Operating Guideline # 804

Initial Response for Structure Fire

December 9, 2019

PURPOSE:
The purpose of this Operating Guideline (OG) is to outline initial response considerations, and establish a common approach and guidelines for the implementation of offensive and defensive structural fire attack. This is NOT an exhaustive "how to" guide for extinguishing all types of structure fires – Incident Commanders must rely of their training and experience to guide decision making with respect to strategic, tactical and task level operations.

ISSUE/RATIONALE:
Upon arrival at the scene of a structural fire incident, the Incident Commander (IC) is faced with many critical decisions. The IC must complete a size-up of the building; consider the survivability profile of anyone who may be trapped inside; the structural stability of the building; the location, extent and duration of the fire (how long has it been burning); evaluate existing fire flow paths; and a myriad of other considerations before he or she declares an overall strategy (offensive attack, marginal attack, or defensive attack) and implements the strategy and tactics necessary for fire control and extinguishment. Once the declaration of a strategy has been made, the IC develops an action plan shares the overarching strategies with his or her subordinates. The officers working at the tactical level have a variety of fire attack and support options at their disposal to help achieve the overall strategic goals of the incident. Understanding when it is appropriate (and importantly, when it is not appropriate) to conduct interior operations is a critical component of the decision making process and one that directly impacts on firefighter safety.
Structure fires today are very different than those fought by the fire service even a decade ago, and they hold significant challenges in terms of firefighter safety. Increased risks in the modern fire environment include homes that are physically much larger, have large open concept floor plans, increased synthetic fuel loads, and often utilize small dimensioned lumber and non-traditional construction methodologies (i.e. – SIP's, Structurally Insulated Panels etc.). Buildings are becoming increasingly insulated allowing interior fires to build up more "inertia" and therefore create an increased potential for ventilation-limited (oxygen starved) fires.

Ventilation-limited fires can make it difficult to locate the seat of the fire from the exterior of the building and improperly applied or timed ventilation techniques can then lead to hostile fire events such as a backdraft.

Varying building configurations can also create multiple flow paths within a burning structure, as can the simple act of opening a door to make entry. Firefighting personnel or building occupants located in a flow path are at significant risk. Recent research as proven that interrupting or disrupting the flow path can: a) reduce heat within the structure; b) minimize the potential for hostile fire events such as flashover; and c) greatly enhance the survivability for occupants and the safety of firefighters.

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GUIDELINE:

General

1. Applying water to any fire as soon as possible should be a tactical priority in terms of gaining fire control. In many cases, gaining rapid control of a fire will diminish the need for other fire ground activities including rescue.

2. Applying water to the seat of the fire or compartment ceiling gas cooling from outside a structure before entry is made can serve to rapidly cool the interior environment creating more tenable interior conditions for those that may be trapped inside, while creating conditions that are safer for firefighters.

3. During the initial size-up phase of the incident, the IC should take into consideration the construction type utilised in any building that is the subject of fire ground operations. The issue of construction methods (legacy construction vs modern building construction) utilised along with other factors such as how long the fire has been burning will impact the decision making process in so far as operational modes is concerned. Modern construction methods, especially those utilizing “lightweight” construction, are generally much less resistant to fire and therefore subject to early collapse under even moderate fire conditions.

4. The following basic principles should be adhered to at all structure fires: a. an incident size-up (including a 360 degree scene evaluation where possible) must be conducted / completed by the I/C before operations can be initiated;
b. a risk vs benefit assessment (including a “survivability profile” for that portion of the structure being entered) should be conducted prior to committing firefighters to dangerous search and rescue operations;
c. identifying the flowpath(s) is critical to firefighter safety;
d. where possible, it is advisable to “cool” the interior of a structure (“soften the fire”) from the exterior before making entry;
e. The smoke conditions should be thoroughly assessed and understand both at the onset and throughout operations;
f. ventilation must be closely coordinated hose attack;
g. Where possible ventilate close to the fire origin; and
h. Close (as much as possible) and control the access door to avoid creating a new flowpath.

