



## IAAI/USFA Abandoned Building Project FD Operations in Vacant/Abandoned Buildings Presentation Outline



### Introduction

This lesson is intended to introduce fire department personnel to the conditions that could lead to injury or death while operating at fires in vacant/abandoned properties. The key concept that must be communicated during this lesson is that these buildings are inherently more dangerous than most occupied structures. The importance of conducting a size-up that included analysis of the potential hazards the buildings pose, utilizing special equipment such as thermal imagers and limiting exposure of personnel by implementing exterior operations early in the incident should be stressed.

### Objectives

At the completion of this program, participants will be able to

1. Describe the potential hazards that vacant properties pose to firefighters.
2. Describe the factors that should be included during the size-up of a fire involving a vacant/abandoned building.
3. Describe the potential life safety hazards that vacant/abandoned buildings pose.
4. Describe methods to reduce the probabilities that a vacant/abandoned building will be occupied in the event of a fire.
5. Describe firefighting operations in vacant/abandoned buildings where there is a known life hazard verses one with no known life hazard.
6. Describe the potential hazards of exterior firefighting operations at vacant/abandoned buildings.
7. Describe how information gathered for a pre-plan or during a building evaluation of a vacant or abandoned building can be used to increase firefighter safety.

## LESSON PLAN – Evaluating Abandoned Buildings

### Lesson Plan

**Time Required:** 1.5 Hours

**Materials:**

- Support slides or slides of vacant/abandoned buildings in community
- *IAAI Field Manual: Evaluation of Vacant and Abandoned Properties*
- Vacant/Abandoned Building Evaluation Form

**References:**

- *Collapse of Burning Buildings, A Guide to Fireground Safety*, Vincent Dunn
- *Six Career Fire Fighters Killed in Cold-Storage and Warehouse Building Fire-Massachusetts*, NIOSH Investigative Report #99F-47, September 2000
- “Fighting Fires In Sealed Buildings”, Michael M. Dugan, Firehouse, June 2001

**Methodology**

- Lecture/discussion

Instructor note: The materials related to the evaluation of vacant/abandoned buildings that are also part of the IAAI/USFA Abandoned Building Project may be useful in reinforcing the types of hazards that are found in vacant and abandoned buildings.

## **LESSON PLAN – Evaluating Abandoned Buildings**

### **Program Outline**

#### **I. Introduction – Why evaluate vacant buildings?**

- A. Vacant or abandoned – What is the difference? – Discuss the difference between a vacant and an abandoned property and the importance of early intervention in the vacancy progression to deal with the properties while a viable property owner is still available.
- B. The magnitude of the problem – Discuss the statistics provided in the background section above regarding the magnitude of the problem in our cities and towns. Review the issues and statistics in your community.
- C. Do you have the authority to inspect a vacant property? – Discuss the codes and ordinances that provide the authority to inspect properties the jurisdiction and the process that must be followed.

#### **II. Safety During the Evaluation**

- A. Potential hazards in vacant or abandoned properties
  - 1. Unstable structure
  - 2. Fall and trip hazards
  - 3. Standing water in basements
  - 4. Vermin
  - 5. Hazardous materials on property
  - 6. Unauthorized occupants
  - 7. Potential for criminal activity on property
- B. Personal protective clothing and equipment
  - 1. Hard hat
  - 2. Gloves
  - 3. Safety shoes or boots
  - 4. Flashlight
  - 5. Radio

#### **III. Building Security and Marking**

- A. Why is security important
- B. What methods can be used to properly secure vacant or abandoned properties – Discuss the requirements of the jurisdiction
- C. Marking vacant and abandoned properties – Discuss the marking system used by the jurisdiction

## LESSON PLAN – Evaluating Abandoned Buildings

### IV. Evaluating the Building

#### A. The Objectives of a building evaluation

1. Determine if the building is secure
2. Identify hazards that require immediate corrective action
3. Evaluate the fire growth potential
  - a. Potential for exposure fires
  - b. Identify available fuel packages
  - c. Identify fire barriers that have been compromised
  - d. Identify the location and type of hazardous materials on the site
4. Evaluate the potential for structural collapse
5. Identify conditions that will be hazards to fire fighters in the event of a fire

#### B. Property Data

1. Owner information
2. Is the building secure? – Evaluating the security of the building and determining if there are signs of recent entry
3. Does the building have active utilities?
4. What was the original use of building and has it been modified for other uses?

