate in work areas at emergency scenes, given protective equipment, traffic and scene control devices, structure fire and roadway emergency scenes, traffic hazards and downed electrical wires, photovoltaic power systems, battery storage systems, an assignment, and SOPs, so that procedures are followed, protective equipment is worn, protected work areas are established as directed using traffic and scene control devices, and the fire fighter performs assigned tasks only in established, protected work areas.

101-A.4.3.3 The safety of responders operating at an emergency scene is a key concern and one of the primary skills that the fire fighter must develop. Operations on roads and highways, on scenes where visibility is restricted, or where utilities can be unstable present a significant risk to the fire fighter as they dismount from apparatus and initiate emergency operations. Special protective equipment and constant attention to potential hazards is essential.

Fire fighters can be assigned to direct the movement of traffic at the scene or set up flare or cone lines either independently or in conjunction with law/traffic enforcement officers. A fire fighter assigned to this duty (either briefly or until the incident is under control) should understand the proper techniques to control traffic and the appropriate use of protective clothing and signaling equipment.

Federal law requires that fire department SOPs when operating on the roadway be in compliance with the US Department of Transportation publication *Manual on Uniform Traffic Control Devices*.

Requisite Knowledge:

- a. Potential hazards involved in operating on emergency scenes including vehicle traffic, utilities, and environmental conditions
 1. Vehicle traffic
 2. Utilities
 3. Environmental conditions
- b. Proper procedures for dismounting apparatus in traffic
 1. Look before you move
 2. Keep an eye on traffic
 3. Walk facing oncoming traffic

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- c. Procedures for safe operation at emergency scenes
 - 1. Follow departmental SOPS
- d. Protective equipment available for members' safety on emergency scenes and work zone designations

Requisite Skills. The ability to use personal protective clothing, deploy traffic and scene control devices, dismount apparatus, and operate in the protected work areas as directed.

101-4.3.4 Force entry into a structure, given PPE tools, and an assignment, so that the tools are used as designed, the barrier is removed, and the opening is in a safe condition and ready for entry.

101-A.4.3.4 The Fire Fighter I should be able to force entry through wood, glass, and metal doors that open in and out, overhead doors, and windows common to the community or service area.

Requisite Knowledge:

- a. Basic construction of typical doors, windows, and walls within the department's community or service area
 - 1. Doors
 - i. Swinging doors
 - a) Inward opening
 - b) Outward opening
 - c) Double swing
 - ii. Wooden doors
 - iii. Metal doors
 - iv. Tempered plate glass doors
 - v. Revolving doors
 - vi. Sliding doors
 - vii. Overhead doors
 - viii. Fire doors
 - 2. Windows
 - i. Single-Hung
 - ii. Double-Hung
 - iii. Casement windows (hinged)
 - iv. Projected windows (factory)

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3.
 - v. Awning and jalousie windows
 - vi. Plastic windows (high security)
 - vii. Screened or barred windows
3. Walls
 - i. Masonry and veneered walls
 - ii. Metal walls
 - iii. Wood frame walls
 - iv. Partition walls
- b. Operation of doors, windows, and locks
- c. Dangers associated with forcing entry through doors, windows, and walls
- d. Tools
 1. Cutting tools
 2. Prying tools
 3. Pushing/pulling tools
 4. Striking tools
- e. Maintenance of tools
 1. Axe heads and cutting edges
 2. Wooden handles
 3. Fiberglass handles
 4. Unprotected metal surfaces
 5. Power equipment

Requisite Skills. The ability to transport and operate hand and power tools and to force entry through doors, windows, and walls using assorted methods and tools.

101-4.3.5 Exit a hazardous area as a team, given vision-obscured conditions, so that a safe haven is found before exhausting the air supply, others are not endangered, and the team integrity is maintained.

101-A.4.3.5 When training exercises are intended to simulate emergency conditions, smoke-generating devices that do not create a hazard are required. Several accidents have occurred when smoke bombs or other smoke-generating devices that produce a toxic atmosphere have been used for

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training exercises. All exercises should be conducted in accordance with the requirements of NFPA 1404.

Requisite Knowledge:

- a. Personnel accountability systems
 - 1. Passport
 - 2. Tag system
 - 3. Electronic system
- b. Communication procedures
 - 1. Radio
 - 2. Face-to-face
 - 3. Tagline
 - 4. Evacuation signal
- c. Emergency evacuation methods
 - 1. Roof escape
 - 2. Balcony escape
 - 3. Self rescue
 - 4. Ladder escape
 - 5. Room escape
- d. What constitutes a safe haven
 - 1. Absence of immediately dangerous to life and health (IDLH) hazard
 - 2. Area outside of collapse zone
- e. Elements that create or indicate a hazard
- f. Emergency procedures for loss of air supply
 - 1. Stay calm/don't panic
 - 2. Activate PASS device
 - 3. Declare Mayday

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

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101-4.3.6 Set up, mount, ascend, dismount, and descend ground ladders, given single and extension ladders, an assignment, and team members if needed, so that hazards are assessed, the ladder is stable, the angle is correct for climbing, extension ladders are extended to the necessary height with the fly locked, the top is placed against a reliable structural component, and the assignment is accomplished.

101-A.4.3.6 The fire fighter should be able to accomplish this task with each type and length of ground ladder carried by the department.

Requisite Knowledge:

a. Parts of a ladder

1. Beam
2. Bed section
3. Butt
4. Butt spur
5. Fly section
6. Guides
7. Halyard
8. Heat sensor label
9. Hooks
10. Pawls(dogs)
11. Protection plates
12. Pulley
13. Rail
14. Rung
15. Staypole
16. Stops
17. Tie rod
18. Tip
19. Truss blocks

b. Hazards associated with setting up ladders

1. Overhead obstruction (energized power lines)
2. Lifting and moving
3. Uneven terrain
4. Soft spots
5. High traffic areas (doorways)
6. Exposure to flame or heat

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- c. What constitutes a stable foundation for ladder placement
 - 1. Flat, stable surface
 - 2. Non-skid surface
- d. Different angles for various tasks
 - 1. Roof
 - 2. Window
 - i. Entry
 - ii. Ventilation or working
 - iii. Rescue set
- e. Climbing techniques
- f. Safety limits to the degree of angulation
- g. What constitutes a reliable structural component for top placement

Requisite Skills. The ability to carry ladders, raise ladders, extend ladders and lock flies, determine that a wall and roof will support the ladder, judge extension ladder height requirements, and place the ladder to avoid obvious hazards, mount, dismount, and descend the ladder.

101-4.3.7 Attack a passenger vehicle fire operating as a member of a team, given PPE, attack line, and hand tools, so that hazards are avoided, leaking flammable liquids are identified and controlled, protection from flash fires is maintained, all vehicle compartments are overhauled, and the fire is extinguished.

101-A.4.3.7 Passenger vehicles include automobiles, light trucks, and vans.

Requisite Knowledge:

- a. Principles of fire streams as they relate to fighting automobile fires
 - 1. Straight stream
 - 2. Fog
- b. Precautions to be followed when advancing hose lines toward an automobile
 - 1. Uphill

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2. Upwind
 3. 45-degree angle approach
- c. Observable results that a fire stream has been properly applied
- d. Identifying alternative fuels and the hazards associated with them
1. Compressed Natural Gas (CNG)
 2. Liquified Petroleum Gas (CNG)
 3. High voltage electrical power
 4. Fuel cell
- e. Dangerous conditions created during an automobile fire
1. Energy absorbing bumpers
 2. Hydraulic pistons (supports)
 - i. Trunks
 - ii. Tailgates
 - iii. Hoods
 3. Shock absorbers/struts
 4. Toxic by-products of combustion
 5. Supplemental Restraint System (SRS)
 6. Side Impact Protection System (SIPS)
 7. Batteries
 8. Combustible metals
- f. Common types of accidents or injuries related to fighting automobile fires and how to avoid them
1. Traffic hazards
 2. Injuries
 3. Respiratory
- g. How to access locked passenger, trunk, and engine compartments
- h. Methods for overhauling an automobile
1. Chock wheels
 2. Disable battery
 3. Apply water thoroughly
 4. Confirm no leaking fluids or fuels

Requisite Skills. The ability to identify automobile fuel type; assess and control fuel leaks; open, close, and adjust the flow and pattern on nozzles;

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apply water for maximum effectiveness while maintaining flash fire protection; advance 1 ½ in. (38 mm) or larger diameter attack lines; and expose hidden fires by opening all automobile compartments.

101-4.3.8 Extinguish fires in exterior Class A materials, given fires in stacked or piled and small unattached structures or storage containers that can be fought from the exterior, attack lines, hand tools and master stream devices, and an assignment, so that exposures are protected, the spread of fire is stopped, collapse hazards are avoided, water application is effective, the fire is extinguished, and signs of the origin area(s) and arson are preserved.

101-A.4.3.8 The Fire Fighter I should be able to extinguish fires in stacked or piled materials such as hay bales, pallets, lumber, piles of mulch, sawdust, other bulk Class A materials, or small unattached structures that are attacked from the exterior. The tactics for extinguishing each of these types of fires are similar enough to be included in one JPR.

Live fire evolutions should be conducted in accordance with the requirements of NFPA 1403. It is further recommended that prior to involvement in live fire evolutions, the fire fighter demonstrate the use of SCBA in smoke and elevated temperature conditions.

In areas where environmental or other concerns restrict the use of Class A fuels for training evolutions, properly installed and monitored gas-fueled fire simulators might be substituted.

