NFPA 424

Guide for Airport/ Community Emergency Planning

2002 Edition

NFPA, 1 Batterymarch Park, PO Box 9101, Quincy, MA 02269-9101
An International Codes and Standards Organization

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Origin and Development of NFPA 424

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The complete text was rewritten in 1986 in an informational format. The document was again rewritten in 1991. The 1996 edition was a partial revision. The 2002 edition is a partial revision.

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Committee Scope: This Committee shall have primary responsibility for documents on aircraft rescue and fire-fighting services and equipment, for procedures for handling aircraft fire emergencies, and for specialized vehicles used to perform these functions at airports, with particular emphasis on saving lives and reducing injuries coincident with aircraft fires following impact or aircraft ground fires. This Committee also shall have responsibility for documents on aircraft hand fire extinguishers and accident prevention and the saving of lives in future aircraft accidents involving fire.

This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

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NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

Changes other than editorial are indicated by a vertical rule beside the paragraph, table, or figure in which the change occurred. These rules are included as an aid to the user in identifying changes from the previous edition. Where one or more complete paragraphs have been deleted, the deletion is indicated by a bullet between the paragraphs that remain.

A reference in brackets [ ] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, Annex H lists the complete title and edition of the source documents for both mandatory and nonmandatory extracts. Editorial changes to extracted material consist of revising references to an appropriate division in this document or the inclusion of the document number with the division number when the reference is to the original document. Requests for interpretations or revisions of extracted text shall be sent to the appropriate technical committee.

Information on referenced publications can be found in Chapter 2 and Annex H.

Chapter 1 Administration

1.1 Scope. This guide describes the elements of an airport/community emergency plan that require consideration before, during, and after an emergency has occurred. The scope of the airport/community emergency plan should include command, communication, and coordination functions for executing the plan. Throughout this document, the airport/community emergency plan will be referred to as the "Plan."

1.2 Purpose. This guide was written to inform airport and adjacent community authorities of current emergency planning techniques and procedures that result in the efficient utilization of personnel from all involved organizations and agencies to provide effective delivery of emergency services in the event of an aircraft-related emergency. Jurisdictional problems previously identified in actual emergencies or emergency plan exercises point out the necessity of resolving the conflicts as part of the development of the Plan. Recommendations contained herein are not intended to conflict with any local or state regulations. One of the principal purposes of this document is to alert all participants to conflicts that can exist due to multijurisdictional factors, such as conflicts between national regulations.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this guide and should be considered part of the recommendations of this document.

2.2 NFPA Publications. (Reserved)

2.3 Other Publications.

2.3.1 ICAO Publications. International Civil Aviation Organization, 999 University St., Montreal, PQ Quebec, Canada H3C 5H7.

International Civil Aviation Organization Airport Services Manual, Part 1, "Rescue and Fire Fighting," 1990.

International Civil Aviation Organization Airport Services Manual, Part 5, "Removal of Disabled Aircraft," 1996.

2.3.2 Air Transport Association of America. Air Transport Association of America, P.O. Box 511, Annapolis Junction, MD 20701.

International Air Transport Association — Guidelines for Airport Operators and Airport Authorities on Procedures for Removal of Disabled Aircraft.

Chapter 3 Definitions

3.1* General. The definitions contained in this chapter apply to the terms used in this guide. Where terms are not included, common usage of the terms applies.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). The organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure.

3.3 General Definitions.

3.3.1 Airborne Emergency. Those emergencies that affect the operational integrity of an aircraft while in flight. The seriousness of these emergencies can be defined by using alert status guidelines stated in FAA terms, and aircraft emergencies for which services may be required, as defined in International Civil Aviation Organization *Airport Services Manual*, Part 1, "Rescue and Fire Fighting."

3.3.2 Aircraft Accident. An occurrence associated with the operation of an aircraft that takes place between the time a person boards the aircraft with the intention of flight and the time such person has disembarked, in which a person suffers death or serious injury as a result of the occurrence or in which the aircraft receives substantial damage.

3.3.3 Aircraft Incident. An occurrence, other than an accident, associated with the operation of an aircraft, that affects or could affect continued safe operation if not corrected. An incident does not result in serious injury to persons or substantial damage to aircraft. [**402:**3.3]

3.3.4 Aircraft Operator. A person, organization, or enterprise engaged in, or offering to engage in, aircraft operation.

3.3.5 Airline Coordinator. A representative authority delegated by an airline to represent its interests during an emergency covered by this guide.

3.3.6 Airport/Community Emergency Plan. Establishment of procedures for coordinating the response of airport services with other agencies in the surrounding community that

could be of assistance in responding to an emergency occurring on, or in the vicinity of, the airport.

3.3.7 Airport Manager. The individual having managerial responsibility for the operation and safety of an airport. The manager can have administrative control over aircraft rescue and fire fighting services but normally does not exercise authority over operational rescue and fire matters.

3.3.8 Airside (Airport Operational Area). The movement area of an airport, adjacent terrain, and buildings or portions thereof, access to which is controlled.

3.3.9 Air Traffic Control Provider. A service established to provide air and ground traffic control for airports. (This includes airport control tower and airport flight information services.)

3.3.10 Area.

3.3.10.1 Care Area. Location where initial medical care is given to injured.

3.3.10.2 Collection Area. Location where seriously injured are collected initially.

3.3.10.3 Holding Area. Location where the apparently uninjured aircraft occupants are transported.

3.3.10.4 Medical Transportation Area. That portion of the triage area where injured persons are staged for transportation to medical facilities under the direct supervision of a medical transportation officer.

3.3.10.5 Staging Area. A prearranged, strategically placed area, where support response personnel, vehicles, and other equipment can be held in an organized state of readiness for use during an emergency.

3.3.11 Biological Agents. Biological materials that are capable of causing an acute disease or long-term damage to the human body. [**1999:**3.3]

3.3.12 Command Post (CP). The location at the scene of an emergency where the incident commander is located and where command, coordination, control, and communications are centralized.

3.3.13 Emergency Exercise.

3.3.13.1 Aircraft Emergency Exercise. Testing of the emergency plan and review of the results in order to improve the effectiveness of the plan.

3.3.13.2 Specialty Emergency Exercise. One or more specialty agencies fully involved in an exercise to test or give the agency practice in its specialty.

3.3.14 Emergency Medical Technician (EMT). A person trained to administer emergency medical treatment more advanced than basic first aid.

3.3.15 Emergency Operations Center. A fixed, designated area to be used in supporting and coordinating operations during emergencies.

3.3.16 Grid Map. A plan view of an area with a system of squares (numbered and lettered) superimposed to provide a fixed reference to any point in the area.

