



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

# Advisory Circular

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**Subject:** Aircraft Rescue and Fire Fighting Communications    **Date:** April 14, 2008    **AC No:** 150/5210-7D  
**Initiated by:** AAS-300    **Change:**

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- 1. PURPOSE.** This Advisory Circular (AC) provides guidance to assist airport operators in preparing for Aircraft Rescue and Fire Fighting (ARFF) communications.
- 2. CANCELLATION.** This AC cancels AC 150/5210-7C, Aircraft Rescue and Fire Fighting Communications, dated July 1, 1999.
- 3. APPLICABILITY.** The prompt and efficient response of a modern ARFF service depends on the reliability of its communications and alarm systems. The material contained in this AC applies to the operation of civil airports where aeronautical activity is conducted. Certificated airport operators may use these recommendations and guidelines to satisfy some of the requirements of 14 Code of Federal Regulations (CFR), Part 139, Certification of Airports.
- 4. COPIES OF THIS AC.** The Office of Airport Safety and Standards makes ACs available to the public through the Internet. These ACs may be found online at [www.faa.gov](http://www.faa.gov). A printed copy of this and other ACs can be ordered from the U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.

A handwritten signature in black ink, appearing to read 'Kelvin L. Solco'.

Kelvin L. Solco  
Acting Director of Airport Safety and Standards

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## 1. OVERVIEW OF AIRPORT EMERGENCY COMMUNICATIONS.

The objective of the airport emergency communications system should be to provide a primary and, where necessary, an alternate effective means of direct communication between the following:

**a.** The alerting authority, Airport Traffic Control Tower (ATCT), Flight Service Station (FSS), Airport Manager, fixed-base operator, or airline office and the Aircraft Rescue and Fire Fighting (ARFF) service.

**b.** The ATCT or FSS and the ARFF responders' enroute to an aircraft emergency and at the accident or incident site.

**c.** The dispatcher and ARFF vehicles at the accident/incident site.

**d.** The ARFF Incident Command (ARFF IC) and appropriate local and mutual aid organizations located on or off the airport, including an alert procedure for all auxiliary personnel expected to participate.

**e.** The ARFF IC and the Emergency Aircraft.

(1) **Discrete Emergency Frequency (DEF).** The DEF establishes a direct link between the Emergency Aircraft and the ARFF IC for providing critical information about the Emergency Aircraft status, if not previously provided by Air Traffic Control (ATC) to the ARFF IC (e.g., fuel on board, souls on board, hazmat or dangerous goods on board and location in aircraft, pilot intentions, etc.). The ARFF IC will relay information to the Pilot of the Emergency Aircraft about the external situation of the aircraft, whether or not evacuation is recommended, and other hazards that may not be readily apparent to the Pilot. ATC will instruct the Emergency Aircraft and the ARFF IC to switch to the DEF as specified in the ARFF Communications – Operating Procedures Letter of Agreement (LOA) for the Discrete Emergency Frequency between the Airport Operator and ATC (see sample LOA in Appendix 6) and in accordance with section 9.b. (1)(b) of this AC.

(2) **Use of the DEF.** Because of the critical and timely nature of the information transmitted on this frequency, transmissions should be limited to ATC, the Pilot of the Emergency Aircraft, and the ARFF IC.

(3) Emergency hand signals, described in Appendix 1, allow communication of evacuation recommendations from the ARFF IC to the Pilot and/or Cabin Crew in the event of radio communications disruption or failure of the DEF.

**f.** Each ARFF vehicle(s), including firefighters in the same ARFF vehicle where operationally necessary.

## 2. AIRCRAFT RESCUE AND FIREFIGHTING COMMUNICATIONS SYSTEM.

**a.** The ARFF communications system should be consistent with the airport's operational needs and address:—

(1) The initial notification method [alarm, dedicated telephone line (crash phone), two-way non-ATC radio, pager, dispatch service, etc.].

(2) Direct and timely communication of the applicable information to the primary responders.

