U.S. Department
of Transportation

**Federal Aviation
Administration**

Advisory Circular

Subject: AIRCRAFT RESCUE AND FIREFIGHTING COMMUNICATIONS

Date: July 1, 1999 **AC No:** 150/5210-7C
Initiated by: AAS-300 **Change:**

1. **PURPOSE.** This advisory circular (AC) Provides guidance for planning and implementing the airport Aircraft Rescue and Firefighting (ARFF) Communications systems.

2. **GENERAL.** The prompt and efficient response of a modern ARFF service depends on the reliability of its communication and alarm systems.

3. **CANCELLATION.** Advisory Circular 150/5210-7B, *Aircraft Fire and Rescue Communications*, dated April 30, 1984, is cancelled.

4. **PRINCIPAL CHANGES**.

a. **Discrete Emergency Frequency**. New provision is established to allow for direct Flight Crew/ARFF Incident Commander/Airport Traffic Control Tower (ATCT) communications on an aeronautical radio frequency (Discrete Emergency Frequency), designated by Air Traffic Control (ATC) from the operational frequencies assigned to that facility. For the purpose of this AC, the ARFF Incident Commander (ARFF IC) is defined as the senior and ranking ARFF firefighter on the scene of the emergency.

b. **Emergency Hand Signals.** New standards for Emergency Hand Signals for use in Flight Crew/ARFF IC direct communications in the event of radio communications failure or following cockpit crew's abandonment of cockpit crew stations to emergency stations away from the radios.

c. **ARFF Incident Commander Call Sign.** New preferred radio call sign for the ARFF I C (e.g. "LAX COMMAND"), when communicating with Flight Crew and the FAA Airport Traffic Control Tower (ATCT).

d. **Training Program.** A training program and recommended implementation for new and revised standards and procedures.

5. **APPLICATION**. The FAA recommends the Guidelines contained herein for ARFF Communications Systems. This AC is not mandatory and does not constitute a regulation. However, the information contained herein provides an acceptable methodology to comply with 14 Code of Federal Regulations, part 139, Certification and Operations: Land Airports Serving Certain Air Carriers (14 CFR part 139); specifically, applicable subparagraphs of §139.319.

DAVID L. BENNETT
Director of Airport Safety and Standards

6. **OVERVIEW OF AIRPORT EMERGENCY COMMUNICATIONS.** The objective of the airport emergency communications system should be to provide an effective primary and, where necessary, an alternate means for direct communications between the following:

a. The alerting authority [FAA Airport Traffic Control Tower (ATCT), Flight Service Station (FSS), airport manager, fixed-base operator, or airline office] and the airport rescue and fire fighting service (ARFF).

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

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

d. The 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) The Discrete Emergency Frequency (DEF) establishes a direct link between the Emergency Aircraft and the ARFF IC that will provide critical information regarding the Emergency Aircraft status, if not previously provided by ATC (fuel on board, souls on board, hazmat or dangerous goods on board and location in aircraft, pilot intentions, etc.) to the ARFF IC. 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. Air Traffic Control (ATC) will instruct the Emergency Aircraft and the ARFF IC to switch to the frequency as specified in the ARFF Communications – Operating Procedures Letter of Agreement (LOA) for the Discrete Emergency Frequency between the Airport Operator and Air Traffic Control - (Sample LOA at 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 are described in this AC (Appendix 1), allowing communication of evacuation recommendations from the ARFF IC to the Pilot and/or Cabin Crew in the event of radio communications disruption or failure on the Discreet Emergency Frequency.

f. Each ARFF vehicle(s) - to include a link between firefighters in the same ARFF vehicle where operationally necessary.

7. AIRCRAFT RESCUE and FIREFIGHTING COMMUNICATION SYSTEM. The guidance in this AC is recommended for the establishment of ARFF communications systems at airports.

a. The ARFF communication system should be consistent with the airport's operational needs and consist of:

(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:

(a) Airport controlling agencies – ATC (Tower, Ground Control, Approach/Departure Control, FSS) - Airport Operations.

(b) Emergency aircraft. (Discrete Emergency Frequency). Emergency aircraft – at airports without an ATCT, or when ATCT is closed. (CTAF or 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 communication system should include:

(1) ARFF vehicles:

(a) Any vehicle that may be employed as the ARFF IC vehicle should have a hard-wired and permanently installed selectable frequency transmitter and receiver (transceiver), not to exclude hard-wired, 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, 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 (47CFR Part 87, 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 alarm located in strategic places.

(4) Understanding and compliance with universal light gun signals. See Appendix 2.

(5) Emergency hand signals. See Appendix 1.