#### C. Building Construction

1. Number of floors and basements
2. Structural members
3. Truss construction – Roof or floors
4. Exposed structural members – Are they exposed as part of the construction or as a result of damage to the property?
5. Construction of the exterior walls – Are metal tie rods (stars) used as part of the system?
6. Number and size of openings in the exterior walls – Discuss the implications of openings to timely discovery of the fire and the potential for exposure fires.
7. Ceiling – Discuss the hazards of different ceiling configurations and the impact on fire development that the removal of the ceiling system could have.

#### D. Evaluating the condition of the structure

1. What is the condition of the interior walls –Discuss how penetrations can allow fire spread from compartment to compartment also impact the integrity of the structure.
2. What is the condition of the roof – Discuss the implications of a deteriorated roof for early collapse and risks involved for fire fighting operations.
3. What is the overall condition of the structure – Discuss the indicators of early collapse in unstable buildings.

## **LESSON PLAN – Evaluating Abandoned Buildings**

### **E. Fire Protection Systems**

1. Is there an operational fire alarm system – Discuss the importance of keeping detection and alarm systems operational if possible
2. Are there operational sprinkler or standpipe systems in the building
3. Does the condition of suppression systems to allow them to be used if supplied by the fire department connection

### **V. Fire Potential**

#### **A. Fuel Packages**

1. What is a fuel package
2. The impact of the quantity and arrangement of fuel packages on fire growth
3. The impact of interior finish on fire development
4. Housekeeping

#### **B. The configuration of the buildings interior and fire development**

1. Large rooms
2. Medium size rooms
3. Small rooms
4. Interior configurations that could lead to fire fighters becoming lost under fire conditions

#### **C. Potential for delay in fire department notification**

1. Windowless building
2. Vacant properties surrounding property being evaluated
3. Remote location

### **VI. The Potential for Exposure Fires**

#### **A. Potential exposures**

1. Location
2. Separation
3. Occupied or vacant

### **VII. Suppression Operations in Vacant or Abandoned Structures**

#### **A. Hazards in the building**

1. Holes in floors
2. Missing stairs
3. Open shafts or pits
4. Potential for disorientation under fire conditions

#### **B. Fire Development**

1. Rapid unexpected fire development
2. Early collapse

#### **C. Impediments to fire fighting operations**

1. Delay in alarm
2. Lack of access
3. Poor water supply

## **LESSON PLAN – Evaluating Abandoned Buildings**

### **VIII. Hazardous materials located on the site**

- A. Type
- B. Quantity

### **IX. Conditions that Require Immediate Correction**

- A. Security
- B. Accumulations of trash or other fuels
- C. Significant hazards to public safety

### **X. Analysis of findings**

- A. Exposure potential
- B. Potential for multi-room fire on arrival
- C. Potential for early structural collapse
- D. Hazards to fire fighting operations

### **XI. How is the Information Used**

- A. Marking the building
- B. Initiating the correction of hazardous conditions
- C. Pre-Fire Planning
- D. Allocation of mitigation resources

The instructor can find support information in the Background Information package provided with this program.

**Attachment A – Vacant/Abandoned Building Evaluation Form**

## Building Marking

# Vacant/Abandoned Building Evaluation Form



Address: \_\_\_\_\_

Property Name: \_\_\_\_\_

Owner Name: \_\_\_\_\_ Telephone: \_\_\_\_\_

Owner Address: \_\_\_\_\_

Answer each of the following questions about the building. Select multiple options, if necessary; explain response.  
Draw a simple sketch of the location and explain your observations in a brief narrative.

**Building Security**
 Secure     Open/unsecured     Signs of recent entry
**Utilities** (Note Entry Points for each active utility on sketch)
**Active Utilities**     No     Yes    **If Yes:**     Gas     Electricity     Oil     Water
**Building Use** (The original use of the building and how it was last used)**Building Construction**
**Number of Floors** \_\_\_\_\_    **Basement:**     Yes     Sub-Basement     Multi Sub-Levels