(3) Communication between primary responders and the following:

(a) Airport controlling agencies, ATCT (Tower, Ground Control, Approach/Departure Control, FSS), and Airport Operations.

(b) Emergency Aircraft (DEF) and Emergency Aircraft at airports without an ATCT or when ATCT is closed [Common Traffic Advisory Frequency (CTAF) or National Guard frequencies].

(c) ARFF responding unit(s) internal command and control (each ARFF vehicle).

(d) Individual ARFF personnel where operationally required.

(e) Supporting units (local jurisdiction and mutual aid organizations).

(f) Airport Operations, Maintenance, and Security.

**b.** ARFF communications system should include the following:

(1) ARFF vehicles.

(a) Any vehicle that may be employed as the ARFF IC vehicle should have a hard-wired, permanently installed selectable frequency transmitter and receiver (transceiver), not to exclude hard-wired, and permanently installed bases for removable hand-held units. These transceiver units should be capable of operating on any 25-KHz channel in the 118.0–136.975 MHz frequency band.

(b) All other ARFF vehicles should have a transceiver capable of communicating on Tower, Ground, and/or UNICOM frequencies and be hard-wired and permanently installed (not to exclude hard-wired, permanently installed bases for removable hand-held units).

(c) All transmitters should be capable of transmitting 5 nautical miles (9.26 km). All radios and transmitters should be licensed and operated in accordance with Federal Communication Commission regulations (47 CFR Part 87, Aviation Services, subparts D and L apply).

(d) Individual hand-held transceivers with Fire Emergency and Airport Operations frequencies if required (in addition to fixed radios in vehicles).

(2) Dedicated telephone lines or cellular phones/personal paging devices.

(3) Wide-area audible alarms located in strategic places.

(4) Universal light gun signals (see Appendix 2).

(5) Emergency hand signals (see Appendix 1).

### 3. INITIAL NOTIFICATION (ALARM) SYSTEM: COMMUNICATION OF ALARM FROM ALERTING AUTHORITY TO PRIMARY RESPONDERS.

**a. Alert Enhancement.** The ARFF station dispatch room at airports with an ATCT should be linked by a non-ATC two-way radio and direct-line telephone to the ATCT, the FSS, or other ATC point.

(1) The emergency direct-line telephone should not pass through any intermediate automated switchboard or operator that could subject the alert calls to delays.

(2) The tone of the emergency telephone bell (or buzzer) should be distinctly different from all other communications signaling devices within hearing of personnel in the dispatch room, on the apparatus floor, or in living quarters, as applicable.

(3) Protection against delays due to telephone bell-buzzer failure should be provided by use of redundant warning lights activated by the same input signal as the telephone ringer. The lights should be strategically located throughout the dispatch room, the apparatus floor, and living space, as dictated by the fire station design and the normal activities of the ARFF personnel.

(4) The ARFF station alarm bells should be linked to the telephone ringer so a call on the emergency telephone circuit simultaneously activates the audible alarm throughout the firehouse.

(5) The alarm circuitry may activate an automatic door-opening device for the vehicle doors in the fire station upon sounding the alarm. Some conditions (climatic, security requirements, or airport noise levels) may make this technique impractical.

(6) At airports not equipped with ground-to-air radio or a formal fire service dispatch room, alarm activation stations should be provided near hangars, shops, fueling stations, and aircraft parking areas where vision of the operational runway is unobstructed, i.e., where service and maintenance personnel normally work, thereby allowing them to quickly activate an alarm upon seeing a need in the operational area for ARFF service.

(7) Passenger loading bridges or areas should be equipped with a method of rapidly alerting the emergency response system in the event of an emergency (e.g., direct access via telephone or alarm system).

**b. Airports with an Operating ATCT.** The ATCT provides the initial alarm to the ARFF department via one or more of the following methods:

(1) **Crash Phone** – A dedicated landline between the ATCT and ARFF station.

(2) **Alarm** – Siren or other audible device loud enough to be heard distinctly over typical airport noise levels that are audible in all areas where ARFF responders spend duty time.