Requisite Knowledge:

- a. Types of attack lines and water streams appropriate for attacking stacked piled materials and outdoor fires
 1. Types of attack lines
 - i. ¾ or 1 inch (booster or reel line)
 - ii. 1½ to 1¾ inches
 - iii. 2 to 2½ inches
 - iv. 3 inch or greater
 2. Water streams
 - i. Low volume (less than 40 GPM)
 - ii. Handline (40 to 350 GPM)
 - iii. Master (350 GPM or greater)

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- b. Dangers — such as collapse — associated with stacked and piled materials
 - 1. Collapse
 - 2. Products of combustion
 - 3. Increased weight (absorption of water)
 - 4. Exposures

- c. Various extinguishing agents and their effect on different material configurations
 - 1. Water
 - i. Cooling
 - ii. Increased surface tension
 - 2. Foam
 - i. Blanketing or smothering
 - ii. Cooling
 - iii. Decreased surface tension

- d. Tools and methods to use in breaking up various types of materials
 - 1. Tools
 - i. Pike pole
 - ii. Rake
 - 2. Heavy equipment
 - i. Tractor
 - ii. Dozer

- e. Difficulties related to complete extinguishment of stacked and piled materials
 - 1. Agent penetration
 - 2. Access
 - 3. Density of material
 - 4. Height and area of pile

- f. Water application methods for exposure protection and fire extinguishment
 - 1. Direct application
 - 2. Indirect application

- g. Dangers such as exposure to toxic or hazardous materials associated with storage building and container fires

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- h. Obvious signs of origin and cause; and techniques for the preservation of fire cause evidence
 - 1. Burn pattern
 - 2. Charring
 - 3. Evidence of accelerants
 - 4. Trailers
 - 5. Protect evidence
 - 6. Preserve area
 - 7. Limit access

- i. Techniques for the preservation of fire cause evidence
 - a. Protect evidence
 - b. Preserve area
 - c. Limit access

Requisite Skills. The ability to recognize inherent hazards related to the material's configuration, operate handlines or master streams, break up material using hand tools and water streams, evaluate for complete extinguishment, operate hose lines and other water application devices, evaluate and modify water application for maximum penetration, search for and expose hidden fires, assess patterns for origin determination, and evaluate for complete extinguishment.

101-4.3.9 Conduct a search and rescue in a structure operating as a member of a team, given an assignment, obscured vision conditions, personal protective equipment, a flashlight, forcible entry tools, hose lines, and ladders when necessary, so that ladders are correctly placed when used, all assigned areas are searched, all victims are located and removed, team integrity is maintained, and team members' safety — including respiratory protection — is not compromised.

101-A.4.3.9 Fire departments and training organizations must use reason and good judgment when training fire fighters to perform fire fighter rescue (rapid intervention) and self-survival evolutions. Training programs should put more emphasis on avoiding being trapped or disoriented in severe fire conditions than they should on getting out of them. While learning practical fire fighter rescue and self-survival skills is important, the particular skills that are taught should not require fire fighters to use tools beyond the limits of their intended use, should not place the fire fighters in an

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inordinate amount of danger during the training evolutions, and should be techniques that could realistically be required on the fireground. Fire departments and training organizations should balance the risk of injury or death to the fire fighter during training on these evolutions with the actual chance that they would ever need to apply them in real life. There are numerous accounts of fire fighters being injured or killed during rapid intervention and self-survival training of skills that will never, or should never, be performed on the fireground. One example of these questionable techniques is sliding down ground ladders. In the rare event that more than one fire fighter will need to exit the same window in an expedient manner, once the first fire fighter steps down two or three rungs, they are not obstructing the next fire fighter from exiting the window. Yet, numerous fire fighters have been seriously injured or died attempting to perform this task in training.

From NFPA 1001 (2019 Edition) Annex, A.4.3.9(B):

“It is not the intent of the Technical Committee on Fire Fighter Professional Qualifications to prohibit a fire fighter from partially or completely removing the backpack assembly, as an emergency procedure only, to exit through a restricted passage, without removing the face piece or compromising the air supply in any manner.”

Requisite Knowledge:

- a. Use of forcible entry tools during rescue operations
 1. Striking
 2. Prying
 3. Cutting
 4. Pushing/Pulling
- b. Ladder operations for rescue
 1. Conscious victim
 2. Unconscious victim
 3. Fire fighter rescue
- c. Psychological effects of operating in obscured conditions and ways to manage them
- d. Methods to determine if an area is tenable
 1. Level of heat

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2. Smoke
 3. Ventilation-limited fire conditions
 4. Creation of flow paths
 5. Structural stability
 6. Risk/benefit analysis
- e. Primary and secondary search techniques
1. Define the following
 - i. Primary search
 - ii. Secondary search
 2. Search techniques
 - i. Right hand/left hand
 - ii. Large area/small area considerations
 - iii. Rope assisted, or hose line
 - iv. Tools (used to extend reach during search)
 - v. Vent-Enter-Isolate-Search (VEIS)
- f. Team members' roles and goals
1. Finding victims
 2. Obtaining information on the extent of the fire
 3. Search priorities
 - i. Closest to fire area
 - ii. Remainder of fire floor
 - iii. Floor above
 - iv. Floor below
 4. Rescue vs. recovery
- g. Methods to use and indicators of finding victims
1. Probable victim locations
 - i. Behind doors
 - ii. Under windows
 - iii. On/under beds
 - iv. In closets
 - v. In bathtubs
 2. Additional considerations
 - i. Type of occupancy
 - ii. Time of day
 - iii. Building size and arrangement
 - iv. Information from neighbors
 - v. Occupant indicators

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- a) Vehicles in driveway
 - b) Toys in yard
- h. Victim removal methods
- 1. Types of carries
 - i. Extremity carry
 - ii. Seat carry
 - iii. Chair carry
 - iv. Webbing drag
 - v. Blanket drag
 - vi. Ladder rescue
 - a) Conscious
 - b) Unconscious
 - 2. Securing of a victim
 - i. Basket
 - ii. Stretcher
 - iii. Long spine board
 - iv. Other devices
- i. Considerations related to respiratory protection
- 1. Personal use/work time
 - 2. Emergency procedures
 - 3. Rescue air/RIT pak
 - 4. Conditions for use
 - i. Heat
 - ii. Smoke
 - iii. Oxygen deficiency
 - iv. Toxic atmospheres

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

- 101-4.3.10 Attack an interior structure fire operating as a member of a team, given an attack line, ladders when needed, personal protective equipment, tools, and an assignment, so that team integrity is maintained, the attack line is deployed for advancement, ladders are correctly placed when used,

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access is gained into the fire area, effective water application practices are used, the fire is approached correctly, attack techniques facilitate suppression given the level of the fire, hidden fires are located and controlled, the correct body posture is maintained, hazards are recognized and managed, and the fire is brought under control.

101-A.4.3.10 The Fire Fighter I should be proficient in the various attack approaches for room and contents fires at three different levels (at grade, above grade, and below grade). Maintenance of body posture in the standard refers to staying low during initial attack, protecting oneself from falling objects, and otherwise using common sense given the state of the fire's growth or suppression. Live fire evolutions should be conducted in accordance with the requirements of NFPA 1403. It is further recommended that prior to involvement in live fire evolutions, the fire fighter demonstrates the use of SCBA in smoke and elevated temperature conditions. In areas where environmental or other concerns restrict the use of Class A fuels for training evolutions, properly installed and monitored gas-fueled fire simulators might be substituted.

Requisite Knowledge:

- a. Principles of fire streams
 1. Definitions
 - i. Pressure
 - ii. Friction loss
 - iii. Elevation loss/gain
 - iv. Fire stream
 - v. Vaporization
 - vi. Latent heat vaporization
 - vii. British Thermal Unit (BTU)
 - viii. Water hammer
 2. Fire streams
 - i. Low-volume stream
 - ii. Handline stream
 - iii. Master stream
 - iv. Cooling/extinguishing properties
- b. Types, design, operation, nozzle pressure effects, and flow capabilities of nozzles
 1. Solid stream

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- i. Types
 - ii. Advantages
 - iii. Disadvantages
 - iv. Flow rate
2. Fog stream
 - i. Types
 - ii. Advantages
 - iii. Disadvantages
 - iv. Flow rate
 - v. Water flow adjustment
 - a) Manually adjustable
 - b) Automatic (constant-pressure)
 - vi. Stream patterns
 - a) Straight stream
 - b) Narrow fog
 - c) Wide fog
 - vii. Broken stream
 - a) Types
 - b) Advantages
 - c) Flow rate
3. Specialty nozzles
 - i. Types
 - ii. Advantages
 - iii. Disadvantages
4. Solid stream nozzle
 - i. Components/parts
 - ii. Operating pressure
 - a) 50 psi hand line
 - b) 80 psi master stream
5. Fog stream nozzle
 - i. Components/parts
 - ii. Operating pressure
 - a) 100 psi hand line
 - b) 50-75 psi low pressure hand line
 - c) 100 psi master stream
6. Broken stream nozzle
 - i. Components/parts
 - ii. Operating pressure varies by design
7. Operating valves
 - i. Ball valve

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- ii. Slide valve
 - iii. Rotary control valve
 - 8. Flow selection
 - i. Automatic
 - ii. Adjustable
 - iii. Fixed
 - 9. Reach
 - i. Solid stream
 - ii. Fog stream
 - iii. Broken stream
 - 10. Nozzlereaction
 - i. Solid stream
 - ii. Fog stream
 - iii. Broken stream
 - 11. Water pattern
 - i. Solid stream
 - ii. Straight stream
 - iii. Narrow fog
 - iv. Wide fog
 - v. Broken stream
 - 12. Flow paths caused by air entrainment
 - i. Solid or straight streams
 - ii. Fog streams
 - 13. Low volume nozzles – 40 GPM or less
 - 14. Hand line nozzles – 40-350 GPM
 - 15. Master stream nozzles – 350 GPM and above
- c. Precautions to be followed when advancing hose lines to a fire
 - 1. Into a structure
 - 2. Up a stairway
 - 3. Down a stairway
 - 4. From a standpipe
 - 5. Up a ladder
- d. Observable results that a fire stream has been properly applied
 - 1. Direct attack
 - i. Smoke
 - ii. Heat
 - iii. Flame
 - 2. Indirect attack