8. INITIAL NOTIFICATION (ALARM) SYSTEM – ALERTING AUTHORITY COMMUNICATION OF ALARM TO PRIMARY RESPONDERS:

a. **Alert Enhancement.** The ARFF station dispatch room at airports with an ATCT should be linked by 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 house design and the normal activities of the ARFF personnel.

(4) The ARFF station alarm bells should be linked to the telephone ringer so that 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 Airport Traffic Control Tower.** ATCT provides initial alarm to the ARFF department via one or more of the following methods:

(1) Crash Phone – A dedicated telephone line 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 is 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 notification.

c. **Airports without an Airport Traffic Control Tower**, (or at times when 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 means with knowledgeable personnel available to operate it. Appropriate communications and alarm control devices must be available at the secondary alerting authority's operating location, and they should be operational during all times that the primary alerting authority is not available.

(2) 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.** ARFF is required on the airport during air carrier operations at 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 (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 firefighting 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 service 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 8e, this AC) 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 communication equipment operations, proper communication procedures, and local emergency plan implementation procedures.

(2) To assure that the communication 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.

9. COMMUNICATION BETWEEN ARFF PRIMARY RESPONDERS AND:

a. **Airport Traffic Control Tower.** After initial information is received regarding 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 Air Traffic Control. (Sample LOA at Appendix 6).

b. **Emergency Aircraft**:

(1) **Emergency Aircraft Flight Crews**. ATC will issue a discrete emergency frequency 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 Air Traffic Control, unless the nature of the transmission is critical to emergency operation.

(a) The discrete emergency frequency (DEF) allows the ARFF IC and the Emergency Aircraft flight crew to communicate with each other directly, allowing the ARFF IC to issue critical information concerning the exact nature of, and hazards associated with, an emergency in progress along with recommendations for action. The discrete emergency frequency will be selected by Air Traffic Control (ATC) from the operational frequencies available assigned to that ATC facility and ATC will notify the Emergency Aircraft and the ARFF IC in accordance with the LOA. (Appendix 6).

(b) The following elements should be included in the transmission from ATC directing the Emergency Aircraft to the discrete emergency frequency (DEF):

- The frequency.

- A statement that ARFF will be on the frequency with transmit and receive capability.
- 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 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 on aircraft and type of any known dangerous goods/HAZMAT on board.

(c) Only the ARFF IC, ATC, 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 ARFF IC).**

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Table 1

FUEL WEIGHT/VOLUME CONVERSION

Conversion Factors: 6.7 lb/gal – 3.04 kg/gal

~POUNDS	= GALLONS	~KILOGRAMS	= GALLONS
2,000 lbs	**300 gal**	**2,000 kg**	**658 gal**
5,000	746	5,000	1,645
10,000	**1,492**	**10,000**	**3,290**
15,000	2,239	15,000	4,934
20,000	**2,985**	**20,000**	**6,579**
25,000	3,731	25.000	8,224
30,000	**4,478**	**30,000**	**9,868**
35,000	5,224	35,000	11,513
40,000	**5,970**	**40,000**	**13,158**
45,000	6,716	45,000	14,803
50,000	**7,463**	**50,000**	**16,447**
100,000	14,925	100,000	32,895
150,000	**22,388**	**150,000**	**49,342**
200,000	29,850	200,000	65,789
250,000	**37,313**	**250,000**	**82,237**

Note: Commercial aircraft fuel indicators measure fuel quantity in POUNDS or KILOGRAMS.

Table 1: Jet Fuel Weight/Volume Conversion

c. **On Airports without an ATCT**, (or when the ATCT is closed), the Emergency Aircraft should contact the ARFF IC on the Common Traffic Advisory Frequency (CTAF) published for the airport or 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:** Communication with local and mutual aid follow-on responders should be on assigned emergency frequency networks – not on the Discrete Emergency Frequency. Before local and mutual aid follow-on responders operate on the airport movement area, they should receive clearance.

f. **Airport Operations.** ARFF response units will communicate with airport operations personnel over established non-ATC communication networks operating on assigned emergency

frequencies, other than the discrete emergency frequency.

10. **LOST COMMUNICATIONS PROCEDURES:** In the event of the loss of radio communication, the following will apply:

a. **Lost Communication 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.

a. **Lost Communications between emergency aircraft and ARFF IC:** If 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 aircrew, and all ARFF fire fighters. See training requirements listed in Appendix 3.

11. **RADIO DISCIPLINE:**

a. Common terminology should be used – 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 reference 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 discrete emergency frequency unless emergency dictates otherwise.

d. Be careful not to "step on" (transmit over) other transmissions:

(1) Wait for a break.