3.3.17 Incident Command System (ICS). The combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure with responsibility for the management of assigned resources to effectively accomplish stated objectives pertaining to an incident (as described in the document Incident Command System) or training exercise. [**1670:**1.3]

3.3.18 Incident Commander (IC). The person in overall command at an emergency.

3.3.19 Investigation. A systematic inquiry or examination. [**1033:**2.1]

3.3.20 Mobile Emergency Hospital (MEH). A specialized, self-contained vehicle that can provide a clinical environment that enables a physician to provide definitive treatment for serious injuries at the accident scene.

3.3.21 Moulage. A reproduction of a skin lesion, tumor, wound, or other pathological state. Applied for realism to simulate injuries in emergency exercises.

3.3.22 Mutual Aid. Reciprocal assistance by emergency services under a prearranged plan. [**402:**3.3]

3.3.23 Paramedic. A medical technician who has received extensive training in advanced life support and emergency medicine. These personnel are usually permitted to administer intravenous fluids and other drugs that can arrest a life-threatening physiological condition.

3.3.24 Perimeter.

3.3.24.1 Inner Perimeter. That area which is secured to allow effective command, communication, and coordination control and to allow for safe operations to deal with an emergency, including the immediate ingress and egress needs of emergency response personnel and vehicles.

3.3.24.2 Outer Perimeter. That area outside of the inner perimeter that is secured for immediate-support operational requirements, free of unauthorized or uncontrolled interference.

3.3.25 Rendezvous Point. A prearranged reference point, that is, road junction, crossroad, or other specified place, where personnel/vehicles responding to an emergency situation initially proceed to receive directions to staging areas or the accident/incident site or both.

3.3.26 Stabilization. The medical measures used to restore basic physiologic equilibrium to a patient, to facilitate future definitive care, in order to ensure survival.

3.3.27 Triage. The sorting of casualties at an emergency according to the nature and severity of their injuries.

3.3.28 Triage Tag. A tag used in the classification of casualties according to the nature and severity of their injuries.

Chapter 4 Elements of Emergency Planning

4.1 General. *(See Annex C.)*

4.1.1 It is the function of the airport operator to develop a plan and procedures for all perceived emergencies applicable to the airport's characteristics and operation. The Plan should describe the coordination of the actions to be taken in an emergency occurring at an airport or in its vicinity. It should be built around an incident command system compatible with provider agencies.

4.1.2 "During the emergency" considerations depend on the exact nature or location of the incident or both. The location

should dictate the agency responsible for management of the emergency. As the nature of the incident changes from emergency operations to the investigative phase, the appropriate investigative agency should assume command and responsibility for the incident scene. All agencies responding to the incident should know, in advance, their respective roles and responsibilities and whom they report to and who reports to them.

4.1.3 "Post-emergency" considerations also should be given considerable attention. Transition of authority and other legal factors should be discussed and preplanned. Consideration should be given to the restoration of protective services in order to permit continuation of normal airport/aircraft operations and public protection that were disrupted by the emergency. Due to specialized training and equipment, ARFF units should be made available for response as expeditiously as possible.

4.1.4 The recommendations contained in this document are based on the requirement that rescue of aircraft occupants and other related accident victims is the primary operational objective. Effective operations require a great deal of preplanning and regular exercises that provide an opportunity for realistic training of personnel from all agencies that will be involved in the incident.

4.1.5 It is crucial that response agencies consider local weather conditions and nighttime operations while developing details of the Plan. For example, low temperatures can freeze medical solutions or tubing during protracted extrication operations. Severe weather conditions also can negatively affect fire fighting foam solution. Precautions should be taken, where necessary, to mitigate weather induced physical problems such as hypothermia and dehydration. Such considerations should apply to emergency personnel, as well as victims of the accident.

4.1.6 Amendment of the Plan.

4.1.6.1 The airport operator should maintain the master records of the Plan and transmit to each participating agency amendments, additions, and revisions as appropriate.

4.1.6.2 The scope of the Plan should include command, communication, and coordination functions for executing the Plan. The Plan should be constructed using a modular and severable format in order to facilitate revisions of specific elements without having to rewrite the entire Plan. The Plan should be reviewed on an annual basis by all participants. The review should include a comprehensive analysis of lessons learned from training sessions, incidents, geographical and physical changes, legal and technical changes, and other factors that can influence the adequacy of the Plan.

4.1.7 Training Costs. The costs of a major training exercise can be a considerable factor for even the smallest of airports. Budgetary planning for training costs should include salaries for personnel; consumables such as fuel, extinguishing agent, medical supplies, legal advice; and other necessary items, such as food for all participants.

4.2 Types of Emergencies and Emergency Alerts. *(See Annex D.)*

4.2.1 Many different types of emergencies can strike a community. However, when creating an airport/community emergency plan, the focus should be on aircraft-related incidents. Preparation including risk assessment for other types of emergencies should be addressed in the pre-emergency planning documents built around the special nature of those incidents.

4.2.2 Most aircraft accidents occur within the airport operational area. However, experience has shown that the most devastating aircraft accidents have been those that occur off-airport, involving structures. It is therefore necessary to design a plan that provides for the needs of both.

4.3 Essential Elements of the Plan. The following should be considered as essential elements of an airport/community emergency plan:

(1) Establishment of formal instruments/agreements/joint powers, and so forth, to initiate development and implementation of the Plan
(2) Detailed planning for 24-hour response, communications, logistics, and so forth
(3) Agreement for incident command and control systems and procedures (all agencies involved within the emergency plan should be aware of each other's defined duties)
(4) Funding for practice
(5) Regular and "as needed" Plan updates
(6) Public relations efforts that bring popular and political support to maintaining readiness

Chapter 5 Agencies Involved

5.1 Agencies.

5.1.1 The Plan should have an up-to-date list of all agencies involved. In addition to agency identification, the list should include current telephone numbers, e-mail addresses, and names of primary contact persons. This list should be reviewed, revised as necessary, and distributed to all agencies on a regular basis.

5.1.2 The first step in a viable airport emergency plan is to have the cooperation and participation of all concerned airport/community authorities and agencies. Those that should be involved are as follows:

(1) Air traffic control services
(2) Rescue and fire fighting services (departments)
(3) Police/security services
(4) Airport operator
(5) Emergency medical services, including ambulance services, hospital coordination center
(6) Hospitals
(7) Aircraft operators
(8) Government services
(9) Communications services
(10) Airport tenants
(11) Transportation authorities (land, sea, and air)
(12) Rescue coordination center
(13) Civil defense
(14) Mutual aid agencies
(15) Harbor patrol and/or coast guard
(16) Military
(17) Clergy
(18) Public information office/news media
(19) Mental health agencies
(20) Customs
(21) Public utilities
(22) Postal authorities
(23) Veterinary service

(24) Coroner
(25) Volunteer organizations (for example, International Red Cross)
(26) Civil engineering contractors

5.2* Air Traffic Control Services. For emergencies involving aircraft, the airport traffic control provider is required to contact the rescue and fire fighting service and provide information on the type of emergency, such as the type of aircraft, number of persons on board, fuel quantity, and location of the accident, if known. After the initial call, mutual aid agencies should be provided the airport grid map reference, rendezvous point, and, where necessary, the airport entrances to be used. Alternately, this function can be assigned by the Plan, either in whole or in part, to another organization or unit. The Plan also can specify that air traffic control services is responsible for initiating the notification of local fire departments and other appropriate agencies in accordance with procedures established in the Plan. The Plan can assign this function to another agency, such as the local fire department dispatching center, but it is very important that this extremely crucial function be well-documented and understood by all concerned. It will be the responsibility of the traffic control provider to restrict airport operations on the depletion of fire cover and/or if the runways are obstructed. This will be communicated by a "Notice to Airmen" (NOTAM).