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- i. Smoke
 - ii. Heat
 - iii. Flame
 - iv. Patterns
 - a) T pattern
 - b) Z pattern
 - c) O pattern
 - 3. Combination attack
 - i. Smoke
 - ii. Heat
 - iii. Flame
 - iv. Patterns
 - a) T pattern
 - b) Z pattern
 - c) O pattern
 - e. Dangerous building conditions created by fire
 - 1. Flashover
 - 2. Rollover
 - 3. Ventilation-limited
 - 4. Backdraft
 - 5. Smoke explosion
 - 6. Imminent building collapse
 - 7. Fire behind, below, or above attack team
 - 8. Kinks or obstructions to the hose line
 - 9. Holes, weak stairs, or other fall hazards
 - 10. Suspended loads on fire-weakened supports
 - 11. Hazardous or highly flammable commodities likely to spill
 - 12. Electrical shock hazards
 - f. Principles of exposure protection
 - 1. Conduction
 - 2. Convection
 - 3. Radiation
 - g. Potential long-term consequences of exposure to products of combustion
 - 1. Respiratory diseases
 - 2. Cardiovascular diseases
 - 3. Stroke
 - 4. Cancer

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5. Death

- h. Physical states of matter in which fuels are found
 - 1. Solid
 - 2. Liquid
 - 3. Gaseous
- i. Common types of accidents or injuries and their causes
 - 1. Common injuries
 - 2. Common activities
 - 3. Common causes
 - i. Slips, trips, falls
 - ii. Failure to wear proper PPE
 - iii. Failure to follow safety procedures
- j. The application of each size and type of attack line, the role of the backup team in fire attack situations, attack and control techniques for grade level and above and below grade levels
 - 1. 30-350 GPM
 - 2. 1½” to 3” hose lines
 - 3. AHJ
 - 4. “Two-in/two-out” rule
 - 5. Fire fighter rescue
 - 6. AHJ
 - 7. Grade level
 - i. Single story structures
 - ii. Large single story structures
 - 8. Above grade level
 - i. Multi-story structures
 - ii. Low-rise
 - iii. Mid-rise
 - iv. High-rise
 - 9. Below grade level
 - i. Basements
 - ii. Vaults
 - 10. Coordinating fire attack with ventilation
 - 11. Exterior offensive attack
 - i. Blitz attack
 - ii. Transitional attack
 - iii. Softening the target

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- k. Exposing hidden fires
 - 1. Overhaul techniques
 - i. Opening walls
 - ii. Opening floors
 - iii. Opening ceilings
 - 2. Other concealed spaces – special considerations

Requisite Skills. The ability to prevent water hammers when shutting down nozzles; open, close, and adjust nozzle flow and patterns; apply water using direct, indirect, and combination attacks; advance charged and uncharged 1 ½ in. (38 mm) diameter or larger hose lines up ladders and up and down interior and exterior stairways; extend hose lines; replace burst hose sections; operate charged hose lines of 1 ½ in. (38 mm) diameter or larger while secured to a ground ladder; couple and uncouple various handline connections; carry hose; attack fires at grade level and above and below grade levels; and locate and suppress interior wall and subfloor fires.

- 101-4.3.11 Perform horizontal ventilation on a structure operating as part of a team, given an assignment, PPE, ventilation tools, equipment, and ladders, so that the ventilation openings are free of obstructions, tools are used as designed, ladders are correctly placed, ventilation devices are correctly placed, and the structure is cleared of smoke.

Requisite Knowledge:

- a. Principles, advantages, limitations, and effects of horizontal, mechanical, and hydraulic ventilation
 - 1. Purposes
 - i. Life safety
 - ii. Fire attack and extinguishment
 - iii. Fire spread control
 - iv. Reduce flashover potential
 - v. Reduce backdraft potential
 - vi. Property conservation
 - 2. Types of horizontal ventilation
 - i. Natural
 - ii. Mechanical
 - a) Positive pressure
 - b) Negative pressure

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- c) Hydraulic
 - 3. Advantages
 - i. Natural
 - ii. Mechanical
 - a) Positive pressure
 - b) Negative pressure
 - c) Hydraulic
 - 4. Limitations
 - i. Natural
 - ii. Mechanical
 - a) Positive pressure
 - b) Negative pressure
 - c) Hydraulic
 - 5. Effects
 - i. Natural
 - ii. Mechanical
 - a) Positive pressure
 - b) Negative pressure
 - c) Hydraulic
- b. Safety considerations when venting a structure
 - 1. Life safety hazards
 - 2. Determining the location and extent of the fire
 - 3. Identifying building construction features
 - 4. Flow paths
 - 5. Predicting fire travel and growth
- c. Fire behavior in a structure
 - 1. Products of combustion
 - 2. Behavior of heat, smoke and fire gases
 - 3. Airflow characteristics
- d. The products of combustion found in a structure fire
 - 1. Heat
 - 2. Smoke
 - 3. Gases and irritants
- e. The signs, causes, effects, and prevention of backdrafts
 - 1. Signs
 - 2. Causes

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3. Effects
4. Prevention

- f. The relationship of oxygen concentration to life safety and fire growth
 1. Firefighter safety
 2. Victim safety

Requisite Skills. The ability to transport and operate ventilation tools and equipment and ladders, and to use safe procedures for breaking window and door glass and removing obstructions.

- 101-4.3.12 Perform vertical ventilation on a structure as part of a team, given an assignment, PPE, ground and roof ladders, and tools, so that ladders are positioned for ventilation, a specified opening is created, all ventilation barriers are removed, structural integrity is not compromised, products of combustion are released from the structure, and the team retreats from the area when ventilation is accomplished.

Requisite Knowledge:

- a. The methods of heat transfer
 1. Conduction
 2. Convection
 3. Radiation
- b. The principles of thermal layering within a structure on fire
 1. Definition of thermal layering (i.e. heat stratification, thermal balance)
 2. Thermal layering as it relates to ventilation
 3. Thermal layering in relation to life safety/rescue
 4. Roof styles
 - i. Flat
 - ii. Pitched
 1. Hip
 2. Gable
 3. Mansard
 4. Shed
 5. Gambrel

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- c. The techniques and safety precautions for venting flat roofs, pitched roofs, and basements;
 1. Weather conditions
 2. Determining need
 3. Exposures
 4. Obstructions/weight on roof
 5. Maintain structural support integrity during cut
 6. PPE
 7. Tools
 8. Ladder placement
 9. Sounding roof
 10. Slips, trips, and falls
 11. Reduced visibility
 12. Equipment safety
 13. Location of vent cut
 14. Secondary means of escape
 15. Personnel
 16. Types of cuts
 17. Angle of pitch
 18. Weather conditions
 19. Determining need
 20. Exposures
 21. Obstructions/weight on roof
 22. Maintain structural support integrity during cut
 23. PPE
 24. Tools
 25. Ladder placement
 26. Sounding roof
 27. Slips, trips, and falls
 28. Reduced visibility
 29. Equipment safety
 30. Location of vent cut
 31. Secondary means of escape
 32. Personnel
 33. Types of cuts
 34. Determining need
 35. Exposures
 36. Obstructions/weight on floor above
 37. Maintain structural support integrity during cut
 38. PPE

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39. Tools
 40. Slips, trips, and falls
 41. Reduced visibility
 42. Equipment safety
 43. Location of ventilation openings
 44. Personnel
- d. Basic indicators of potential collapse or roof failure
 1. Construction
 - i. Solid beam
 - ii. Light weight trusses
 2. Size up
 - i. Sagging roof
 - ii. Spongy roof
 - iii. Melting tar
 - iv. Smoke seepage
 - v. Visible fire
 3. Elapsed time of fire
 - e. The effects of construction type and elapsed time under fire conditions on structural integrity
 1. Fire spread
 - f. The advantages and disadvantages of vertical and trench/strip ventilation

Requisite Skills. The ability to transport and operate ventilation tools and equipment; hoist ventilation tools to a roof; cut roofing and flooring materials to vent flat roofs, pitched roofs, and basements; sound a roof for integrity; clear an opening with hand tools; select, carry, deploy, and secure ground ladders for ventilation activities; deploy roof ladders on pitched roofs while secured to a ground ladder; and carry ventilation-related tools and equipment while ascending and descending ladders.

- 101-4.3.13 Overhaul a fire scene, given PPE, an attack line, hand tools, a flashlight, and an assignment, so that structural integrity is not compromised, all hidden fires are discovered, fire cause evidence is preserved, and the fire is extinguished.

Requisite Knowledge:

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- a. Types of fire attack lines and water application devices most effective for overhaul
 - 1. Attack lines
 - 2. Fire extinguishers
 - 3. Buckets and basins
 - 4. SOPs per AHJ

- b. Water application methods for extinguishment that limit water damage
 - 1. Water conservation
 - 2. Soaking in buckets and basins

- c. Types of tools and methods and methods used to expose hidden fire
 - 1. Prying and pulling tools
 - 2. Cutting tools
 - 3. Striking tools
 - 4. Power tools
 - 5. Thermal imaging camera
 - 6. Sight
 - 7. Touch
 - 8. Sound
 - 9. Electronic instruments

- d. Dangers associated with overhaul
 - 1. Toxic atmospheric conditions
 - 2. Weakened floors and structural members
 - 3. Sharp objects and debris
 - 4. Utilities
 - 5. Slippery surfaces

- e. Obvious signs of area of origin or signs of arson
 - 1. Burn patterns
 - 2. Smoke markings
 - 3. Physical evidence

- f. Reasons for protection of fire scene
 - 1. Securing the scene
 - 2. Preservation of evidence

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

- 101-4.3.14 Conserve property as a member of a team, given salvage tools and equipment and an assignment, so that the building and its contents are protected from further damage.

