



# Burlington Fire Department



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<b>Section: 01 - Suppression</b>	
<b>SOG Number: 01.91</b>	<b>Effective Date: June 19, 2018</b>
<b>Subject: Aircraft Emergencies: Off Airfield</b>	
<b>By Order of Fire Chief Steven A. Locke</b>	

## **I. Purpose:**

To familiarize Burlington Fire Department personnel responding to aircraft emergencies, prior to the aircraft's arrival at the Burlington International Airport, and the various types of aircrafts and their potential hazards.

## **II. Scope:**

This guideline applies to all Burlington Fire Department personnel who respond to emergency incidents. As with any emergency, the authority to deviate from this procedure rests with the Incident Commander or Chief Engineer.

## **III. Definitions:**

Aircraft Crash: When an aircraft lands in an abnormal manner, usually causing severe damage.

Civilian Aircraft: Private or commercial aircraft not operated by the U.S. Military or U.S. Government.

Cockpit Voice Recorder (CVR): A recording device installed in civilian aircraft to record crew conversations and communications.

Emergency Power Unit (EPU): An emergency source of power in some military aircraft,

activated in the event of a failure of electrical power, hydraulic power, or both which could pose a toxic atmosphere if activated or exposed.

Explosive Ordnance Disposal (EOD): Specialists trained to detect, disarm, detonate and dispose of explosive threats and munitions.

Federal Aviation Administration (FAA): An independent agency of the U.S. Federal Government charged with the primary responsibility of regulating the safety of both military and civil aviation.

Fixed-Wing Aircraft: An aircraft capable of flight by using its fixed wings and forward air speed to generate lift.

Flight Control Surfaces: Moving parts of an aircraft, including ailerons, elevators, flaps, landing gears and doors, and vertical stabilizers used during flight to control the aircraft's flight path.

Flight Data Recorder (FDR): A recording device used to record flight data on large, civilian aircraft including altitude, airspeed, heading, etc.

Flight Deck: Front of the aircraft containing the instruments and controls used by the flight crew to operate the aircraft.

Forward Firing Munitions: Weapons systems and related projectiles that could pose an imminent threat to anything or anyone in the path of the front of the aircraft.

Fuselage: The complete central structure to which the wing, tail surfaces and engines are attached on an airplane.

Ground Emergency: An unexpected occurrence or set of circumstances while the aircraft is on the ground, requiring immediate action to mitigate the situation and could pose significant danger to those on-board and around the aircraft.

In-Flight Emergency (IFE): An unexpected occurrence or set of circumstances during flight that requires immediate action to mitigate the situation and could pose significant danger to those on-board and along the aircraft's flight path until the aircraft is safely on the ground.

Large Frame Aircraft: Greater than 250 gallons (or 2000 pounds) of fuel and capable of carrying 7 or more passengers.

Military Aircraft: Any aircraft operated by the U.S. Military.

National Transportation Safety Board: An independent Federal agency charged by Congress with investigating every civil aviation accident in the United States and

significant accidents in other modes of transportation.

Off-Field Emergency: An emergency effecting aircraft that occurs anywhere other than the property of the designated airfield.

Ordnance: Bombs, rockets, ammunition, and other explosive devices carried on various military aircraft.

Phase: A label given to the declared aircraft emergency, determined by the airport emergency fire alarm control center (FACC) dispatcher, based primarily on the size of the aircraft and the number of souls on board, to initiate the appropriate level of emergency response units; Phase 3, Phase 4, Phase 5 (being the most serious).

Rotary-Wing Aircraft: Also known as a rotorcraft, it is a heavier-than-air flying machine gaining lift generated by wings, called rotary wings or rotor blades, which revolve around a mast.

Small Frame Aircraft: Less than 250 gallons (or 2000 pounds) of fuel and capable of carrying 6 or fewer passengers.

Souls On Board (SOB): The total number of persons on an aircraft to include passengers and all crew members.