5.3 Rescue and Fire Fighting Services (Departments).

5.3.1* The primary responsibility of airport rescue and fire fighting personnel is to save lives. Property endangered by aircraft incidents and accidents occurring on or near the airport should be preserved as far as practical. To achieve this objective, fire control normally is defined as "securing" the area to prevent any reignitions. There can be aircraft accidents, however, where fire does not occur or where the fire is rapidly extinguished. In every case each action taken is aimed at providing the most immediate attention possible to survivors of the accident with special emphasis on the initial care and timely transportation of the immediate care (Priority I) victims to the appropriate trauma center.

5.3.2 Rescue and fire fighting personnel should receive emergency medical training that meets the minimum standards of their state and local jurisdictions. The stabilization of seriously injured victims can depend entirely upon these first-arriving personnel. Coordination with other responding personnel having advanced medical expertise (paramedics and medical doctors) should be addressed in the Plan.

5.3.3 The fire fighting officer in command should be identified by a standard distinctive uniform. In addition, the Plan should provide for a highly visible vest or other apparel with reflective lettering, front and back, that reads "INCIDENT COMMANDER."

5.3.4 Only fire fighting and rescue personnel wearing approved fire fighting protective clothing and equipment should be allowed in close proximity to an aircraft accident site [300 ft (100 m) from any point on the aircraft or any fuel spillage is usually considered a safe distance].

5.3.5 As part of the interagency planning process, health and safety risks associated with an aircraft accident/incident should be communicated to other agencies that could become involved. The incident commander of the ARFF response should ensure that other agencies working within the immediate crash site are aware of the potential hazards, and the appropriate personnel protective clothing/equipment that could be required.

5.4 Police/Security Services.

5.4.1 In an airport emergency, it should be expected that the first police or security officer to arrive at the scene will initiate site security procedures and request reinforcement as needed. It should be expected that these responsibilities will be spelled out in the Plan, identifying the responsible law enforcement agency for the accident site and providing for a smooth transition of command should responsibility for site security shift from one agency to another.

5.4.2* Congestion-free ingress and egress roads should be established immediately for emergency vehicles. The security services, police force, or other appropriate local authorities should be expected to ensure that only persons with specific tasks are allowed at the scene of the accident, and they also should be expected to route the normal traffic away from or around the accident site.

5.4.3 The Plan should provide for the prevention of unauthorized access to the accident site and for preserving the site undisturbed for investigation purposes.

5.4.4 A mutual aid program should be instituted between all potentially involved security agencies, for example, airport, city, local, and governmental security forces; mail inspectors; and, where appropriate, military police and customs officials.

5.4.5 A method of easy identification of responding emergency personnel should be implemented at security check points to ensure that appropriate emergency personnel have immediate access to the accident site. "Emergency Access" identification can be preissued by the airport operator to emergency personnel for use during an emergency.

5.4.6 In many cases it is not possible or practicable for vehicles of mutual aid fire departments, ambulances, and so forth, to proceed directly to the accident/incident site. It should be essential that the emergency plan include procedures for meeting at a designated rendezvous point or points. A rendezvous point also can be used as a staging area where responding units can be held until needed at the accident site. Suitable accommodation should be provided at the rendezvous point(s) for the rendezvous point officer to facilitate the briefing of incoming officers in charge of supporting services. Adequate telephone and radio provisions should be available. Those controlling the rendezvous point should also consider the suitability of vehicles to adverse terrain conditions at the accident site in order to prevent obstruction of the access route by disabled vehicles. Staging of vehicles can prevent traffic jams and confusion at the accident scene.

5.4.7 To easily identify and distinguish the security/police officer in command, a distinct colored vest with reflective lettering displayed front and back should be utilized.

5.5 Airport Operator.

5.5.1 The airport operator is responsible for establishing, promulgating, and implementing the Plan and designating a person to take charge of the overall operation at the command post. (Incident command should rest with the agency having jurisdiction.) The Plan should call for the airport operator to ensure that the information on names, e-mail addresses, and telephone numbers of offices or people involved in an airport emergency is kept up-to-date and distributed to all concerned. The Plan also should set up necessary meetings

of the airport emergency plan coordinating committee, composed of key personnel from participating agencies for critique of the Plan, after it has been tested or implemented. The airport operator should be responsible for closing the airport, or part of it, and ensuring that aircraft operations are resumed only when circumstances permit aircraft to operate safely without interfering with rescue activities.

5.5.1.1 The removal of disabled aircraft should be part of the plan. It would be incumbent on the airport operator to ensure that airlines using the airport have made adequate plans and arrangements either separately or conjointly to ensure prompt arrival of recovery equipment and qualified personnel.

5.5.2 To easily identify and distinguish the airport operations officer, a distinctive colored vest with reflective lettering displayed front and back should be utilized.

5.6 On-Scene Medical Services.

5.6.1 The purpose of medical services is to provide triage, medical care, and transportation to accident victims. The optimal goal should be transport of the immediate (Priority I) victim to the appropriate trauma center.

5.6.2 It is essential that the medical aspects of the Plan be integrated with other local community emergency plans and agreements.

5.6.3 A medical coordinator should be assigned to assume command of the emergency medical operations at the accident site. In some cases, it might be necessary to appoint an interim medical coordinator, who will be relieved when the designated medical coordinator arrives. An interim medical coordinator should be assigned by the airport rescue and fire fighting command personnel.

5.6.4 Medical and ambulance services can be an integral part of the airport services, particularly whenever an ambulance service is a part of the airport's rescue and fire fighting service. Whenever medical and ambulance services are not available at the airport, prearrangement with local, private, public, or military medical and ambulance services should be made. The plan should ensure the dispatch of a satisfactory assignment of personnel, equipment, and medical supplies. To ensure a rapid response, the plan can include arrangements for land, sea, and airborne transportation of medical services to the scene, and the subsequent transportation of persons requiring immediate medical care. Prearrangements are necessary to ensure the availability of doctors and other medical personnel for all airport emergencies.