(2) Address whom you are calling (i.e. *LA Tower, US AIR 1042*, etc.).

(3) Identify yourself (i.e. *LAX COMMAND, Delta 1042*, etc).

(4) State your message clearly.

12. **Radio Call Signs:** Emergency communications should use only location/function specific call signs:

a. Use airport/facility name followed by function:

(1) ***Washington Command*** **(Note: ARFF responders should avoid the use of terms such as "FIRE", "CRASH", etc., as call signs that could be misconstrued).**

(2) Washington Tower

(3) ***Washington Ops***

(4) Washington Ground

(5) Washington Approach

(6) Washington Center

(7) Leesburg Radio

b. Aircraft will use their ATC assigned call signs (i.e. ***US Air 21***; ***American 30***; ***Delta 340***; ***November 123 Papa Alpha***; etc.).

APPENDIX

Appendix 1 - STANDARD EMERGENCY HAND SIGNALS

The following hand signals are established as the minimum required for emergency communication between the ARFF Incident Commander/ARFF Firefighters and the Cockpit and/or Cabin Crews of the Incident Aircraft. ARFF Emergency Hand Signals should be given from the left front side of the aircraft for the cockpit crew. Note: In order to communicate more effectively with the cabin crew, Emergency Hand Signals may be given by ARFF Firefighters 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.

Night - same with wands.

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2. **RECOMMEND STOP –** Recommend evacuation in progress be halted. Stop aircraft movement or other activity in progress.

Arms in front of head - Crossed at wrists

Night - same with wands

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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).

Night – same with wands

(Photos courtesy of The Air Line Pilots Association)

APPENDIX 2 - AIRPORT TRAFFIC CONTROL TOWER LIGHT GUN SIGNALS

Air Traffic Control Tower Light Gun Signals

MEANING			
COLOR AND TYPE OF SIGNAL	**MOVEMENT OF VEHICLES, EQUIPEMENT AND PERSONNEL**	**AIRCRAFT ON THE GROUND**	**AIRCRAFT IN FLIGHT**
Steady green	Cleared to cross, proceed or go	Cleared for takeoff	Cleared to land
Flashing green	Not applicable	Cleared for taxi	Return for landing (to be followed by steady green at the proper time)
Steady red	STOP	STOP	Give way to other aircraft and continue circling
Flashing red	Clear the taxiway/runway	Return to starting point on airport	Airport unsafe, do not land
Flashing white	Return to starting point on airport	Return to starting point on airport	Not applicable
Alternating red and green	Exercise extreme caution	Exercise extreme caution	Exercise extreme caution

APPENDIX 3 - TRAINING

1. Training for ARFF personnel:

a. Discrete Emergency Frequency (DEF):

(1) ARFF IC (and anyone who may assume that duty) is thoroughly familiar with ARFF/ATCT/Air Crew Emergency Communications Procedures – paragraph 9.

(2) Review Radio Discipline section - paragraph 11.

(3) Familiar with Appendix 5 – *Standard Aviation Pronunciation and Terminology.*

(4) Comply with Federal Communication Commission rules and procedures.

(5) Review Lost Communication procedures – paragraph 10.

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 aircrews with ARFF/ATCT/Air Crew Emergency Communications Procedures – paragraph 8 this AC.

b. Review Lost Communication procedures – paragraph 10.

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 Discrete Emergency Frequency (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 & RELATED READING

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

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 at:

44512 12th St. SW
Washington, D.C. 20554

(202) 418-2022
1-888-225-5322
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 297 –** *Guide on Principles and Practices for Communications Systems*. Provides general information about electronic systems of information transfer for fire service communication.
- **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 the NFPA at:

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) 293-8500
http://www.aci-na.org

APPENDIX 5 - STANDARD AVIATION PRONUNCIATION AND RESPONSES

ICAO INTERNATIONAL PHONETIC ALPHABET:

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

RADIO TERMINOLOGY:

"MAYDAY"	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.
"PAN-PAN"	(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.
"ROGER"	I have received all of your last transmission.
"WILCO"	I have received your message, understand it, and will comply with it.
"NEGATIVE"	"No" or "permission not granted" or "that is not correct".
"AFFIRMATIVE"	"Yes"
"ETA"	Estimated Time of Arrival – (runway-on time or at gate).
"SOULS ON BOARD"	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.

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 Advisory Circular 150/5210-7C.

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.

_____ _____

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

Airport Manager
(identifying name) Airport Authority

_____

Chief, (airport name) Aircraft Rescue and Firefighting