**Exterior Walls**     Block/Brick     Curtain Wall     Wood     Metal Tie Rods (stars)

**Openings in Exterior Walls**     Many     Few     Windowless  
(Windows, Doors, etc.)

**Structural Members**     Steel     Concrete     Wood     Mixed (*Describe*)  
(Beams, Girders, Columns)

**Truss Construction**     Roof     Floors

**Exposed Structural Members**     Yes     No  
(Beams, Girders, Columns & Trusses)

**Ceiling Type**     None     Suspended     Metal     Sheetrock/Plaster     Wood
**Condition of Interior Walls and Floors** (Integrity of compartmentation)
 Good     Deteriorating     Multiple penetrations that would allow fire spread     Walls
**Condition of Roof**
 Good     Some instability/deterioration     Major deterioration     Floors
**General Condition of Structure**
 Good     Minor structural instability     Major deterioration of structural elements
**Fire Protection Systems**
**Operational Fire Alarm System**     Yes     No

**Operational Sprinkler System**     Yes     No     System off, but usable if supplied through FD connection  
(Valves open, pressure showing on gauges)

**Operational Standpipe System**     Yes     No

**Fire Department Connection**     Yes     No  
(If Yes, note location on sketch)

**Fire Potential**

**Fuel Packages** (Fuel Load)

**Quantity**  Numerous  Moderate  Limited

**Distribution**  Concentrated  Spread out

**Housekeeping**  Good  Poor

**Interior Finish**  Combustible  Non-combustible  Mixed (Describe)

**Room Size**  Large  Moderate  Small

**Potential for a delay in FD notification**  High  Medium  Low

**Exposures** (Note locations on sketch)

**Location**  **A side**  **B side**  **C side**  **D side**

**Separation** (ft) \_\_\_\_\_

**Occupied** (Y/N) \_\_\_\_\_

**Suppression Operations**

**Hazards In Building**  Holes in Floors  Missing Stairs  Open Shafts/pits

**Building Access:**  4 sides  3 sides  2 Sides  Limited

**Interior Layout**  Complicated  Normal - Walls/Partitions  Open

**Water Supply:**  Adequate  Inadequate (Note Locations on Sketch)

**Hazardous materials located on the site**  Yes  None Observed

(If Yes, describe in detail)

**Conditions that require immediate correction**  Yes  No

(If Yes, describe in detail)

**Analysis of the building** (provide *your* analysis of the building)

**High** Moderate Low

Potential for an exposure fire (extension to another building)

Potential for a Multi-Room fire on arrival of first due company

Potential for structural collapse early in the fire development

Potential for fire fighters to become lost or trapped during operations

**Narrative:**

Inspected by:

Posting Authorized by:

Data Entered by:

## **Attachment B – Evaluation Activity**

## **Building Evaluation Activity**

This activity is provided as an optional element of the IAAI/USFA Vacant/Abandoned Building Evaluation program. It is intended to provide participants with hands on experience in evaluating vacant or abandoned structures using the IAAI/USFA Evaluation form.

### **Materials and Equipment**

- Personal protective clothing
- Flashlight
- Radio
- Evaluation forms
- Graph/grid paper
- Pen or pencil
- Ruler

### **Preparation and Safety**

Locate a vacant or abandoned building that is available for the activity. Permission from the owner should be obtained prior to entry. The lead instructor should inspect each property prior to assigning teams to a building. Buildings with significant hazards should **NOT** be used for this activity. An instructor equipped with a portable radio should act as safety officer while participants are operating in the building.

### **Activity**

- Divide the group into teams of 2 to 4 participants.
- Assign two or more teams to each of the properties identified for the activity.
- Teams should be instructed to conduct an evaluation of the structure independently. Each team should complete the evaluation form and develop a sketch of the assigned building.
- Teams assigned to each building should present their findings to the group individually. Any variations in evaluations of the building should be discussed in detail and a consensus achieved.
- Continue with reports until all assigned buildings have been discussed.

## **LESSON PLAN – Evaluating Abandoned Buildings**

### **Using the PowerPoint Support Slides**

The PowerPoint support slides provided with this lesson plan are intended to provide a graphical element to this presentation. While the talk can be delivered without the slides, seeing examples of what is being discussed will make a lasting impression on the audience.

The PowerPoint file can be projected using a computer and projector or the slides can be printed as transparencies. The presenter can use the features provided with PowerPoint to provide handouts to the participants by printing the Handout view from the file. Presenters should also review the Notes view of the file as additional information regarding most of the slides is provided.

For those with the capability, photos of buildings and issues from the local community can be easily added to the program to customize the program.