5.6.5 The Plan should designate a medical transportation officer whose responsibilities would include all of the following:

(1) Alerting hospitals and medical personnel to the emergency
(2) Directing transportation of casualties to hospitals properly suited to the particular injury
(3) Accounting for casualties by recording route of transportation, hospital transported to, and casualty's name and extent of injuries
(4) Advising hospitals when casualties are en route
(5) Maintaining contact with hospitals, medical transportation, the senior medical officer, on-scene command post, and the command post

5.7 Hospitals.

5.7.1 Participating hospitals should have contingency emergency plans for blood donations and to provide for mobilization of necessary medical trauma teams to the accident site in the shortest possible time. Availability of qualified personnel and adequate facilities at the hospitals are vital. Therefore, it is important to establish in advance an accurate list of surrounding hospitals classified according to their effective receiving capacity and specialized features, such as neurosurgical ability or burn treatment.

5.7.2 The distance from the airport and the ability to receive helicopters should be considered. Reliable two-way communication between the incident command post and these entities is important. The alert of an aircraft accident should be made to a single medical authority/agency, which then alerts all appropriate facilities according to a local medical communications network.

5.7.3 It is essential that hospitals continually communicate through a central control point to facilitate distribution of critically injured patients. Information regarding availability of a specific trauma center, operating room, and ward space should be collected at a central control point, designated in the Plan, and disseminated to the medical transportation officer at the scene.

5.8 Aircraft Operators. *(See Annex E.)*

5.8.1* The aircraft operator/company of an aircraft involved in an accident should be expected to provide full details of aircraft-related information, such as the number of persons on board, fuel, and cargo information. This information is vital to the incident commander and can influence the tactics and strategies used to deal with the emergency.

5.8.2 Aircraft operators also should be responsible for providing first arrangements for any uninjured survivors who need to continue their journey or require accommodation or other assistance. They also might be responsible for contacting deceased passengers' next of kin. Clergy, police, international relief agencies (Red Cross, etc.), and mental health agencies will normally assist in the accomplishment of this task.

5.8.3 The proper disposition of all cargo, mail, and baggage aboard an aircraft involved in an accident is the responsibility of the aircraft operator. Permission to remove these items from the aircraft can be granted by the incident commander after the emergency has been abated and the requirements of the accident investigators have been met.

5.8.4 The airport emergency plan should designate an agreed resource to respond to emergencies that involve a chartered, private, military, or other nontenant aircraft operator.

5.9 Government Agencies. In order to avoid conflict and confusion between participants, the airport emergency plan should clearly define the obligation, controls, and limitations placed on the airport operator by government agencies. Post-accident investigation, unlawful seizure of aircraft, bomb threats, and bombings can fall into jurisdictions other than that of the airport operator. The environmental or rivers protection agency or both should be aware of the potential hazards from an aircraft accident to ensure that measures are in place to prevent contamination through fuel spillage, fire fighting media, airborne particulate, and oxidization of metals. The Plan should reflect procedures for informing these agencies of an accident.

5.10 Communication Services. Arrangements should be made to provide all airport agencies involved in an emergency

with two-way communication capabilities. The Plan also should provide an adequate communication network to be maintained with the off-airport agencies responding to an emergency. The Plan should call for the command post and emergency operations center to have the capability of freely communicating with all participating agencies. Cellular telephones can be extremely effective. Amateur, military, and civil defense radio networks are worth considering as a back-up.

5.11 Airport Tenants. Airport tenants and their employees should be considered a prime source of readily available equipment and manpower who might have intimate knowledge of the airport and aircraft. They can be invaluable, especially if their backgrounds include medical training, food preparation, or transportation. It is important that these persons be deployed under supervision and assigned specific functions to avoid duplication of efforts and the possibility of disrupting other emergency operations.

5.12 Transportation Authorities (Land, Sea, Air).

5.12.1 In an emergency, vehicles are needed to carry out rescue operations, transport personnel, and haul supplies and debris. Responsibility for the control of vehicles to be used during an emergency should be assigned to a designated transportation officer. The emergency plan should include an inventory and assignment of transportation and mechanical equipment held at the airport, such as transportation vehicles, trucks, diggers, cranes, and cars, with contingency plans for staff to be called to operate the equipment.

5.12.2 In airport emergencies, provision should be made for an easily identifiable guide vehicle(s), equipped with two-way radio communication, to lead groups of vehicles from the rendezvous point(s) or staging area to the accident site to avoid interference with aircraft operations.

5.12.3 To easily identify and distinguish the transportation incident commander, a distinct colored vest with reflective lettering displayed front and back should be utilized.

5.12.4 Suitable rescue equipment and services should be available for use at an airport where the area to be covered by the appropriate services includes water or swampy areas or other difficult terrain that cannot be fully served by conventional wheeled vehicles. This is particularly important where a significant portion of approach and departure operations takes place over these areas.

5.13 Rescue Coordination Center. Rescue coordination centers can play a significant role in an aircraft accident occurring in the vicinity of an airport if the site of the accident is not known or if rescue facilities in addition to those available at or near the airport are required to be brought into action. Rescue coordination centers should have means of immediate communication with all rescue units within their areas of responsibility, including units able to provide aircraft, helicopters, and special rescue teams and, where appropriate, with coastal radio stations capable of alerting and communicating with surface vessels. Assistance from these units can be essential in responding to an accident in the vicinity of the airport. It is therefore suggested that the potential role of the rescue coordination center be specifically highlighted in the proposed airport emergency plan document in a separate paragraph.

5.14 Civil Defense. The airport emergency plan should be integrated with the local community civil defense emergency plan and with local search and rescue teams. Consideration should be given to the role the airport may have as a result of coordination with civil defense officials and in support of any civil defense emergency plan requirements.

5.15 Mutual Aid Agencies.

5.15.1* Airport emergencies can be of such magnitude that local rescue and fire fighting, security, law enforcement, and medical services are inadequate to handle the situation. It is therefore strongly recommended that written mutual aid agreements be initiated to ensure the prompt and orderly response of these agencies.

5.15.2 All mutual aid agreements should be reviewed or revised annually. Telephone and personnel contacts should be reviewed and updated monthly.

5.16 Harbor Patrol and Coast Guard. Harbor Patrol and Coast Guard services are vital to airports adjacent to large bodies of water. Coordination of such services should be included in the Plan where applicable. Communication requirements to obtain the immediate response of such services (and the ability to communicate during the emergency) should be an essential ingredient of the Plan. If the area where the boats are to be operated is subject to freezing, vehicles suitable for operation on ice (i.e., hovercraft, swamp boats, etc.) should be available. *(See Annex F.)*

5.17 Military. Where a military installation is located on or in the vicinity of an airport, a mutual aid agreement should be initiated to integrate personnel with command, communication, and coordination functions of the emergency plan.