## **IV. Guidelines:**

### **A. General Response Considerations**

1. Classification of aircraft: Military or Civilian
  - a) Military aircraft concerns
    - 1) Determine whether Large-frame or Fighter aircraft
    - 2) Both may have the following hazards:
      - i. Explosives (potentially up to Hazard Class 1.1)
        - i. Bombs, missiles
        - ii. Initiators for ejection seats and canopy jettison
      - ii. Flares (Hazard Class 1.3)
      - iii. Radiation from radar in nose cones
      - iv. Hazardous materials from various fluids and composite construction materials.
    - 3) Large-frame aircraft additional hazards:
      - i. Fuel capacity up to 52,000 gallons
      - ii. Passengers can vary from 3 to 150+ SOB
      - iii. Cargo can be a mixed variety

- 4) Fighter aircraft additional hazards:
  - i. Forward firing munitions (Machine gun, missiles, rockets, etc)
  - ii. Fuel capacity up to 1750 gallons (including on-board tanks and external fuel tanks)
  - iii. Passengers can vary from 1 to 4 SOB
- b) Civilian aircraft concerns
  - 1) Passengers can vary from 1 to 220+ SOB
  - 2) Cargo contents can vary (baggage or FedEx)
  - 3) Fuel can exceed 11,000 gallons
- c) Type of Aircraft: Fixed-wing or Rotary-wing
  - 1) Fixed-wing:
    - i. Propellers pose decapitation and/or dismember hazards
    - ii. Jet propulsion poses ingestion and exhaust hazards
      - i. Ingestion. (At idle speed) Avoid 25 feet radius from front of intake and within Four feet behind intake opening.
      - ii. Exhaust. Avoid exhaust area up to 150 feet, including parking / operating apparatus.
  - 2) Rotary-wing blades pose decapitation and/or dismember hazards (including tail section).

## 2. Location of crash site

- a) Lake Champlain (ref. Ice / Cold Water SOG 4.01)
- b) Highway and Route 127 (for potential emergency landing)
- c) Residential/Commercial impact site
  - 1) Structure Fires
  - 2) Structural collapse potential
  - 3) Effected utilities
    - i. Compromised water supply
    - ii. Electrical hazards impeding access
    - iii. Compromised natural gas supply lines
    - iv. Other heating fuels hazards
- d) Shallow angle at impact could span large geographical area
  - 1) Multiple buildings potentially involved
  - 2) Large aircraft debris field
    - i. Passengers ejected
    - ii. Hazards impede access
- e) Steep angle at impact may have limited geographical area

- f) Terrain
  - 1) Access / retrieval issues
  - 2) Flowing fuel hazards
  - 3) Pooling of fuel hazards
- 3. Type of landing
  - a) Crash
    - 1) Crew had limited to no control of aircraft
    - 2) Decreased chances of survival
  - b) Controlled Emergency Landing (increased chances of survival)

## B. Strategic Goals

1. Rescue aircraft passengers and victims in effected structures involved in the crash
2. Protect Exposures
3. Initiate MCI Protocols
4. Isolate crash site
5. Control Hazardous Materials
6. Protect evidence

## C. Tactical Response

1. Approach
  - a) From uphill/upwind whenever possible
  - b) Be extremely cautious of passengers ejected during impact
  - c) Avoid parking apparatus in front of aircraft in case of forward firing munitions
  - d) Be cautious of pooling flammable liquids
  - e) Be cautious of aircraft debris and jagged materials
2. Rescue
  - a) Use extinguishing agents (foam / water) to secure a rescue path
  - b) Avoid disturbing foam blankets on flammable liquids
  - c) Follow MCI protocols
    - 1) Be diligent distinguishing aircraft passengers from ground victims for accountability.
    - 2) Try to document location where victims were found
  - d) Gaining access
    - 1) Consider utilizing VTANG trained personnel to gain access to Military or Large-frame civilian aircraft
    - 2) Be aware of structural instability of aircraft and buildings

- i. Some areas may require shoring
    - ii. Some areas may require confined space entry
  - 3) Use extreme caution with cutting tools to suppress sparks from igniting flammable liquids
  - 4) Avoid cutting wires and hydraulic lines on fuselage
  - e) Coordinate suppression and ventilation to increase chances of survival by removal of toxic atmosphere in the aircraft
- 3. Protect exposures
- 4. Isolate Crash Site
  - a) Establish Hot, Warm and Cold Zones
  - b) Crash site may have multiple isolation zones
  - c) Establish Unified Command with Agency Partners as needed
- 5. Protect Crash Site Evidence
  - a) Secure evidence in place (aircraft wreckage and parts) as soon as possible, particularly Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR)
  - b) Limit extinguishing agent and overhaul operations when possible to avoid disturbing evidence
  - c) Fatalities are to be left in place whenever possible for investigation purposes

**V. Responsibility:**

It is the responsibility of all members to read, understand and follow this Standard Operating Guideline

Revision History			
Revision Date	Section	Summary	Principal Author
Initial Document		No prior guideline existed.	Lt. Rousseau