(3) **Emergency Dispatch Center** – A central dispatching point that receives notice of an aircraft emergency, and alerts and dispatches ARFF responders.

(4) **Cellular Telephone/Paging Device.**

**c. Airports without an ATCT.** Airports without ATCTs (or at times when the ATCT is closed) should establish a system for notification of ARFF responders (and other emergency responders, if

applicable) through FSS, enroute ATC facilities, air carrier operations departments, public 911 calls, airport operations, and other possible avenues of emergency notification that assures—

(1) There is an alternate alerting method with knowledgeable personnel available to operate it. Appropriate communications and alarm control devices must be available at the secondary alerting authority's operating location. They should be operational during all times the primary alerting authority is not available and ensure—

(2) There is no excessive delay in sending messages.

(3) The length and content of messages are appropriate and complete.

(4) Information is not degraded by interference (electronic/objects/etc).

(5) Appropriate means are used to transmit emergency messages and activate alarm control mechanisms.

**d. Off-Airport Fire Department.** With some exceptions, ARFF is required on the airport during air carrier operations at 14 CFR Part 139 certificated airports. At non-certificated airports, when an off-airport fire department furnishes the rescue and fire fighting equipment and personnel and the alerting/dispatch for airport emergencies is handled by an emergency direct-line telephone between the airport alerting authority and the off-airport fire department, the off-airport fire station alarm(s) should sound upon activation of the direct emergency line.

**e. Multifunction Notification.** The notification of all units required to respond to an emergency at a large airport can be expedited by the use of a "conference" circuit. Such an arrangement allows simultaneous notification. This "conference" circuit should, as appropriate, include—

(1) ARFF service (should receive alarm first and respond while remainder of list is being notified).

(2) ATCT, FSS, or other control point.

(3) Airport police/security.

(4) Airport management (Operations and Maintenance).

(5) Military units (at joint-use airports).

(6) Other authorities on or off the airport as required by the Airport Emergency Plan (AEP).

**f. Notification of Firefighters.**

(1) Firehouses in which personnel are normally present for duty but may be preoccupied with "housekeeping" or training duties should be equipped with a public address (PA) system. This is particularly important in firehouses where the dispatcher room, training room, and living quarters are physically separated from the apparatus floor. A PA system can significantly enhance response time and firefighter effectiveness by providing vital details of the emergency to the firefighters during turnout, e.g., location of accident or incident site, type of aircraft, number of persons involved, aircraft fuel load, preferred vehicle routing, etc.



(2) At airports with a main ARFF station and one or more substations, an interconnected PA system may be necessary.

**g. Notification of Dual-Function Personnel.** At airports employing dual-function personnel or auxiliary firefighters, an audible alarm should be installed in all areas where auxiliary fire fighting personnel are employed to notify them of an emergency recall for ARFF duties. This alarm should have a distinctly different sound, and it should be loud enough to be clearly heard above the normal noise level.

**h. Notification of Mutual Aid Units.** A reliable voice communications capability should be available between the ARFF services and any off-airport organizations expected to participate in the airport-community mutual aid plan. If there is more than one mutual aid responder, the multifunction notification (paragraph 3e above) should be utilized.

**i. Dispatch Room Effectiveness.** The ARFF service dispatch room should be designed and operated in such a manner that an aircraft's request for assistance can be received, evaluated, and acted upon with a minimum of activity or consultation.

(1) All personnel assigned to dispatch room duties require training in communications equipment operations, proper communications procedures, and local emergency plan implementation procedures.

(2) To assure the communications system is operational under a variety of airport emergency conditions, communications equipment should be functionally tested daily, and provisions should be made for an emergency standby power source.

#### **4. COMMUNICATIONS BETWEEN ARFF PRIMARY RESPONDERS AND OTHERS.**

**a. ATCT.** After receiving initial information about the emergency via the alarm system, the ARFF responders will receive clearance onto the airport movement area to the emergency location over the ATCT-published ground control and/or Tower frequencies. Alternate procedures should be specified in the ARFF Communications – Operating Procedures Letter of Agreement (LOA) for the Discrete Emergency Frequency between the Airport Operator and ATCT (see sample LOA in Appendix 6).