5.18 Clergy. The Plan should include advance agreements with clergy of all faiths to provide comfort to casualties and relatives.

5.19 Public Information Officer. A public information officer should be designated. This officer should coordinate and release factual information to the news media and also should coordinate public information statements between all parties involved. It is recommended that the television and radio news media be requested to withhold the release of accident information to allow sufficient time for adequate security to be established. Past history has shown that, as knowledge of the accident spreads, onlookers flock to the site and interfere with emergency vehicles' access to the incident.

5.20 Mental Health Agencies. The emergency plan should include the local mental health agencies. Therapeutic treatment as well as follow-up procedures for dealing with the possible long-term effects of the emergency should be available for survivors, relatives, eyewitnesses, and emergency scene personnel.

5.21 Customs. The Plan should include agreed procedures required by the customs authority for the examination of baggage and freight to ensure that dutiable goods and contraband is not being brought into the country illegally.

5.22 Public Utilities. An airport has a heavy reliance on the supply of public utilities; the Plan should include agreed procedures in the event of a potential emergency, which affects the supply of gas, electricity, water, and communications.

5.23 Post Office. Postal services include the transportation of mail by air; the Plan should include procedures for the retrieval of official post, which might be carried on aircraft that have been involved in an accident.

5.24 Veterinary Service. Procedures should be in place within the Plan to ensure that in the event of an aircraft accident, veterinary services respond immediately.

5.25 Coroner. The Plan should reflect agreed upon procedures for temporary mortuary arrangements, which should be located remote from public view, large enough for its intended use, with electricity, running water, and suitable screening. Fire department facilities or any facility used by responding emergency personnel should not be used for this purpose.

5.26 Volunteer Organizations. Within the airport envelope many volunteer organizations exist that support the local community and that at a time of crisis have contingency plans in place to render assistance. It is important that when compiling a plan these organizations are approached as to facilities or support they may be able to offer to complement the plan. (e.g., International Red Cross, etc.).

5.27 Additional Support Services. Where necessary, airport operators should ensure that the plan reflects additional support by the use of external civil engineering contractors.

Chapter 6 Functions of Each Agency for an Aircraft Accident On-Airport

6.1* General. The airport/community emergency plan should be implemented immediately upon an aircraft accident occurring on-airport. Responding agencies should comply with Section 6.2 through 6.10.

6.2 Action by Air Traffic Control (ATC) Services.

6.2.1 Air traffic control services should initiate emergency response by using the alarm communications system. *(See Figure 6.2.1.)*

6.2.2* Information on the location of the accident, giving grid-map reference or identifying terrain or landmark features should be immediately provided by air traffic control services. Initial details should include the type of aircraft. Subsequent information should include details such as the occupants, fuel on board, aircraft operator (if known), and the presence or absence of any dangerous goods, including the type, quantity, and location.

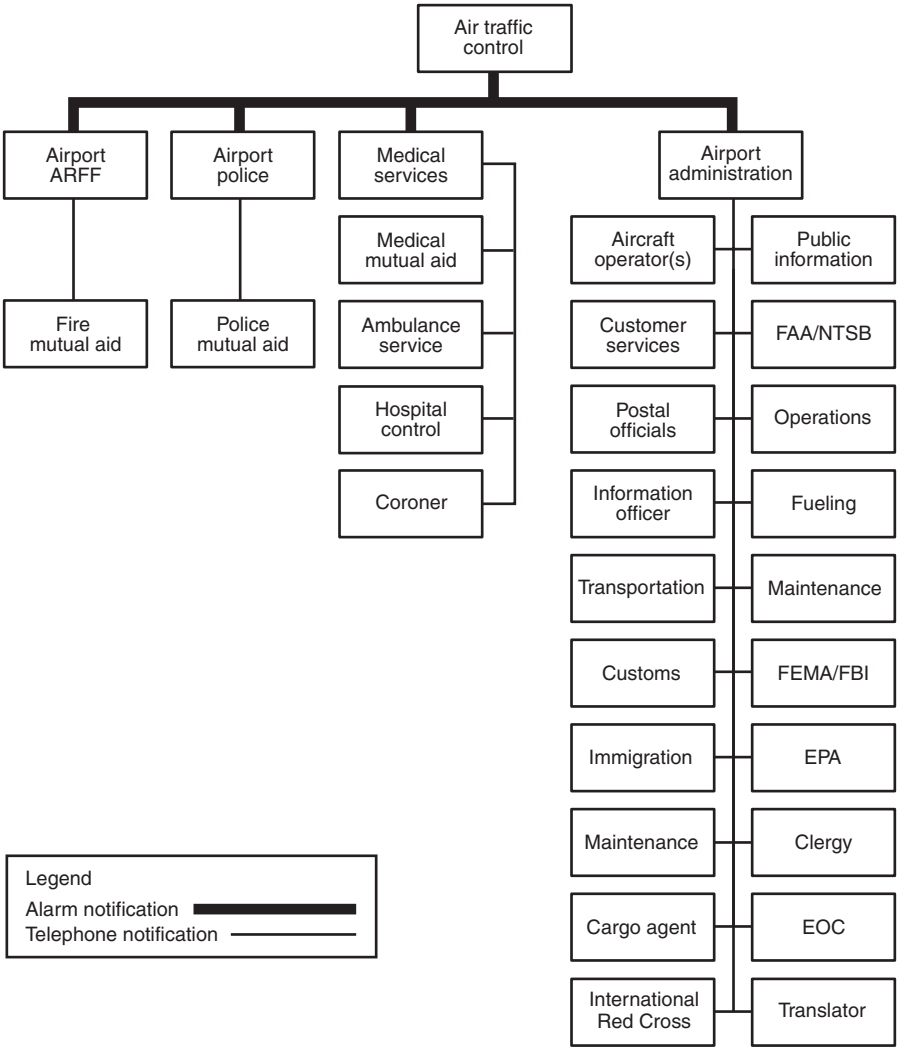

FIGURE 6.2.1 Sample Notification Chart — Aircraft Accident On-Airport.

6.2.3 Air traffic control should initially restrict aircraft operations to the degree necessary to prevent expansion of the accident scenario and facilitate emergency response.

6.2.4 An appropriate Notice to Airmen (NOTAM) should be initiated by the airport, for example, "Airport rescue and fire fighting protection reduced/unavailable until (insert time) or until further notice due to aircraft accident." (Note that this notice may be automatic if so delineated in the plan.)

6.2.5 Air traffic control should confirm that the actions above were completed, utilizing pre-established checklists, indicating notification time(s) and name of person(s) completing action(s).

6.2.6 Air traffic control should immediately establish restricted airspace over the immediate vicinity of the accident to facilitate evacuation of casualties by helicopter and preclude interference with emergency operations by nonemergency flights.