Requisite Knowledge:

- a. The purpose of property conservation and its value to the public
- b. Methods used to protect property
 1. Removal of property
 2. Protection of property in place
- c. Types of and uses for salvage covers
 1. Types
 2. Uses
 - i. Cover property
 - ii. Construct basins, chutes and catchalls
 - iii. Floor runners
 - iv. Debris removal
- d. Operations at properties protected with automatic sprinklers
- e. How to stop the flow of water from an automatic sprinkler head
 1. Sprinkler stops and wedges
 2. Operate main control valves
- f. Identification of the main control valve on an automatic sprinkler system
 1. Sprinkler riser
 2. Indication valves
 - i. Outside stem and yoke (OS&Y)
 - ii. Butterfly valve
 - iii. Wall post indicator valve (WPIV)

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- iv. Post indicator valve (PIV)
- v. Post indicator valve assembly (PIVA)

- g. Forcible entry issues related to salvage
 - 1. Utilize forcible entry when necessary
 - 2. Try before you pry

- h. Procedures for protecting possible areas of origin and potential evidence

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

101-4.3.15 Connect a fire department pumper to a water supply as a member of a team, given supply or intake hose, hose tools, and a fire hydrant or static water source, so that connections are tight and water flow is unobstructed.

101-A.4.3.15 Static water sources can include portable water tanks, ponds, creeks, and so forth.

Requisite Knowledge:

- a. Loading and off-loading procedures for mobile water supply apparatus
 - 1. Portable water tanks
 - 2. Drafting and siphoning appliances
 - 3. Relay pumping apparatus
 - 4. Fill apparatus and drafting appliances
 - 5. Portable pumps
 - 6. Fire hydrant appliances
 - 7. Dry hydrants or suction supply points

- b. Fire hydrant operation
 - 1. Types
 - i. Dry barrel hydrant

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- ii. Wet barrel hydrant
 2. Color coding
 - i. Class AA light blue
 - ii. Class A green
 - iii. Class B orange
 - iv. Class C red
- c. Suitable static water supply sources, procedures, and protocol for connecting to various water sources
 1. Lakes
 2. Rivers
 3. Streams
 4. Ponds
 5. Pools
 6. Hydrant to pumper connection
 - i. Forward hose lay
 - ii. Reverse hose lay
 7. Drafting

Requisite Skills. The ability to hand lay a supply hose, connect and place hard suction hose for drafting operations, deploy portable water tanks as well as the equipment necessary to transfer water between and draft from them, make hydrant-to-pumper hose connections for forward and reverse lays, connect supply hose to a hydrant, and fully open and close the hydrant.

101-4.3.16 Extinguish incipient Class A, Class B, and Class C fires, given a selection of portable fire extinguishers, so that the correct extinguisher is chosen, the fire is completely extinguished, and correct extinguisher-handling techniques are followed.

101-A.4.3.16 The Fire Fighter I should be able to extinguish incipient Class A fires such as wastebaskets, small piles of pallets, wood, or hay; Class B fires of approximately 9 ft² (0.84 m²); and Class C fires where the electrical equipment is energized. If the Fire Department has Class D or K type extinguishers, the fire fighter should be knowledgeable on the devices and their use.

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Requisite Knowledge:

- a. Classifications of fire
 1. Class A – ordinary combustible materials
 2. Class B – flammable and/or combustible liquids and gases
 3. Class C – energized electrical equipment
 4. Class D – combustible metals
 5. Class K – combustible cooking oils

- b. Types of, rating systems for, and risks associated with each class of fire;
 1. Combustible materials
 2. Flammable liquids and gases
 3. Energized electrical equipment
 4. Combustible metals
 5. Combustible cooking oils
 6. Class A
 - i. Wood panel
 - ii. Wood crib
 7. Class B test
 - i. Pan of flammable liquid
 - ii. n-heptane used
 8. Class C test
 - i. Applies to energized electrical fires only
 - ii. De-energized is treated as a Class A, B or D fire
 9. Class D
 - i. Metal fires only
 - ii. Dry powder agent must be formulated to the specific metal
 10. Class K test
 - i. Cooking oil fires
 - ii. Uses a specialized extinguishing agent

- c. Operating methods of portable extinguishers
 1. Acronym PASS
 - i. Pull
 - ii. Aim
 - iii. Squeeze
 - iv. Sweep
 2. Distance from the fire

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- d. Limitations of portable extinguishers
 - 1. Type of agent for fire
 - 2. Size of extinguisher for fire

Requisite Skills. The ability to operate portable fire extinguishers, approach fire with portable fire extinguishers, select an appropriate extinguisher based on the size and type of fire, and safely carry portable fire extinguishers.

- 101-4.3.17 Operate emergency scene lighting , given fire service lighting equipment, power supply , and an assignment so that emergency scene lighting equipment is operated within the manufacturer’s listed safety precautions.

Requisite Knowledge:

- a. Safety principles and practices
 - 1. Safely lifts equipment during set up
 - 2. Locates the power plant in a remote and well-ventilated position
 - 3. Arranges power cords neatly to minimize tripping hazards
 - 4. Ground Fault Interrupter (GFI) operations
- b. Power supply capacity and limitations
 - 1. Power supply (portable or mounted)
 - 2. Lights
 - 3. Auxiliary equipment
 - 4. Cords
 - 5. Connectors
- c. Light deployment methods
 - 1. Safely lifts equipment during set up
 - 2. Locates the power plant in a remote and well-ventilated position
 - 3. Arranges power cords neatly to minimize tripping hazards
 - 4. Ground Fault Interrupter (GFI) operations

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

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101-4.3.18 Turn off building utilities, given tools and an assignment, so that the assignment is safely completed.

Requisite Knowledge:

- a. Properties, principles, and safety concerns for electricity, gas, and water systems
- b. Utility disconnect methods and associated dangers;
 1. Electrical
 - i. Electric meter
 - ii. Main breaker box
 2. Natural gas meter
 3. Water meter
 4. Electrocutation
 5. Fire/explosion
- c. Use of required safety equipment

Requisite Skills. The ability to identify utility control devices, operate control valves or switches, and assess for related hazards.

101-4.3.19 Combat a ground cover fire operating as a member of a team, given protective clothing, SCBA if needed, hose lines, extinguishers or hand tools, and an assignment, so that threats to property are reported, threats to personal safety are recognized, retreat is quickly accomplished when warranted, and the assignment is completed.

101-A.4.3.19 Protective clothing is not personal protective clothing as used throughout the rest of this document. Some jurisdictions provide fire fighters with different clothing for ground cover fires than is worn for structural fires. This clothing can be substituted for structural protective clothing in order to meet the intent of this JPR.

Requisite Knowledge:

- a. Types of ground cover fires
 1. Aerial fuel
 2. Surface fuel
 3. Subsurface fuel

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- b. Parts of ground cover fires
 - 1. Head
 - 2. Origin
 - 3. Heel
 - 4. Left and Right Flanks
 - 5. Fingers
 - 6. Spot fires
 - 7. Island
 - 8. Pocket
 - 9. Green
 - 10. Black

- c. Methods to contain or suppress
 - 1. Direct attack
 - 2. Indirect attack
 - 3. Parallel attack

- d. Safety principles and practices
 - 1. Proper use of PPE
 - 2. Proper use of tools
 - 3. Scene hazard awareness
 - 4. Ten Standard Firefighting Orders
 - 5. The Watch Out Situations

Requisite Skills. The ability to determine exposure threats based on fire spread potential, protect exposures, construct a fire line or extinguish with hand tools, maintain integrity of established fire lines, and suppress ground cover fires using water.

- 101-4.3.20 Tie a knot appropriate for hoisting tools, given PPE, tools, ropes, and an assignment, so that the knots used are appropriate for hoisting tools securely and as directed.

Requisite Knowledge:

- a. Knot types and usage;
 - 1. Safety knot or overhand knot
 - 2. Half hitch
 - 3. Clove hitch
 - 4. Figure 8

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5. Figure 8 on a bight
 6. Figure 8 with a follow through
 7. Bowline
 8. Sheet bend or becket bend
- b. The difference between life safety and utility rope
1. Natural
 2. Synthetic
- c. Reasons for placing rope out of service
1. Inspection
 - i. Routine
 - ii. After use
 2. Storage
 3. Maintenance
- d. Types of knots to use for given tools, ropes, or situations
1. Hoisting an axe
 2. Pike pole
 3. Hose
 4. Ladder
 5. Power tools or fans
- e. Hoisting methods for tools and equipment
- f. Using rope to support response activities
1. Utility
 2. Life safety/rescue

Requisite Skills. The ability to hoist tools using specific knots based on the type of tool.

101-4.3.21 **Air Monitoring**

Operate air-monitoring instrument, given an air monitor and an assignment or task, so that the device is operated and the fire fighter recognizes the high- or low-level alarms of the air monitor and takes action to mitigate the hazard.

Requisite Knowledge:

- a. Knowledge of the various uses for an air monitor
- b. Basic operation of an air monitor
- c. Recognition and emergency actions to be taken upon the activation of the high- or low-level alarms of the air monitor

Requisite Skills. The ability to operate the air monitor, recognize the alarms, and react to the alarms of the air monitor.

101-4.4 **Rescue Operations**

This duty shall involve no requirements for Fire Fighter I.

101-4.5 **Preparedness and Maintenance**

This duty shall involve performing activities that reduce the loss of life and property due to fire through response readiness, according to the JPRs in 4.5.1 and 4.5.2.

101-4.5.1 Clean and check ladders, ventilation equipment, SCBA, ropes, salvage equipment, and hand tools, given cleaning tools, cleaning supplies, and an assignment, so that equipment is clean and maintained according to manufacturer's or departmental guidelines, maintenance is recorded, and equipment is placed in a ready state or reported otherwise.

101-A.4.5.1 It is known that during an overhaul, many fire fighters remove their respiratory protective equipment and, as a result, expose themselves to probable contamination by carcinogens, toxic substances, and so forth. Respiratory protective equipment should be worn during overhaul, and all PPE should be washed down after any incident involving fire prior to leaving the scene.

Requisite Knowledge:

- a. Types of cleaning methods for various tools and equipment
 1. Ladders
 2. Ventilation equipment
 3. SCBA
 4. Ropes

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5. Salvage equipment
 6. Hand tools
- b. Correct use of cleaning solvents
 1. Mild diluted detergent
 2. Safety solvent
 3. Water
 4. Manufacturer's recommendations
 - c. Manufacturers or departmental guidelines for cleaning equipment and tools.