**b. Emergency Aircraft Flight Crews.** ATC will issue a DEF to both the Emergency Aircraft and the ARFF IC in the event of a reported or observed in-flight or ground emergency. The ARFF IC should delay transmissions to the Emergency Aircraft crew until cleared by ATC, unless the nature of the transmission is **critical** to emergency operation (e.g., ARFF IC sees smoke coming from aircraft prior to landing).

(1) The DEF allows the ARFF IC and the Emergency Aircraft Flight Crew to communicate with each other directly so the ARFF IC can issue critical information about the exact nature of, and hazards associated with, an emergency in progress as well as recommendations for action. The DEF will be selected by ATC from the operational frequencies available.

(2) The DEF should be available to the ATCT facility, and ATC will notify the Emergency Aircraft and the ARFF IC in accordance with the LOA. (See Appendix 6.)

(3) The following elements should be included in the transmission from ATC directing the Emergency Aircraft to the DEF:

- The frequency.
- Statements that ARFF will be on the frequency with transmit and receive capability.
- Identification that the ARFF IC call sign is “[Airport Identifier] Command”.
- When time permits, the following minimum information should be passed to the ARFF IC by the ATCT or Emergency Aircraft:
  - “Souls on Board” – total number of passengers and crew.
  - “Fuel on Board” – total quantity in pounds or kilograms. (See Table 1.)
  - Location and type of any known dangerous goods/hazmat on board.

(4) Only the ARFF IC, ATCT, and the Emergency Aircraft should transmit on the DEF. (Note: If the Emergency Aircraft has dumped fuel after declaring emergency with ATC, revised fuel on board should be passed to the ARFF IC).

**TABLE 1: FUEL WEIGHT/VOLUME CONVERSION**  
 (Conversion Factors: 6.7 lb/gal – 3.04 kg/gal)

POUND	GALLONS	KILOGRAMS	GALLONS
<b>2,000 lbs</b>	<b>300 gal</b>	<b>2,000 Kg</b>	<b>658 gal</b>
5,000	746	5,000	1,645
<b>10,000</b>	<b>1,492</b>	<b>10,000</b>	<b>3,290</b>
15,000	2,239	15,000	4,934
<b>20,000</b>	<b>2,985</b>	<b>20,000</b>	<b>6,579</b>
25,000	3,731	25,000	8,224
<b>30,000</b>	<b>4,478</b>	<b>30,000</b>	<b>9,868</b>
35,000	5,224	35,000	11,513
<b>40,000</b>	<b>5,970</b>	<b>40,000</b>	<b>13,158</b>
45,000	6,716	45,000	14,803
<b>50,000</b>	<b>7,463</b>	<b>50,000</b>	<b>16,447</b>
100,000	14,925	100,000	32,895
<b>150,000</b>	<b>22,388</b>	<b>150,000</b>	<b>49,342</b>
200,000	29,850	200,000	65,789
<b>250,000</b>	<b>37,313</b>	<b>250,000</b>	<b>82,237</b>

**c. On Airports without an ATCT.** On airports without an ATCT or when the ATCT is closed, the Emergency Aircraft should contact the ARFF IC on the CTAF published for the airport or the civil emergency frequency (121.5 MHz).

**d. Incident Command Communications Network.** Incident Command should use established non-ATC emergency frequency networks for internal communications.

**e. Local and Mutual Aid Support.** Communications with local and mutual aid follow-on responders should be on assigned emergency frequency networks, not the DEF. Before local and mutual aid follow-on responders operate on the airport movement area, they should receive clearance from the ACTC and be escorted by the Airport Operator.

**f. Airport Operations.** ARFF response units will communicate with Airport Operations personnel over established non-ATC communications networks operating on assigned emergency frequencies, not the DEF.