Offensive Interior Fire Attack (Typical House Fire - < 2000 square feet)

5. Before conducting offensive interior operations when an advanced fire is present, the IC should account for the following resourcing requirements:
a. sufficient experienced human resources are at the scene to conduct immediate offensive operations - IC, plus pump operator, plus attack/search team of at least two experienced firefighters if considering a “fast attack” or “rapid rescue” attempt (total of 4 personnel on first arriving pump/apparatus);

b. sufficient human and physical resources are confirmed as responding to provide support operations - Rapid Intervention Team (minimum 2 firefighters), back-up fire attack (minimum 4 firefighters), ventilation/ladders (minimum 2 firefighters), Accountability/Entry Control Officer (minimum 1 firefighter);
c. a reliable water supply has been established; and
d. confirmation that adequate/functioning radio communications are available.

6. The IC should place into immediate operation one or more handlines of the appropriate size (38mm or 65mm) depending on the nature and extent of the fire and as dictated by incident flowpaths. Where the size of the fire indicates that a 65mm line be placed in operation initially, the back-up line should be of the same size unless immediate fire control is achieved by the first line. Back-up lines should be stretch and charged as soon as staffing allows and are a principal means to protect the primary line crew (always protect firefighters exit paths including stairway's).

7. All supporting operations (Accountability/Entry Control, R.I.T., ventilation etc.) should be initiated as soon as possible and any tactical operations that affect fire control or crew safety must be authorized by the IC.

Transitional Fire Attack

8. Where heavy fire conditions (visible fire/heavy turbulent smoke) present themselves in an interior structural situation, the IC shall consider a "Transitional Fire Attack"; that is an aggressive application of water (straight stream directed at the fire itself or at ceiling in a ventilation limited situation) directly into a compartment through an external opening (i.e. – window) in order to darken down/cool the interior conditions and make the interior conditions safer.

9. This should be immediately followed by a quick and coordinated entry by the attack team into the structure to complete tactical objectives (rescue, fire extinguishment etc.). Ventilation should be limited until rapid entry is made and water is applied to the seat of the fire. A crew member should be assigned to control the entry point - door – and the attack team should be mindful to cool accumulated gases constantly as they enter and progress towards the seat of the fire. New ventilation openings should NOT be made until fire control is assured (unless closely coordinated with attack crews) as they may create a new flowpath for the fire.

10.All supporting operations (Accountability/Entry Control, R.I.T., ventilation etc.) will be initiated as soon as possible and any tactical operations that affect fire control or crew safety must be authorized by the IC.

Defensive Fire Attack

11.Where fireground conditions dictate that it is unsafe to enter a structure, the IC shall order defensive operations that are aimed at:
a) exposure protection;
b) fire control; and
c) fire extinguishment.
Use of master stream devices and large handlines should be considered as initial tactics in an attempt to rapidly gain control of the fire.

12.All supporting operations (Accountability/Entry Control, R.I.T., ventilation etc.) will be initiated as soon as possible and any tactical operations that affect fire control or crew safety must be authorized by the IC.

13.The I/C must consider the potential for building collapse in all defensive fire operations and the appropriate collapse zones will be established and "policed" throughout the incident. The "Departmental Safety Officer and /or one or more "Incident Safety Officers" should be assigned to assist with maintaining watch and monitoring the collapse zone as may be appropriate.

Large Structures

14. At large structures (i.e. commercial/industrial settings), the IC should be cognizant of the potential for increased fuel loads and therefore handlines initially deployed shall be 65mm handlines.

15. All supporting operations (Accountability/Entry Control, R.I.T., ventilation etc. will be initiated as soon as possible and any tactical operations that affect fire control or crew safety must be authorized by the IC.

16. Because of the varied nature of industrial and commercial operations, the IC should attempt to ascertain the nature of the commercial or industrial activities being carried out on the premise before committing crews to interior operations. Of concern are hazardous materials or processes that may be present and the need to safeguard firefighters from unnecessary exposure to these hazards.