6.3 Action by Rescue and Fire Fighting (RFF) Services.

6.3.1 An alarm for an aircraft accident on the airport will normally be received from the air traffic control services. When, however, an alarm is received from any other source, or an accident is observed, or there is reason to consider that one is imminent, the airport rescue and fire fighting services should initiate immediate action. The air traffic control services should be informed by the responding fire fighting services as to the nature of the alarm, its location, and the response initiated.

6.3.2 Airport rescue and fire fighting services should carry out as follows:

(1) Proceed via established access routes to the incident as indicated by air traffic control services
(2) Advise mutual aid fire departments while en route of the following:
  (a) Rendezvous point
  (b) Staging area(s)
  (c) Manpower and equipment required for support if known
  (d) Any other pertinent information
(3) Immediately establish an on-scene command post

6.3.3 Command authority at any accident site should be predetermined according to the jurisdictional responsibilities of the agencies involved and as designated in the airport/community emergency plan.

6.3.4 Prior agreement should be reached between the on-airport rescue and fire fighting service and the off-airport mutual aid fire departments as to who is best equipped to fight fires in aircraft hangars or other airport structures. Additionally, there should be prior agreement as to which agency will be in command when an accident involves an aircraft or an airport structure or both.

6.4 Action by Police/Security Services.

6.4.1 The first security/police officer to arrive should coordinate with the incident commander and, to the extent possible, immediately establish free traffic lanes on ingress and egress roads for emergency vehicles, initiate security responsibility, and request reinforcements as needed. Traffic flow and site security should be the primary responsibility of police and security personnel. They should notify the appropriate communications center of the location of the accident and available means of access and egress. After consultation with the incident commander, they should initiate traffic control measures in order to aid responding emergency vehicles. They should notify the airport security communications center or the incident commander (where appropriate) of the location of the accident, access, ingress, and egress roads available, and where responding security personnel should make initial response and recommendations for setting up roadblocks away from the accident site to aid responding emergency vehicles. Responding police vehicles should not proceed directly to the accident site, but set up appropriate roadblocks at least two to three blocks away, as directed by supervisory authority to prevent road congestion.

6.4.2 Security personnel and police should handle traffic in the vicinity of the accident site, admit only authorized emergency personnel to the scene, keep unauthorized persons from the accident site, and be responsible for preservation of the accident scene.

6.4.3 All unnecessary traffic should be routed away from and around the accident site.

6.4.4 The emergency site should be cordoned off as soon as possible to exclude intruders, media, sightseers, onlookers, and souvenir hunters. Appropriate markings should be prominently displayed to advise all persons of possible hazards that can cause serious injury should they encroach on the area.

6.4.5 Communications between all security check points and the command post or emergency operations center or both should be established as soon as possible.

6.4.6 Identifying arm bands, site passes, I.D. tags, or other indication of empowerment should be issued by the authority having jurisdiction and monitored by the security services.

6.4.7 Special security provisions should be instituted for the protection of the flight crew, flight data recorders and cockpit voice recorders, any official post involved, and any dangerous goods that could be present.

6.5 Action by Airport Operator.

6.5.1 The airport operator representative should respond to the accident site and, as needed, set up an easily identifiable mobile command post. The mobile command post should be adequately staffed by senior representatives able to make decisions involving the following types of operations:

(1) Airport
(2) Security
(3) Medical
(4) Aircraft
(5) Aircraft recovery
(6) Aircraft fueling

6.5.2 The airport operator should commence pre-established checklist procedures that verify the following:

(1) The airport emergency operations center has been activated.
(2) Mutual aid police procedures have been initiated and secondary notification calls have been made.
(3) Medical and ambulance services have been alerted and their arrivals verified at the designated rendezvous point or staging area.
(4) Mutual aid fire departments have been notified and escort has been provided for their access to the accident site.

(5) The affected aircraft operator has been notified and information obtained on any dangerous goods or hazardous materials on board the aircraft, for example, explosive substances, flammable gases and liquids, combustible solids, oxidizing substances, poisonous substances, radioactive materials, or corrosives, total number of occupants (passengers, crew non-revenue generating passengers, infants).
(6) Liaison has been established with air traffic control services concerning the closure of airport areas, designation of emergency response corridors, and issuing of voice advisories and Notices to Airmen (NOTAM) advising of status of airport rescue and fire fighting protection.
(7) Government aircraft accident investigation authorities, such as the National Transportation Safety Board (NTSB), have been notified (if military aircraft is involved the appropriate military organization should be notified).
(8) The meteorological department has been notified to make a special weather observation.
(9) Arrangements have been made for the affected runway to be surveyed immediately by the appropriate personnel to identify the location of crash debris and to ensure that the debris be secured pending release by investigating agencies.
(10) Airspace reservation coordination offices (Air Traffic Flow Control Office), if any, have been advised of airport capabilities.
(11) Medical Examiner's/Coroner's Office has been notified to assist with fatalities if necessary.
(12) Temporary morgue facilities have been identified and designated.

6.5.3 In conjunction with mutual aid police, the airport operator should carry out the following:

(1) Designate rendezvous points and staging areas for the inner and outer perimeters
(2) Assign security personnel at the staging area or rendezvous point or both to escort vehicles so as to ensure the orderly flow of emergency personnel to the accident site, particularly the provision of escort for ambulances responding to the rendezvous point and from the staging area
(3) Assign parking areas for escort vehicles and ambulances, giving consideration to the need for rapid deployment when dispatched
(4) Prophylactic (preventative) medical treatment for all personnel engaged in response, investigation, and recovery
(5) Protective clothing for those involved in investigation and recovery

6.5.4 The airport operator also should, to the extent possible, arrange to have available the following services as could be required:

(1) Portable emergency shelter for use by other than medical services
(2) Lavatories
(3) Drinking water
(4) Ropes, barriers, and so forth
(5) Food service
(6) Mobile or portable lighting
(7) Portable heating system
(8) Cones, stakes, flags, and signs
(9) Machinery, heavy equipment, and extraction tools
(10) Communications equipment such as megaphone, portable telephone, and so forth
(11) Fuel removal equipment

6.5.5 The airport operator should provide the initial briefing for their airport public information officer. They should then coordinate, where appropriate, with the public information officer of the aircraft operator involved to provide the following:

(1) Media releases for the various media officers from the agencies involved
(2) Briefings and statements that will be released to the media

6.5.6 Upon concurrence of the chief fire officer, police/security chief, and the medical coordinator, the airport operator's incident commander should notify all participating mutual aid organizations of termination of the airport emergency. Note that this might not terminate all actions and responsibilities of participating agencies.

6.5.7 The aircraft operator representative should make arrangements for bus transportation from the accident site to the designated traumatized holding area. Transportation of the walking wounded from the scene should be permitted only after consultation with the medical coordinator. Passengers should be under medical supervision while awaiting transportation, during transport, and at the receiving processing site.