## 5. LOST COMMUNICATIONS PROCEDURES.

In the event of the loss of radio communications, the following will apply:

**a. Lost Communications between ATCT and Emergency Aircraft/ARFF Responders.** Universal ATCT light gun signals will be given to the aircraft (for clearance to land) and to the ARFF responders on the airport movement area (for clearance to cross active runways and taxiways). See Appendix 2.

**b. Lost Communications between Emergency Aircraft and ARFF IC.** Once the aircraft is on the ground and radio communications cannot be established and electronic communications cannot be reestablished, standard emergency hand signals, as depicted in Appendix 1, should be used. These hand signals should be known and understood by all Cockpit and Cabin Crew and all ARFF Firefighters. See training requirements listed in Appendix 3.

## 6. RADIO DISCIPLINE.

**a.** Common terminology should be used; that is, clear, specific language using standard terms and phrases. Avoid occupation-specific jargon and codes (e.g., “10 codes”). In airport/aircraft emergencies, standard aviation pronunciation and references should be used. See Appendix 5.

**b.** Answer calls promptly and concisely. Pronounce words distinctly and slowly, without emotion.

**c.** During critical phases of flight (final approach, transition to landing, and touchdown), only ATCT and the Emergency Aircraft should be transmitting on the DEF unless the emergency dictates otherwise (e.g., ARFF IC sees smoke coming from aircraft prior to landing).

**d.** Be careful not to “step on” (transmit over) other transmissions:

- (1) Wait for a break.
- (2) Specify to whom you are calling (e.g., *LA Tower, US AIR 1042*, etc.)
- (3) Identify yourself (e.g., *LAX COMMAND, Delta 1042*, etc.)
- (4) State your message clearly.

## 7. RADIO CALL SIGNS.

Emergency communications should use only location/function specific call signs.

- a.** Use airport/facility name followed by function.
- b.** Aircraft will use their ATC assigned call signs (e.g., *US Air 21*, *American 30*, *Delta 340*, *November 123 Papa Alpha*, etc.).

## APPENDIX 1 – STANDARD EMERGENCY HAND AND ARM SIGNALS

The following hand signals are established as the minimum required for emergency communications between the ARFF IC/ARFF Firefighters and the Cockpit and/or Cabin Crews of the emergency aircraft. ARFF emergency hand signals to the Cockpit Crew should be given from the left front side of the aircraft. Note: In order to communicate more effectively with the Cabin Crew, ARFF Firefighters may give emergency hand signals from other positions

### 1. RECOMMEND EVACUATION.

Evacuation recommended based on ARFF IC's assessment of external situation.



Arm extended from body and held horizontal with hand upraised at eye level. Execute beckoning arm motion angled backward. Non-beckoning arm held against body.

At night, use the same signal with wands.

### 2. RECOMMEND STOP.

Recommend evacuation in progress be halted. Stop aircraft movement or other activity in progress.



Arms in front of head and crossed at wrists.

At night, use the same signal with wands.

**3. EMERGENCY CONTAINED.**

No outside evidence of dangerous condition or “all clear.”



**Arms extended outward and down at a 45-degree angle. Arms moved inward below waistline simultaneously until wrists crossed, then extended outward to starting position (Umpire’s “safe” signal).**

**At night, use the same signal with wands**

(Photos courtesy of the Air Line Pilots Association)

## APPENDIX 2 – AIRPORT TRAFFIC CONTROL TOWER (ATCT) LIGHT GUN SIGNALS

TABLE A2 – MEANING OF ATCT LIGHT GUN SIGNALS

COLOR AND TYPE OF SIGNAL	SIGNAL TO –		
	MOVING VEHICLES, EQUIPMENT, AND PERSONNEL	AIRCRAFT ON THE GROUND	AIRCRAFT IN FLIGHT
<b>Steady green</b>	Cleared to cross, proceed or go	Cleared for takeoff	Cleared to land
<b>Flashing green</b>	Not applicable	Cleared for taxi	Return for landing (to be followed by steady <b>green</b> at the proper time)
<b>Steady red</b>	STOP!	STOP!	Give way to other aircraft and continue circling
<b>Flashing red</b>	Clear the taxiway/runway	Taxi clear of runway in use	Airport unsafe, do not land
<b>Flashing white</b>	Return to starting point on airport	Return to starting point on airport	Not applicable
<b>Alternating red and green</b>	Exercise extreme caution	Exercise extreme caution	Exercise extreme caution