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

- 101-4.5.1 Clean, inspect, and return fire hose to service, given washing equipment, water, detergent, tools, and replacement gaskets, so that damage is noted and corrected, the hose is clean, and the equipment is placed in a ready state for service.

Requisite Knowledge:

- a. Departmental procedures for noting a defective hose and removing it from service
- b. Cleaning methods
 1. Rinse
 2. Gently scrub with mild detergent
 3. Final rinse
- c. Hose rolls and loads
 1. Straight roll
 2. Donut roll
 3. Twin donut roll
 4. Self-locking twin donut roll
 5. Forward lay
 6. Reverse lay
 7. Accordion load
 8. Horseshoe load

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9. Flat load
10. Triple layer load
11. Minuteman load

Requisite Skills. The ability to clean different types of hose, operate hose washing and drying equipment, mark defective hose, and replace coupling gaskets, roll hose, and reload hose.

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CERTIFICATION CURRICULUM MANUAL – CHAPTER ONE

FIRE FIGHTER II

SECTION 102

BASIC FIRE SUPPRESSION – FIREFIGHTER II

A Basic Structure Fire Protection Personnel is a Fire Fighter who has met all the job performance requirements of Fire Fighter I and Fire Fighter II as defined in NFPA 1001 *Standard for Fire Fighter Professional Qualifications*. In order to satisfactorily meet these requirements, the Fire Fighter trainee must meet all the job performance requirements (JPRs) and demonstrate mastery of all the knowledge, skills, and ability requirements of the following components of the Texas Commission on Fire Protection Certification Curriculum Manual:

- Chapter 1, Section 101 – 4 Basic Fire Suppression – Firefighter I
- Chapter 1, Section 102 – 5 Basic Fire Suppression – Firefighter II
- Chapter 6, Section 601 – 4 Hazardous Materials Awareness
- Chapter 6, Section 602 – 5 Hazardous Materials Operations
- Chapter 6, Section 603 – 6.1 Hazardous Materials Operations – Mission Specific Competencies – Using Personal Protective Equipment
- Chapter 6, Section 603 – 6.6 Hazardous Materials Operations – Mission Specific Competencies – Product Control

102-5.1 **General**

102-5.1.1 **General Knowledge Requirements**

Responsibilities of the Fire Fighter II in assuming and transferring command within an incident management system, performing assigned duties in conformance with applicable NFPA and other safety regulations and authority having jurisdiction AHJ procedures, and the role of a Fire Fighter II within the organization.

- a. Identify and describe the purpose of an Incident Management System
 1. Common terminology
 2. Modular organization
 3. Integrated communications
 4. Unified command structure
 5. Incident Action Plan (IAP)
 6. Manageable span of control
 7. Predesignated incident facilities
 8. Comprehensive resource management
 9. Personnel Accountability

- b. Procedure for implementing the Incident Management System
 1. Hazard and risk analysis
 - i. What has occurred?

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- ii. What is the current status of the emergency?
 - iii. Is anyone trapped or injured?
 - iv. Can the emergency be handled with the resources on scene or en route?
 - v. Does the emergency fall within the scope of the individual's training?
 - 2. Risk vs. benefit
- c. Establishing command and the transfer of command
 - 1. First on scene
 - i. Investigation
 - ii. Command
 - iii. Pass command for fast attack/rescue
 - 2. Considerations for transfer of command
 - i. Arrival of senior staff
 - ii. Specialized incident
 - iii. Resource requirements
 - iv. Time restraints
 - v. Demobilization
 - 3. Methods of transferring command
 - i. Face-to-face
 - ii. Via radio
- d. Transferring command
 - 1. Name of Incident
 - 2. Incident Status
 - 3. Safety Considerations
 - 4. Goals and Objectives Listed in the IAP
 - 5. Progress Toward Completion of Tactical Objectives
 - 6. Deployment of Assigned Resources
 - 7. Assessment of the Need for Additional Resources

102-5.1.2 General Skill Requirements

The ability to determine the need for command, organize and coordinate an incident management system until command is transferred, and function within an assigned role in an incident management system.

102-5.2 Fire Department Communications

This duty shall involve performing activities related to initiating and reporting responses, according to the JPRs in 5.2.1 and 5.2.2.

102-5.2.1 Complete a basic incident report, given the report forms, guidelines, and information, so that all pertinent information is recorded, the information is accurate, and the report is complete.

Requisite Knowledge:

- a. Content requirements for basic incident reports
 - 1. National Fire Incident Reporting System (NFIRS)
 - 2. Texas fire incident reporting system (TXFIRS)
- b. The purpose and usefulness of accurate reports
 - 1. A legal record of an incident
 - 2. Provides information to officials for evaluation performance and making changes
 - 3. Aids in determining departmental needs
- c. Consequences of inaccurate reports
 - 1. Incorrect data
 - 2. Litigation
- d. Required coding procedures
 - 1. NFIRS
 - 2. TXFIRS

Required Skills. The ability to determine necessary codes, proof reports, and operate fire department computers or other equipment necessary to complete reports.

102-5.2.2 Communicate the need for team assistance, given fire department communications equipment, SOPs, and a team, so that the supervisor is consistently informed of team needs, departmental SOPs are followed, and the assignment is accomplished safely.

102-A.5.2.2 The Fire Fighter II could be assigned to accomplish or coordinate tasks away from direct supervision. Many of these tasks could result in the need for additional or replacement personnel due to the ever-changing conditions on the scene of an emergency. The Fire Fighter II is expected to identify these needs and effectively communicate this information within an incident management system. Use of radio communication equipment necessitates that these communications be accurate and efficient.

Requisite Knowledge:

- a. SOPs for alarm assignments
- b. Fire department radio communication procedures

Requisite Skills. The ability to operate fire department communications equipment.

102-5.3 **Fireground Operations**

This duty shall involve performing activities necessary to ensure life safety, fire control, and property conservation, according to the JPRs in 5.3.1 through 5.3.4.

102-5.3.1 Extinguish an ignitable liquid fire, operating as a member of a team, given an assignment, an attack line, PPE, a foam proportioning device, a nozzle, foam concentrates, and a water supply, so that the correct type of foam concentrate is selected for the given fuel and conditions, a properly proportioned foam stream is applied to the surface of the fuel to create and maintain a foam blanket, fire is extinguished, reignition is prevented, team protection is maintained with a foam stream, and the hazard is faced until retreat to safe haven is reached

102-A.5.3.1 The Fire Fighter II should be able to accomplish this task with each type of foam concentrate used by the jurisdiction. This could include the use of both Class A and B foam concentrates on appropriate fires. When using Class B foams to attack flammable or combustible liquid fires, the Fire Fighter II should extinguish a fire of at least 100 ft² (9 m²). The Fire Fighter II is not expected to calculate application rates and densities. The intent of this JPR can be met in training through the use of training foam concentrates or gas-fired training props.

Requisite Knowledge:

- a. Methods by which foam prevents or controls a hazard
 - 1. Blanketing effect
 - 2. Vapor
 - 3. Separating
 - 4. Cooling
 - 5. Smothering
 - 6. Penetrating
- b. Principles by which foam is generated

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1. Components of finished foam
 - i. Foam solution
 - a) Foam concentrate
 - b) Water
 - ii. Air (aeration/mechanical agitation at the nozzle)
 2. Water + concentrate = foam solution
 3. Foam solution + air = finished foam
 4. Methods by which foam is generated
 - i. Foam Proportioning
 - a) Eduction
 - b) Injection
 - c) Premixing
 5. Foam proportioners
 - i. In Line Foam Eductors
 - ii. Foam Nozzle Eductors
 - iii. Apparatus Mounted Proportioners
 - iv. Compressed Air Foam Systems (CAFS)
 6. Balanced pressure foam system
 7. Premix
- c. Causes for poor foam generation and corrective measures
1. Foam concentrate/fuel type mismatch
 2. Fuel area and depth
 3. Wrong application rate
 4. Inadequate water supply, or pressure
 5. Foam educator type and setting
 6. Nozzle type and setting
 7. Back pressure
 8. Identify fuel type
 - i. Hydrocarbon
 - ii. Polar solvent
 9. Determine fuel depth and surface area
 10. Determine application rate (GPM/ft²)
 11. Acquire adequate supply of foam concentrate
 12. Establish water supply and correct pressure
 13. Verify proper educator operation
 - i. Setting (i.e. 1%, 3%, 6%)
 - ii. Concentrate pick-up tube
 14. Nozzle flow matches educator capability (GPM) and provides aeration
 15. Check for hose kinks and/or blockage
 16. Assure nozzle is fully open

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- d. Difference between hydrocarbon and polar solvent fuels and concentrates that work on each
 - 1. Hydrocarbon fuels
 - i. Examples
 - ii. Concentrate types
 - iii. Concentrate percentage and application rate
 - 2. Polar solvent fuels
 - i. Examples
 - ii. Concentrate types
 - iii. Concentrate percentages and application rate

- e. The characteristics, uses, and limitations of fire-fighting foams
 - 1. Protein
 - i. High water retention and heat resistance
 - ii. Effective vapor suppression
 - iii. Limited shelf life
 - iv. Poor fuel resistance
 - v. Slow knockdown
 - vi. Poor compatibility with dry chemical agents
 - 2. Fluoroprotein
 - i. Excellent fuel resistance
 - ii. Compatible with specific dry chemical agents
 - iii. High heat resistance
 - iv. Requires use of foam nozzle
 - 3. Film Forming Fluoroprotein (FFFP)
 - i. Fast film-forming capability
 - ii. High heat resistance
 - 4. Aqueous Film Forming Foam (AFFF)/Alcohol Type Concentrate (ATC)
 - i. Fast film-forming capability
 - ii. Applied with regular fog nozzles
 - iii. Compatible with specific dry chemical agents
 - iv. ATC suitable for polar solvent fuel fires
 - v. Quick drain-down may require continued application
 - 5. High-expansion foam
 - i. Reduces surface tension of water
 - ii. Excellent penetration into Class A materials
 - iii. Poor heat resistance
 - 6. Class A foams
 - i. Reduces surface tension of water
 - ii. Foamy water solution clings to surfaces
 - iii. Fast extinguishment
 - iv. Requires a more accurate proportioning system