6.6 Action by Medical Services. The medical coordinator should coordinate with the medical transportation officer and medical services the following:

(1) Verify that mutual aid medical and ambulance services have been alerted and verify their subsequent arrival at the rendezvous point or staging area and that a medical communication network is established
(2) Organize the necessary action for triage and treatment of the casualties and their eventual evacuation by appropriate means of transportation
(3) Provide control and dispatch of the casualties to the appropriate hospitals by land, sea, or air
(4) Maintain an accurate list of the casualties including names, as available, and their destination for treatment
(5) Coordinate, with the airport operator and the aircraft operator concerned, the transportation of the apparently uninjured to the designated holding area
(6) Arrange for the restocking of the medical supplies, if necessary
(7) Provide medical analysis of the walking wounded or traumatized

6.7 Action by Hospitals. Hospitals listed in the emergency plan should be prepared to do the following:

(1) Provide medical care to the casualties when they arrive
(2) Provide doctors and trauma teams in accordance with the airport/community emergency plan
(3) Ensure that adequate doctors and nurses, blood, operating rooms, intensive care, and surgical teams are available for emergency disaster situations, including aircraft accidents

6.8 Action by Aircraft Operators.

6.8.1 An aircraft operator representative should report to the command post to coordinate the aircraft operator activities with the incident commander.

6.8.2 The aircraft operator representative should provide information regarding occupants and dangerous goods or hazardous materials on the aircraft. These include explosive substances, flammable liquids or gases, combustible solids, oxidizing substances, poisonous substances, radioactive materials, and corrosives. Information of this nature should be relayed as soon as possible to the chief fire officer and the medical coordinator.

6.8.3 The aircraft operator staff should proceed to the designated uninjured holding area. The aircraft operator representative at the uninjured holding area should appoint a receptionist, registrars, and welfare coordinators from staff who have been previously trained in these functions.

6.8.4 The aircraft operator representative who is in command of the uninjured holding area should oversee the overall operations by making arrangements for commissary items, clothing, telephone facilities, and additional medical services if required.

6.8.5 The receptionist should meet the transportation vehicles as they arrive from the scene of the accident and direct the passengers to the registrars' tables where they will be processed. The receptionist also should explain where toilet facilities, telephones, and other amenities are located. However, migration outside the holding area should be prevented until each person transported to the holding area is identified and processed according to the Plan.

6.8.6 The registrar should record the passenger's name on the manifest and determine what reservation requirements are desired, that is, hotel accommodation, air transportation, or other modes of transportation, and so forth, and any persons to be notified of the passenger's physical or mental condition and potential plans. The registrar then should make out an identification tag or sticker and place it on the passenger. When their registration is completed, the registrars then should direct passengers to the welfare coordinators.

6.8.7 Welfare coordinators and mental health specialists trained in stress management should proceed with the following:

(1) Give support and comfort to relatives and friends of persons on board the aircraft involved
(2) Register relatives and friends waiting at the airport for information about persons on board
(3) Provide care, comfort, and assistance to the walking injured and uninjured survivors and responding personnel (if required)
(4) Assist in the provision and serving of refreshments to waiting relatives and friends

The welfare plan should provide for a suitable location to carry out the functions as well as procedures for alerting and coordinating welfare organizations.

6.8.8 The aircraft operator should provide notification of the aircraft accident to the following:

(1) Health and welfare agencies
(2) Customs, where applicable
(3) Immigration, where applicable
(4) Post office
(5) Environmental protection agencies, where applicable

6.8.9 An aircraft operator official should arrange for the initial notification of relatives and friends.

6.8.10 News releases by aircraft operators should be prepared in conjunction with the airport public information officer and liaison officers from other agencies involved in the accident.

6.8.11 The aircraft operator is responsible for the removal of the wrecked or disabled aircraft as soon as authorized by the Accident Investigation Board or its designee. For aircraft removal technique, see *International Civil Aviation Organization Airport Services Manual*, Part 5, "Removal of Disabled Aircraft." Also see *International Air Transport Association — Guidelines for Airport Operators and Airport Authorities on Procedures for Removal of Disabled Aircraft*.

6.9 Action by Government Agencies. The following government agencies can be required to take appropriate action as indicated in their emergency plan:

(1) Accident Investigation Board
(2) National Aviation Administration (e.g., FAA and CAA)
(3) Health and welfare
(4) Post office
(5) Customs
(6) Immigration
(7) Agriculture
(8) Public works

6.10 Action by the Public Information Officer.

6.10.1 All media personnel should be directed to a designated news media staging area for news media personnel authorized to cover an airport emergency. Selection of staging areas should take into consideration media needs for photography and video transmission. At this area the following should be provided:

(1) Latest briefing
(2) Communications (telephones)
(3) Transportation service to and from the scene of the emergency, where permissible and where it will not interfere with rescue, medical treatment of casualties, and the accident investigation

6.10.2 Only members of the news media, freelance reporters, and photographers wearing a valid regular police working news media card should be admitted to the briefing area or permitted in the designated news media staging area or transported to the scene of the emergency.

6.10.3 In general, the official authority for news releases concerning an aircraft emergency should be one of the following:

(1) A public information officer designated by the airport operator
(2) The representative of the aircraft operator involved
(3) Both (1) and (2)
(4) Upon assumption of jurisdiction, the lead investigative agency

6.10.4 Under no circumstances should the news media or any other personnel not involved in life saving or fire fighting operations be permitted inside security lines until all rescue operations have been completed and the area has been declared safe by the chief fire officer. When establishing security lines, the interests of news coverage should be taken into account insofar as rescue operations permit.

6.11 Organization Charts.

6.11.1 Organization charts should be prepared for each anticipated type of emergency situation, off-airport incident, on-airport incident, earthquake, or flood.

6.11.2 These charts should depict the relationships and duties of all components of the Plan in such detail that each participating agency has a full understanding of its duties and responsibilities.

Chapter 7 Functions of Each Agency for an Aircraft Accident off the Airport

7.1* General. The airport/community emergency plan should be implemented immediately upon an aircraft accident occurring off the airport. Responding agencies should comply with Sections 7.2 through 7.10.