**APPENDIX 3 – TRAINING****1. Training for ARFF Personnel.**

## a. Discrete Emergency Frequency (DEF):

- (1) Be thoroughly familiar with ARFF/ATCT/Air Crew Emergency Communications Procedures (for ARFF IC and anyone who may assume that duty).
  - (2) Review Radio Discipline section – *paragraph 6*.
  - (3) Be familiar with Standard Aviation Pronunciation and Responses – *Appendix 5*.
  - (4) Comply with Federal Communication Commission rules and procedures.
  - (5) Review Lost Communications procedures – *paragraph 5*.
- b. Review ATCT Light Gun Signals – *Appendix 2*.
- c. Learn and practice Standard Emergency Hand Signals – *Appendix 1*.

**2. Training for Air Crews.**

- a. Familiarize air crews with ARFF/ATCT/Air Crew Emergency Communications Procedures.
- b. Review Lost Communications procedures – *paragraph 5*.
- c. Learn and practice Standard Emergency Hand Signals – *Appendix 1*.

**3. Training for Airport Operations, Alerting Authorities, and Local/Mutual Aid Responders.**

- a. Ensure that all participants are practiced and familiar with Airport Emergency Plan procedures and duties.
- b. Review DEF use and procedures.
- c. Practice knowledge of system operation for notification of ARFF responders (and other emergency responders, if applicable).

**Note: Training in this AC may be accomplished in conjunction with established recurrent training after initial familiarization.**



## APPENDIX 4 – REFERENCE AND RELATED READING

### 1. ARFF Working Group.

A non-profit international organization dedicated to the sharing of ARFF information between airport firefighters, municipal fire departments, and others concerned with aircraft fire fighting. For more information, contact the ARFF Working Group:

**1701 W Northwest Highway**  
**Grapevine, TX 76051**  
**(817) 329-5092**  
<http://www.arffwg.org>

### 2. Federal Communications Commission (FCC).

The FCC is the Federal agency that regulates interstate and international communications by radio, television, wire, satellite, and cable. For information, including forms or license status, contact the FCC:

**44512 12th St. SW**  
**Washington, DC 20554**  
**(202) 418-2022 or toll-free at (888) 225-5322**  
<http://www.fcc.gov>

### 3. National Fire Protection Association (NFPA).

The NFPA's mission is to reduce the burden of fire on the quality of life by advocating scientifically based consensus codes and standards, research, and education for fire and related safety issues, including—

- **Publication 402 – *Guide for Aircraft Rescue and Fire Fighting Operations.*** Describes operational procedures for both airport and structural fire departments with ARFF responsibilities for non-military aircraft.
- **Publication 403 – *Standards for Aircraft Rescue and Firefighting Services at Airports.*** Covers requirements for providing and maintaining ARFF services at airports.

For more information, contact NFPA:

**NFPA**  
**1 Batterymarch Park**  
**Quincy, MA 02269-9101**  
**(617) 770-3000**  
<http://www.nfpa.org>

### 4. Airport Trade/ Professional Associations.

Additional information may be obtained from airport associations, including the American Association of Airport Executives (AAAE) and the Airport Council International – North America (ACI-NA). For more information, contact—