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- v. Impacts fire investigation laboratory tests
 - vi. Creates difficult salvage operations
- f. The advantages and disadvantages of using fog nozzles versus foam nozzles for foam application
- 1. Widely available
 - 2. Variable flow and pattern
 - 3. Faster occasion when hose is pre-connected
 - 4. May not create same quality
 - 5. Creates highest quality of foam
 - 6. Useful in blanketing operations
 - 7. Not as versatile as a fog nozzle
 - 8. Stream reach less than a standard fog nozzle
- g. Foam stream application techniques
- 1. Roll-on technique
 - 2. Bank-down technique
 - 3. Rain-down technique
- h. Hazards associated with foam usage
- 1. Mildly irritating
 - 2. Mildly corrosive
 - 3. Environmental impact
 - 4. Limited foam stream reach
- i. Methods to reduce or avoid hazards
- 1. Flush affected areas with water
 - 2. Control run-off
 - 3. Additional exposure lines for personnel protection

Requisite Skills. The ability to prepare a foam concentrate supply for use, assemble foam stream components, master various foam application techniques, and approach and retreat from spills as part of a coordinated team.

- 102-5.3.2 Coordinate an interior attack line for a team's accomplishment of an assignment in a structure fire, given attack lines, personnel, PPE, and tools, so that crew integrity is established; attack techniques are selected for the given level of the fire (e.g., attic, grade level, upper levels, or basement); attack techniques are communicated to the attack teams; constant team coordination is maintained; fire growth and development is continuously evaluated; search, rescue, and ventilation requirements are

communicated or managed; hazards are reported to the attack teams; and incident command is apprised of changing conditions.

102-A.5.3.2 The Fire Fighter II should be able to coordinate the actions of the interior attack line team at common residential fires and small business fires in the fire department's district. Complex or large interior fire management should be left to the officers; however, this JPR will facilitate the development of the Fire Fighter II toward effectively handling specific assignments within large fires.

Jurisdictions that use Fire Fighter IIs as acting company officers should comply with the requirements of NFPA 1021, *Standard for Fire Officer Professional Qualifications*.

Requisite Knowledge:

- a. Selection of the nozzle and hose for fire attack, given different situations
 1. Handlines
 - i. Fog nozzles
 - ii. Solid stream
 - iii. Broken stream
 2. Master streams
 - i. Fog nozzles
 - ii. Solid stream
 3. Small diameter ($\frac{3}{4}$ ", 1", 1½", 1¾", 2") handlines
 4. Medium diameter (2½", 3") handlines
 5. Medium or large diameter hose (3½", 4", 5", 6") for master stream support

- b. Selection of adapters and appliances to be used for specific fireground situations
 1. Wyes – gated and non-gated
 2. Siamese – clapper and non-clapper
 3. Water thief
 4. Large diameter hose appliance
 5. Hydrant valve
 6. Double male
 7. Double female
 8. Reducers
 9. Adapters
 - i. Adapts one thread type to another
 - ii. Adapts threaded couplings to sexless couplings

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- c. Dangerous building conditions created by fire and fire suppression activities
 - 1. Dangerous fire conditions in a building
 - i. Ventilation-limited
 - ii. Flashover
 - iii. Backdraft
 - 2. Conditions that contribute to the spread and intensity of the fire
 - i. Fire loading
 - ii. Combustible furnishings and finishes
 - iii. Roof coverings
 - iv. Wooden floors and ceilings
 - v. Large, open spaces
 - 3. Conditions that make the building susceptible to collapse
 - i. Damage to structural system of the building from fire or firefighting activities
 - ii. Age of the building
 - iii. Lightweight or truss construction
 - iv. Older buildings exposed to weather
 - v. Firefighting operations
 - a) Improper vertical ventilation
 - b) Added weight of water used for fire extinguishment
- d. Indicators of building collapse
 - 1. Deterioration of mortar joints
 - 2. Overall age and condition of the building
 - 3. Cracks in walls, floors, ceilings, and roofs
 - 4. Signs of building repair (tie rods and stars)
 - 5. Large open spans
 - 6. Bulges, bowing and leaning of walls
 - 7. Sagging floors
 - 8. Abandoned buildings
 - 9. Large volume of fire
 - 10. Extended firefighting operations
 - 11. Smoke coming from cracks in walls
 - 12. Dark smoke from truss roof or floor spaces
 - 13. Multiple fires in same building or damage from previous fires
- e. Effects of fire and fire suppression activities on wood, masonry (brick, block, stone), cast iron, steel, reinforced concrete, gypsum wallboard, glass, and plaster on lath
- f. Search and rescue and ventilation procedures

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1. Define the following
 - i. Primary search
 - ii. Secondary search
 2. Search techniques
 - i. Right hand/left hand
 - ii. Large area/small area considerations
 - iii. Rope assisted, or hose line
 - iv. Use of tools
 - a) To extend reach
 - b) Door chocks doors/latch straps
 - c) Thermal imaging cameras
 - v. Vent-Enter-Isolate-Search (VEIS)
 - vi. Communication during search
 - vii. Search marking systems
 3. Door control
 4. Types
 - i. Natural
 - ii. Mechanical
 - a) Positive pressure
 - b) Negative pressure
 - c) Hydraulic
 5. Techniques
 - i. Horizontal
 - ii. Vertical
 6. Coordinate with fire attack
 7. Special considerations
 - i. Concrete roofs
 - ii. Metal roofs
 - iii. Ventilating basements
 - iv. Ventilating high-rises
 - v. Ventilating windowless buildings
 - vi. Ventilating large buildings
 8. Flow paths
 - i. Improving flow
 - ii. Interrupting flow
- g. Indicators of structural instability
1. Truss
 2. Lightweight construction
 3. Cracks or separations in walls, floors, ceilings and roof structures
 4. Presence of tie rods and stars
 5. Loose bricks, blocks, or stones falling from buildings

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6. Deteriorated mortar joints
 7. Walls that appear to be leaning
 8. Structural members that appear to be distorted
- h. Suppression approaches and practices for various types of structural fires
1. Offensive
 2. Exterior offensive attack
 - i. Blitz attack
 - ii. Transitional attack
 - iii. Softening the target
 3. Defensive
 4. Occupancy
 - i. Single-family dwellings
 - ii. Multi-family dwellings
 - iii. Commercial occupancies
 - iv. High-rises
 5. Residential fires
 - i. Attic
 - ii. Grade-level
 - iii. Upper-level
 - iv. Basement
 - v. Concealed spaces
 6. Small business fires
 - i. Attic
 - ii. Grade-level
 - iii. Upper-level
 - iv. Basement
 - v. Concealed spaces
- i. The association between specific tools and special forcible entry needs
1. Hand tools
 - i. Pry axe
 - ii. Detroit door opener
 2. Power tools
 - i. Chain saw
 - ii. Circular saw
 - iii. Reciprocating saw
 - iv. Drill
 3. Lock tools
 - i. A tool
 - ii. K tool
 - iii. J tool

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- iv. Shove knife
 - v. Duck bill lock breaker
 - vi. Locking pliers and chain
 - vii. Bam bam tool
 - viii. Elevator keys
4. Hydraulic/pneumatic tools
- i. Rabbet tool
 - ii. Hydraulic spreaders
 - iii. Hydraulic rams
 - iv. Hydraulic cutters
 - v. Pneumatic spreaders
 - vi. Pneumatic cutters
 - vii. Pneumatic drills and saws

Requisite Skills. The ability to assemble a team, choose attack techniques for various levels of a fire (e.g., attic, grade level, upper levels, or basement), evaluate and forecast a fire’s growth and development, select tools for forcible entry, incorporate search and rescue procedures and ventilation procedures in the completion of the attack team efforts, and determine developing hazardous building or fire conditions.

102-5.3.3 Control a flammable gas cylinder fire, operating as a member of a team, given an assignment, a cylinder outside of a structure, an attack line, PPE, and tools, so that crew integrity is maintained, contents are identified, safe havens are identified prior to advancing, open valves are closed, flames are not extinguished unless the leaking gas is eliminated, the cylinder is cooled, cylinder integrity is evaluated, hazardous conditions are recognized and acted upon, and the cylinder is faced during approach and retreat.

102-A.5.3.3 Controlling flammable gas cylinder fires can be a very dangerous operation. The Fire Fighter II should act as a team member, under the direct supervision of an officer, during these operations.

Requisite Knowledge:

- a. Characteristics of pressurized flammable gases
 - 1. Pressure
 - 2. Vapor pressure
 - 3. Vapor density
 - 4. Expansion ratio

- b. Elements of a gas cylinder

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1. Cylinder design
 2. Cylinder valves
 3. Pressure relief valves
- c. Effects of heat and pressure on closed cylinders
1. Expansion of cylinder
 2. Pressure relief valves
 3. Container failure
- d. Boiling liquid expanding vapor explosion (BLEVE) signs and effects
1. Pinging sound of pressure-stretched metal
 2. Discoloration of metal shell
 3. Bulge or bubble in metal shell
 4. Activation of pressure relief valve
 5. Failure of pressure relief valve
 6. Increase in intensity of pressure relief valve (torch)
 7. Container failure
 8. Violent explosion with fragmentation
 9. Rapid expansion of gases
 10. Huge fireball
 11. Radiant heat
 12. Flying container fragments
- e. Methods for identifying contents
1. Placards
 2. Labels
 3. Shipping papers
 4. Facility documents
- f. How to identify safe havens before approaching flammable gas cylinder fires
1. Perform scene size-up
 - i. Note position and condition of container
 - ii. Analyze terrain
 - iii. Identify possible safe havens
- g. Water stream usage and demands for pressurized cylinder fires
1. Volume of water
 - i. Vapor space
 - ii. Point of impingement
 - iii. 500 gpm minimum
 2. Placement of streamers
 3. Manned vs. unmanned fire streams

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4. Secured, uninterrupted source
 5. Adequate stream application
- h. What to do if the fire is prematurely extinguished
1. Vapor dispersion
 2. Vapor control (close valve)
 3. Secure or eliminate ignition sources
- i. Valve types and their operation
1. Shut-off valves
 2. Pressure relief valves
- j. Alternative actions related to various hazards
1. Evacuate
 2. Isolate
 3. Allow self extinguishment
 4. Retreat
- k. When to retreat
1. Failure of relief valve
 2. Significant container damage
 3. Loss of water

Requisite Skills. The ability to execute effective advances and retreats, apply various techniques for water application, assess cylinder integrity and changing cylinder conditions, operate control valves, and choose effective procedures when conditions change.