Abandoned Buildings

17.In fires involving buildings that are known or reasonably believed by the fire department to be abandoned, IC's should exercise extreme caution and give due regard to fire conditions and all relevant fireground factors prior to committing firefighters to interior firefighting positions (Note: firefighters should not be committed to interior operations in well advanced fires in structures that are known to be abandoned).

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RESPONSIBILITY:
It is the responsibility of all members to comply with the provisions of this OG and particularly that Company Officers (supervisors) and firefighters (workers) ensure that they adhere to their duties in accordance with the provisions of this document and the Occupational Health and Safety Act.

REFERENCES:
• Occupational Health and Safety Act (RSO 1990, c. 0.1)
• S.21 Committee Guidance Note 2-01 Incident Command
• S.21 Committee Guidance Note 2-02 the Buddy System
• S.21 Committee Guidance Note 2-03 Communications
• S.21 Committee Guidance Note 2-04 Incident Safety Officer
• S.21 Committee Guidance Note 5-01 Accountability and Entry
• S.21 Committee Guidance Note 6-06 Rapid Fire Progression
• S.21 Committee Guidance Note 6-11 Rapid Intervention Teams
• S.21 Committee Guidance Note 6-14 Safe Roof Operations
• S.21 Committee Guidance Note 6-18 Unprotected Lightweight Building
• S.21 Committee Guidance Note 6-24 Building Collapse
• S.21 Committee Guidance Note 6-33 Abandoned Buildings
• S.21 Committee Guidance Note 7-06 Hazardous Fire Conditions
• MLFD Operating Guideline (OG) 101, Turnout Gear
• MLFD Operating Guideline (OG) 203, Breathing Apparatus
• MLFD Operating Guideline (OG) 207, Accountability System
• MLFD Operating Guideline (OG) 208, Rapid Intervention Teams
• MLFD Operating Guideline (OG) 221, Risk Management Philosophy
• MLFD Operating Guideline (OG) 227, Hostile Fire Events
• MLFD Operating Guideline (OG) 311, Thermal Imaging Camera's: Maintenance & Operation
• MLFD Operating Guideline (OG) 509, Apparatus Positioning
• MLFD Operating Guideline (OG) 601, Water Supply – Urban Fire Operations
• MLFD Operating Guideline (OG) 602, Water Supply – Rural Fire Operations
• MLFD Operating Guideline (OG) 701, Roles & Responsibilities of the Incident Commander
• MLFD Operating Guideline (OG) 702, Situation Reports
• MLFD Operating Guideline (OG) 703, Assigning Sectors/Groups
• MLFD Operating Guideline (OG) 704, Survivability Profiling
• MLFD Operating Guideline (OG) 705, Crew Resource Management
• MLFD Operating Guideline (OG) 706, Safety Officer
• MLFD Operating Guideline (OG) 707, Operational Control Zones
• MLFD Operating Guideline (OG) 801, Declaration of Incident Sire Emergency
• MLFD Operating Guideline (OG) 802, Apparatus Placement
• MLFD Operating Guideline (OG) 803, Staging Personnel
• MLFD Operating Guideline (OG) 805, Winter Operations
• MLFD Operating Guideline (OG) 809, Chimney Fire Response

- MLFD Operating Guideline (OG) 812, Accountability & Entry Control
- MLFD Operating Guideline (OG) 813, Extinguishment of Fires
- MLFD Operating Guideline (OG) 816, Safe Roof Operations
- MLFD Operating Guideline (OG) 817, Mayday Declaration
- MLFD Operating Guideline (OG) 818, Thermal Imaging Camera Use
- Fire Command, The Essentials of Local IMS, Second Edition, Alan Brunacini
- Canadian Firefighters Handbook, Firefighting & Emergency Response, First Edition, Delmar, Cengage Learning
- Essentials of Firefighting and Fire Department Operations, 6th Edition, IFSTA/Brady
- Fire and Emergency Services Company Officer, 5th Edition, IFSTA
- Fireground Strategies, 2nd Edition, Anthony Avillo
- Fire Officers Handbook of Tactics, 3rd Edition, John Norman