**AAAE**  
**4212 King Street**  
**Alexandria, VA 22302**  
**(703) 824-0500**  
<http://www.airportnet.org>

**ACI-NA**  
**1775 K Street NW, Suite 500**  
**Washington, DC 20006**  
**(202) 239-8500**  
<http://www.aci-na.org>

**APPENDIX 5 – STANDARD AVIATION PRONUNCIATION AND RESPONSES****ICAO INTERNATIONAL PHONETIC ALPHABET**

<b>A</b>	Alpha	( <b>AL-FAH</b> )	<b>S</b>	Sierra	( <b>SEE-AIR-RAH</b> )
<b>B</b>	Bravo	( <b>BRAH-VOH</b> )	<b>T</b>	Tango	( <b>TANG-GO</b> )
<b>C</b>	Charlie	( <b>CHAR-LEE</b> ) (or <b>SHAR-LEE</b> )	<b>U</b>	Uniform	( <b>YOU-NEE-FORM</b> ) (or <b>OO-NEE-FORM</b> )
<b>D</b>	Delta	( <b>DELL-TAH</b> )	<b>V</b>	Victor	( <b>VIK-TAH</b> )
<b>E</b>	Echo	( <b>ECK-OH</b> )	<b>W</b>	Whiskey	( <b>WISS-KEY</b> )
<b>F</b>	Foxtrot	( <b>FOKS-TROT</b> )	<b>X</b>	X-ray	( <b>ECKS-RAY</b> )
<b>G</b>	Golf	( <b>GOLF</b> )	<b>Y</b>	Yankee	( <b>YANG-KEY</b> )
<b>H</b>	Hotel	( <b>HOH-TELL</b> )	<b>Z</b>	Zulu	( <b>ZOO-LOO</b> )
<b>I</b>	India	( <b>IN-DEE-AH</b> )	<b>1</b>	Wun	
<b>J</b>	Juliett	( <b>JEW-LEE-ETT</b> )	<b>2</b>	Too	
<b>K</b>	Kilo	( <b>KEY-LOH</b> )	<b>3</b>	Tree	
<b>L</b>	Lima	( <b>LEE-mah</b> )	<b>4</b>	Fow-er	
<b>M</b>	Mike	( <b>MIKE</b> )	<b>5</b>	Fife	
<b>N</b>	November	( <b>NO-VEM-BER</b> )	<b>6</b>	Six	
<b>O</b>	Oscar	( <b>OSS-CAR</b> )	<b>7</b>	Sev-en	
<b>P</b>	Papa	( <b>PAH-PAH</b> )	<b>8</b>	Ait	
<b>Q</b>	Quebec	( <b>KEH-BECK</b> )	<b>9</b>	Nin-er	
<b>R</b>	Romeo	( <b>ROW-ME-OH</b> )	<b>0</b>	Ze-ro	

**RADIO TERMINOLOGY**

<b>“MAYDAY”</b>	International Distress Call (radio silence for others on frequency in use). When repeated three times, it indicates imminent and grave danger and that immediate assistance is requested.
<b>“PAN-PAN”</b>	(Pon-Pon) Urgency transmissions (do not block or interfere on frequency). When repeated three times, indicates uncertainty or alert followed by the nature of the urgency.
<b>“ROGER”</b>	I have received all of your last transmission.
<b>“WILCO”</b>	I have received your message, understand it, and will comply with it.
<b>“NEGATIVE”</b>	“No” or “permission not granted” or “that is not correct”.
<b>“AFFIRMATIVE”</b>	“Yes”.
<b>“ETA”</b>	Estimated time of arrival – (runway-on time or at gate).
<b>“SOULS ON BOARD”</b>	Total number people on aircraft (passengers and crew).

**“SAY AGAIN”**                      Used to request a repeat of last transmission.

**“FUEL ON BOARD”**              Total quantity of fuel on board aircraft in pounds or kilograms.

Examples of other terminology can be found in the *International Fire Service Training Association (IFSTA) Aircraft Rescue and Fire Fighting* (4<sup>th</sup> edition).