102-5.3.4 Protect evidence of fire cause and origin, given a flashlight and overhaul tools, so that the evidence is noted and protected from further disturbance until investigators can arrive on the scene.

102-A.5.3.4 The Fire Fighter II should be able to recognize important evidence as to a fire's cause and maintain the evidence so that further testing can be done without contamination or chain-of-custody problems. Evidence should be left in place (when possible; otherwise, chain of custody must be established), not altered by improper handling, walking, and so forth, and not destroyed. Possible means to protect evidence is to avoid touching, protect with salvage covers during overhaul, or rope off the area where the evidence lies. The Fire Fighter II is not intended to be highly proficient at origin and cause determination.

Jurisdictions that use Fire Fighter IIs to determine origin and cause should comply with the requirements of NFPA 1021, *Standard for Fire Officer Professional Qualifications*.

Requisite Knowledge:

- a. Methods to assess origin and cause
 1. Smoke conditions
 2. Unusual odors
 3. Abnormal behavior of fire when water is applied
 4. Obstacles hindering fire fighting
 5. Incendiary devices, trailers and accelerants
 6. Effects of ventilation
 7. Structural modifications
 8. Charring and fire patterns
 9. Fire behavior
 10. Availability of documents
 11. Fire detection and protection systems
 12. Intrusion alarms
 13. Description of fire
 14. Contents
 15. Business records
 16. Time of day
 17. Weather conditions
 18. Vehicles and people on scene

- b. Types of evidence
 1. Physical evidence
 2. Direct evidence
 3. Circumstantial evidence

- c. Means to protect various types of evidence
 1. Securing the fire scene
 2. Chain of custody
 3. Do not gather or handle evidence
 4. Avoid trampling over evidence
 5. Avoid excess use of water
 6. Protect human footprints and tire marks
 7. Protect partially burned papers found in a furnace, stove or fireplace
 8. Leave charred documents found in containers

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- d. The role and relationship of Fire Fighter IIs, law enforcement authority , and private investigation entities in fire investigations
 - 1. The importance of writing a chronological account of important circumstances personally observed
 - 2. Identify the importance of reporting hearsay to the investigator
 - 3. Identify the importance of performing salvage and overhaul carefully
 - 4. Fire marshal
 - 5. Arson investigator
 - 6. Fire investigator
 - 7. Police
 - 8. Insurance investigator
 - 9. Private investigator

- e. The effects and problems associated with removing property or evidence from the scene
 - 1. Exigent circumstances rule
 - 2. Chain of custody
 - 3. Spoliation
 - 4. Statements
 - 5. Miranda warning
 - 6. Search and seizure

Requisite Skills. The ability to locate the fire’s origin area, recognize possible causes, and protect the evidence.

102-5.4 **Rescue Operations**

This duty shall involve performing activities related to accessing and disentangling victims from motor vehicle accidents and helping special rescue teams, according to the JPRs in 5.4.1 and 5.4.2.

102-5.4.1 Extricate a victim entrapped in a motor vehicle as part of a team, given stabilization and extrication tools, so that the vehicle is stabilized, the victim is disentangled without further injury, and hazards are managed.

102-A.5.4.1 In the context of this standard, the term *extricate* refers to those activities required to allow emergency medical personnel access to the victim, stabilization of the vehicle, the displacement or removal of vehicle components obstructing victim removal, and the protection of the victim and response personnel from hazards associated with motor vehicle accidents and the use of hand and power tools on a motor vehicle.

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As persons performing extrication can be different from those performing medical functions, this standard does not address medical care of the victim. An awareness of the needs and responsibilities of emergency medical functions is recommended to allow for efficient coordination between the “extrication” team and the “medical” team.

Requisite Knowledge:

- a. The fire department’s role at a vehicle accident
 1. Response
 2. Arrival and size-up
 3. Stabilization of the scene
 4. Gaining access and disentangling victims
 5. Removing and treating the victim

- b. Points of strength and weakness in auto body construction
 1. Vehicle door and door posts
 2. Vehicle roof
 3. Steering wheel
 4. Vehicle floor
 5. Vehicle pedals
 6. Vehicle seats
 7. Reinforced dashboard
 8. Vehicle windshield and windows
 9. Dashboard

- c. Dangers associated with vehicle components and systems
 1. Vehicle stabilization
 2. Airbag systems (SRS and SIPS)
 3. Roll over protection systems (ROPS)
 4. Hybrid electrical systems
 5. Fuels

- d. The uses and limitations of hand and power extrication equipment
 1. Hydraulic devices
 - i. Upright
 - ii. Upside down
 - iii. On its side
 - iv. On an inclined surface
 2. Pneumatic devices
 3. Block and tackle
 4. Cribbing and shoring materials
 5. Ratchet device

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6. Hydraulic extrication spreaders
 7. Hydraulic extrication shears
 8. Hydraulic extrication ram
- e. Safety procedures when using various types of extrication equipment
1. PPE
 2. Flammable hazards
 3. Electrical hazards
 4. Pinch hazards
 5. Crush hazards
 6. Vehicle safety device deployment hazards
 7. Proper tool use

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

102-5.4.2 Assist rescue operation teams, given standard operating procedures, necessary rescue equipment, and an assignment, so that procedures are followed, rescue items are recognized and retrieved in the time as prescribed by the AHJ, and the assignment is completed.

102-A.5.4.2 The Fire Fighter II is not expected to be proficient in technical rescue skills. The Fire Fighter II should be able to help technical rescue teams in their efforts to safely manage structural collapses, trench collapses, cave and tunnel emergencies, water and ice emergencies, elevator and escalator emergencies, energized electrical line emergencies, and industrial accidents.

Requisite Knowledge:

- a. The fire fighter's role at a technical rescue operation
 1. Safety
 2. Receive direction from technical rescue personnel
 3. Work as a team
 4. Basic components of rescue operations
 - i. Preparation
 - ii. Response
 - iii. Arrival and size-up
 - iv. Stabilization
 - v. Access

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- vi. Disentanglement
 - vii. Removal
 - viii. Transport
 - ix. Security of the scene and preparation for next call
 - x. Post incident analysis
- b. The hazards associated with technical rescue operations
1. Machinery
 2. Confined space
 3. Rope rescue (vertical rescue)
 4. Trench
 5. Structural collapse
 6. Water and ice
 7. Energized electrical line
 8. Elevator and escalator emergencies
 9. Wilderness
 10. Mine, tunnel and cave
 11. Industrial/hazardous materials
- c. Types and uses for rescue tools
1. Machinery (e.g., hydraulic spreaders/cutters/rams)
 2. Confined space (e.g., taglines, harnesses, supplied air respirators, air monitoring devices, tripod, winch)
 3. Rope rescue (vertical rescue, e.g., rope, carabiners, anchor plates, pulleys)
 4. Trench (e.g., shoring, cribbing, stringers, rakers, air monitoring devices)
 5. Structural collapse (e.g., jacks, shoring, cribbing)
 6. Water and ice (e.g., PFDs, throw bag of rope)
 7. Elevator and escalator emergencies (e.g., elevator keys)
 8. Wilderness (e.g., compass, GPS, stokes basket)
 9. Mine, tunnel and cave (e.g., shoring, ropes, flashlights)
- d. Rescue practices and goals
1. Machinery
 2. Confined space
 3. Rope rescue (vertical rescue)
 4. Trench
 5. Structural collapse
 6. Water and ice
 7. Elevator and escalator emergencies
 8. Wilderness
 9. Mine, tunnel and cave

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

102-5.5 **Fire and Life Safety Initiatives, Preparedness, and Maintenance**

This duty shall involve performing activities related to reducing the loss of life and property due to fire through hazard identification, inspection, and response readiness, according to the JPRs in 5.5.1 through 5.5.5.

102-5.5.1 Perform a fire safety survey in an occupied structure, given survey forms and procedures, so that fire and life safety hazards are identified, recommendations for their correction are made to the occupant, and unresolved issues are referred to the proper authority.

102-A.5.5.1 A fire safety survey is intended to be a basic survey of the property to identify major hazards such as locked exits, nonoperational fire protection and detection systems, a lack of smoke alarms in residential occupancies, nonoperational water supplies, hazardous interior finishes, hazardous storage, and other items identified on the survey form. It is not intended to be a fire inspection conducted to the job performance requirements of a Fire Inspector as identified in NFPA 1031.

Requisite Knowledge:

- a. Organizational policy and procedures
 1. Scheduling considerations
 2. Approach and introduction
 3. Conducting the survey
 4. Formulate recommendations

- b. Common causes of fire and their prevention
 1. Housekeeping practices
 2. Smoking
 3. Open burning
 4. Electrical sources of ignition
 5. Common hazards by location
 - i. Kitchen
 - ii. Living area
 - iii. Bedroom
 - iv. Garage/storage
 - v. Bathroom
 - vi. Laundry

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- vii. Attics and basements
- viii. Exterior
- 6. Special hazards

- c. The importance of a fire safety survey and public fire education programs to fire department public relations and the community
 - 1. Enhances community life safety
 - 2. Prevents loss
 - 3. Promotes community support
- d. Referral procedures

Requisite Skills. The ability to complete forms, recognize hazards, match findings to preapproved recommendations, and effectively communicate findings to occupants or referrals.

102-5.5.2 Present fire safety information to station visitors or small groups, given prepared materials, so that all information is presented, the information is accurate, and questions are answered or referred.

102-A.5.5.2 The Fire Fighter II should be able to present basic information on how to do the following:

- (1) Stop, drop, and roll when one's clothes are on fire
- (2) Crawl low under smoke
- (3) Plan and practice a home escape plan with two ways out of each room (especially sleeping rooms), a meeting place, and how to call the fire department (from the neighbor's house)
- (4) Alert others to an emergency
- (5) Call the fire department
- (6) Test and maintain residential smoke alarms according to manufacturer's instructions

The Fire Fighter II is not expected to be an accomplished speaker or instructor.

Requisite Knowledge:

- a. Parts of informational materials and how to use them
 - 1. Learn Not to Burn
 - 2. EDITH (Exit Drill In The Home)
 - 3. Installation and maintenance of smoke alarms
 - 4. Change your clock – change your battery

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5. Stop, drop and roll
6. Fire safety for babysitters
7. Fire safety for seniors
8. Fire safety for college students
9. Wildland prevention program
10. Pamphlets
11. Coloring books
12. Public service announcements (PSAs)
13. Public presentations

b. Basic presentation skills

1. Age and audience appropriateness
2. Knowledge of subject – preparation
3. Use of props
4. Professional attire
5. Positive attitude

c. Departmental standard operating procedures (SOPs) for giving fire station tours

Requisite Skills. The ability to document presentations and to use prepared materials.

102-5.5.3 Prepare a preincident survey, given forms, necessary tools, and an assignment, so that all required occupancy information is recorded, items of concern are noted, and accurate sketches or diagrams are prepared.

102-A.5.5.3 The Fire Fighter II should be able to compile information related to potential emergency incidents within their community for use by officers in the development of preincident plans. Jurisdictions that use Fire Fighter IIs to develop preincident plans should comply with the requirements of NFPA 1021, *Standard for Fire Officer Professional Qualifications*.

Requisite Knowledge:

a. The sources of water supply for fire protection

1. Pressurized
2. Static

b. The fundamentals of fire suppression and detection systems

1. Automatic sprinkler systems
 - i. Types
 - a) Wet pipe

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- b) Dry pipe
 - c) Pre-action
 - d) Deluge
 - e) Residential
 - ii. Sprinkler heads
 - a) Deflector style
 - 1) Upright
 - 2) Pendant
 - 3) Side wall
 - 4) Deluge
 - 5) Recessed
 - 6) In-rack
 - b) Activating devices
 - 1) Fusible link
 - 2) Frangible bulb
 - 3) Chemical pellet
 - iii. Control valves
 - a) Outside stem and yoke (OS&Y)
 - b) Butterfly valve
 - c) Wall post indicator valve (WPIV)
 - d) Post indicator valve (PIV)
 - e) Post indicator valve assembly (PIVA)
 - iv. Valves
 - a) Check valve
 - b) Main drain
 - c) Alarm test
 - d) Inspector test
 - v. Fire department connection (FDC)
 - a) Two 2½" inlets
 - b) One large diameter hose (LDH)
2. Standpipe systems
- i. Class I
 - a) Fire department use only
 - b) 2½" connection with a valve
 - ii. Class II
 - a) Occupant use
 - b) 1½" single jacket hose preconnected
 - iii. Class III
 - a) Occupant or fire department use
 - b) 2½" connection with 1½" reducer and hose preconnected
3. Specialized extinguishment systems
- i. Dry chemical systems

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- ii. Wet chemical systems
- iii. Foam systems
- iv. Clean agent systems
- v. Carbon dioxide systems
- 4. Fire department notification systems
 - i. Remote station systems
 - ii. Proprietary systems
 - iii. Central station systems
- 5. Fire alarm system components
 - i. Initiating devices
 - a) Heat detectors
 - 1) Fixed-temperature detectors
 - 2) Rate-of-rise detectors
 - 3) Combination rate-of-rise fixed temperature detectors
 - b) Smoke detectors
 - 1) Ionization
 - 2) Photoelectric
 - c) Flame detectors
 - 1) Ultraviolet (UV)
 - 2) Infrared (IR)
 - d) Fire – gas detectors
 - e) Manual pull station
 - ii. Notification Appliances
 - a) Audible
 - 1) Bells
 - 2) Horns
 - 3) Sirens
 - 4) Recorded announcement
 - b) Visual
 - 1) Strobes
 - 2) Rotating beacons
 - c) Textual
 - d) Tactile
 - e) Fire alarm control panel (FACP)
 - 1) Power supply
- c. Common symbols used in diagramming construction features, utilities, hazards, and fire protection systems
 - 1. Construction features
 - i. Fire escape
 - ii. Skylight
 - iii. Stairs

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- iv. Elevator
 - v. Fire wall
 - 2. Utilities
 - i. Gas
 - ii. Electric
 - iii. Water
 - 3. Fire protection
 - i. Hydrant
 - ii. Sprinkler riser
 - iii. Fire department connection
 - iv. Automatic sprinklers
 - v. Not sprinklered
 - vi. Standpipe
 - vii. Fire alarm
 - viii. Fire pump
 - 4. Hazards
 - i. Gasoline tank
 - ii. Steam boiler
 - a) Vertical
 - b) Horizontal
- d. Departmental requirements for a preincident survey and form completion
- 1. Tactical information – considerations/planning for:
 - i. Water supply
 - ii. Utilities
 - iii. Search and rescue
 - iv. Forcible entry
 - v. Ladder placement
 - vi. Ventilation
 - 2. Occupancy type
 - i. High rise
 - ii. Assembly
 - iii. Health care facilities
 - iv. Detention and correctional facilities
 - v. Residential occupancies
 - 3. Locations requiring special considerations
 - i. Gas or liquid fuel pipelines
 - ii. Electrical transmission lines
 - iii. Ships and waterways
 - iv. Subways
 - v. Railroads
 - vi. Airports

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- vii. Industrial facilities
 - viii. Hazardous materials bulk storage locations
- e. The importance of accurate diagrams
- 1. Accurate diagrams promote better decision making
 - 2. Enhances civilian and firefighter safety
 - 3. Search and rescue operations are conducted efficiently

Requisite Skills. The ability to identify the components of fire suppression and detection systems; sketch the site, buildings, and special features; detect hazards and special considerations to include in the preincident sketch; and complete all related departmental forms.

- 102-5.5.4 Maintain power plants, power tools, and lighting equipment, given tools and manufacturers' instructions, so that equipment is clean and maintained according to manufacturer and departmental guidelines, maintenance is recorded, and equipment is placed in a ready state or reported otherwise.

Requisite Knowledge:

- a. Types of cleaning methods
 - 1. Metal parts
 - 2. Wood parts
 - 3. Fiberglass/synthetic parts
 - 4. Cutting edges
 - 5. Power tools
 - 6. Electrical/electronic devices
- b. Correct use of cleaning solvents
 - 1. Associated hazards
 - 2. Application
 - 3. Safety considerations
- c. Manufacturer and departmental guidelines for maintaining equipment and its documentation
 - 1. Per the manufacturer's recommendations
 - 2. Inspection frequency and procedures per AHJ
- d. Problem-reporting practices
 - 1. Tag problem item
 - 2. Remove from service
 - 3. Report problem per AHJ

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

102-5.5.5 Perform an annual service test on fire hose, given a pump, a marking device, pressure gauges, a timer, record sheets, and related equipment, so that procedures are followed, the condition of the hose is evaluated, any damaged hose is removed from service, and the results are recorded.

102-A.5.5.5 Procedures for conducting hose testing can be found in Chapter 4 of NFPA 1962.

Requisite Knowledge:

- a. Procedures for safely conducting hose service testing
 1. Routine inspection
 - i. Lay clean hose out on flat surface
 - ii. Inspect hose for defects
 - iii. Mark defects as found
 - iv. Tag hose with description of defects found
 2. Annual service test
 - i. Don protective gear – wear helmet and gloves at a minimum
 - ii. Connect up to 300 feet maximum of hose to a discharge outlet
 - iii. Attach a nozzle or valve to the end of the hose
 - iv. Fill hose to 50 psi, remove air, twists and kinks in hose
 - v. Mark hose at the base of the coupling
 - vi. Check couplings and hose for leaks
 - vii. If couplings leak at the gasket, replace the gasket
 - viii. After gaskets are replaced or if no leaks are present, increase pressure to manufacturer’s recommended pressure per NFPA 1962 and maintain for 5 minutes
 - ix. Monitor hose and couplings for leaks or failure
 - x. Reduce pressure, depressurize hose, and drain
 - xi. Inspect marks at couplings for separation or slippage
 - xii. Tag failures or defects
 - xiii. Distinctly mark hose that passed
 - xiv. Log test results for departmental record
 3. Safety notes:
 - i. Always wear a helmet and gloves while working around pressurized hose

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- ii. Never walk over, straddle, or stand over hose being pressure tested
- b. Indicators that dictate any hose be removed from service
 - 1. Mechanical damage
 - i. Bent or damaged couplings
 - ii. Hose separating from couplings
 - iii. Cuts or holes
 - iv. Crushed suction hose
 - 2. Chemical damage
 - i. Chemical degradation
 - ii. Contamination
 - 3. Heat damage
 - i. Burn holes
 - ii. Delamination
 - 4. Mildew/rot
 - 5. Service test pressure failure (i.e. burst hose)
- c. Recording procedures for hose test results
 - 1. Hose records should contain:
 - i. Hose size/length, type, and diameter
 - ii. Date of manufacture
 - iii. Date of purchase
 - iv. Testing dates
 - v. Any repairs made
 - 2. Other information per AHJ

Requisite Skills. The ability to operate hose testing equipment and nozzles and to record results.