**APPENDIX 6 – SAMPLE LETTER OF AGREEMENT (LOA) ESTABLISHING PROCEDURES FOR ARFF COMMUNICATIONS**

**(Identifying name) Airport Authority (ATC facility) Airport Traffic Control Tower  
LETTER OF AGREEMENT EFFECTIVE: (date)**

**SUBJECT:** Aircraft Rescue and Firefighting Communications – Operating Procedures

**1. PURPOSE.** To establish operating procedures for direct radio communication between the (identifying name) Aircraft Rescue and Firefighting – Incident Commander (ARFF IC), an aircraft flight crew, and the (ATC facility) Airport Traffic Control Tower (facility identifier ATCT).

**2. SCOPE.** The procedures outlined herein describe the authorization, use, and limitations of Discrete Emergency Frequency (DEF) use by aircraft, ARFF, and ATCT elements during an aircraft emergency. This Letter of Agreement (LOA) is used in conjunction with, and subordinate to, the LOA between (identifying name) airport authority and (facility identifier) ATCT to provide emergency services.

**3. RESPONSIBILITIES.** Each party to this agreement is responsible for compliance by personnel under their authority with the provisions contained herein. Training, both initial and recurrent, of involved personnel is also the responsibility of the signatories.

**4. AIRPORT AUTHORITY PROCEDURES.**

**a.** Recognizing the (identifying name) airport authority's overall control of the airport, it has the need to monitor the DEF in use during an emergency for awareness of the situation and for planning purposes. If an aircraft emergency is in progress, the DEF is designated for communications between the ARFF IC, flight crew, and the ATCT.

**b.** The ARFF IC, call sign "(airport) Command" shall initially utilize the ground control frequency established for emergency response and maintain contact with (facility identifier) ATCT on such frequency until directed to switch to the DEF.

**c.** When directed to switch to the DEF, the ARFF IC will utilize that frequency for emergency communications with the flight crew. ATC personnel will use the phraseology "(airport) Command, (aircraft call sign) on (frequency)."

**d.** The ARFF IC may request permission from (facility identifier) ATCT to establish direct communications, on the DEF, with the flight crew of the aircraft involved in the emergency. The ARFF IC shall receive direct authorization from (facility identifier) ATCT and be assigned to the DEF prior to transmitting on it.

**e.** At no time during direct communication with the emergency aircraft shall the ARFF IC make issue with an ATC instruction or clearance. Terminology on the DEF shall be in accordance with AC 150/5210-7D.

**f.** The ARFF IC shall notify the ATCT when the status of the emergency allows the release of the DEF. (Facility identifier) ATCT will then direct the emergency aircraft and all responding vehicles to return to the normal ground control frequency or as otherwise directed.

## 5. [Facility identifier] ATCT PROCEDURES.

a. Once an emergency response has been initiated, the ATCT supervisor may elect to have a separate controller coordinate the emergency on the DEF.

b. The controller assigned to coordinate the emergency shall coordinate (with all appropriate operating positions) for the arrival of the aircraft and the intent/request of responding vehicles to proceed toward the site before issuing clearance for such.

c. Aircraft/vehicles already assigned to the DEF, but not involved in the emergency, shall be assigned another frequency.

d. The controller assigned to coordinate the emergency shall approve the ARFF IC to communicate directly with the flight crew of the emergency aircraft, as appropriate.

e. ATC shall issue instructions for the ARFF IC and aircraft to switch to the DEF. Phraseology: For ARFF IC, “(airport) Command, (aircraft call sign) on (frequency)”. For aircraft, “(aircraft call sign), (airport) Command on (frequency) with transmit and receive capability.”

f. When the DEF is in use, (facility identifier) ATCT will issue control instructions and information to the flight crew and ARFF vehicles on the DEF.

g. When notified by the ARFF IC that the status of the emergency allows the release of the DEF, (facility identifier) ATCT will then direct the emergency aircraft and all responding vehicles to return to the normal ground control frequency or as otherwise directed.

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Air Traffic Manager,  
(Airport name) Airport Traffic Control Tower

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Airport Manager  
(identifying name) Airport Authority

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Chief,  
(airport name) Aircraft Rescue and Fire Fighting

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