7.2 Action by Air Traffic Control (ATC) Services.

7.2.1 Air traffic control services should initiate emergency response by using the alarm communications system. *(See Figure 7.2.1.)*

7.2.2* Air traffic control should alert the airport rescue and fire fighting service, police and security services, airport operator, and medical services in accordance with the procedure in the airport/community emergency plan, giving grid map reference. Information on the location of the accident, giving grid map reference or other identifying terrain/landmark features, should be provided immediately by air traffic control provider. Subsequent calls can expand this information by

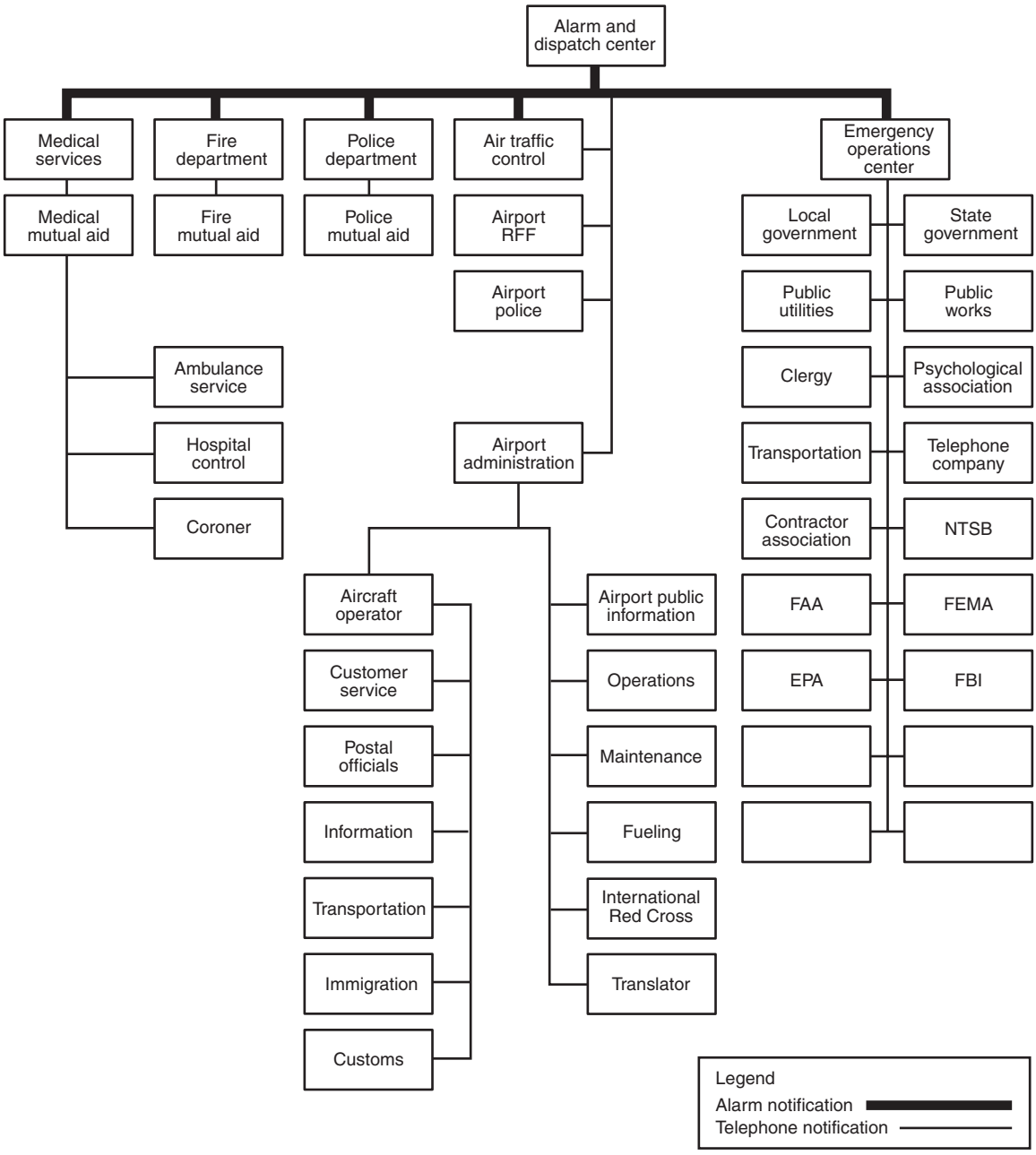

FIGURE 7.2.1 Sample Notification Chart — Aircraft Accident Off-Airport.

providing details on the number of occupants, fuel on board, aircraft operator (if known), and the presence/absence of any dangerous goods, including type, quantity, and location.

7.2.3 If the accident location is beyond pre-established ARFF response protocols, and the fire department having jurisdiction so requests, dispatch of the ARFF service should be in accordance with the plan and any mutual aid agreements. An appropriate Notice to Airmen (NOTAM) should be issued immediately if the fire fighting protection of the airport is reduced or unavailable.

7.2.4 Air traffic control provider should immediately establish restricted airspace over the immediate vicinity of the accident to facilitate evacuation of casualties by helicopter and preclude interference with emergency operations by non-emergency flights.

7.2.5 Air traffic control should confirm that the actions in 7.2.2, 7.2.3, and 7.2.4 were completed, utilizing pre-established checklists, indicating notification time(s) and name of person(s) completing the action(s).

7.3 Action by Rescue and Fire Fighting (RFF) Services.

7.3.1 A call for an aircraft accident off the airport normally is received from the air traffic control services, local police, or local fire departments. Designated vehicles should be sent in accordance with the existing mutual aid department agreements. The air traffic control provider should be advised of any reduction of aerodrome category, due to the reduction of fire cover, the onward transmission to airmen should include information that the airport can only accept aircraft up to a certain size and provide an example of the aircraft type.

7.3.2 Responding airport rescue and fire fighting services should do the following:

(1) Proceed via preestablished access routes, considering vehicle weight, height, and width, to the off-airport accident site in coordination with local police/security direction
(2) While en route, advise or request of fire department having jurisdiction over the area all of the following:
    (a) Rendezvous point or staging area or both
    (b) Staffing and equipment responding
    (c) Any other pertinent information

7.3.3 The senior airport fire officer should report to the senior fire officer of the fire department having jurisdiction over the area to request orders.

7.3.4 Prior agreement should be made between the ARFF service and the local fire department in command and mutual aid fire departments as to who is to fight fires involving aircraft or structures or both. Additionally, there should be prior agreement as to which agency will act in command when an accident involves both an aircraft and an off-airport structure. Mutual aid fire departments and ARFF services should discuss joint risk assessment and control measures at the accident site. Procedures should be implemented to allow an airport and local fire departments to test agreed practices.

7.4 Action by Police/Security Services.

7.4.1 The first security/police officer to arrive should coordinate with the incident commander and, to the extent possible, immediately establish free traffic lanes on ingress and egress roads for emergency vehicles, initiate security responsibility, and request reinforcements as needed. Traffic flow and site security are the primary responsibility of police and security personnel. They should notify the appropriate communications center of the location of the accident and available means of access and egress. After consultation with the incident commander, they should initiate traffic control measures in order to aid responding emergency vehicles.

7.4.2 Security personnel and police will be needed to handle traffic in the vicinity of the accident site and to prevent disturbance of material scattered over the accident site. The emergency site should be cordoned off as soon as possible to exclude intruders, media, sightseers, onlookers, and souvenir hunters. Appropriate markings should be prominently displayed to advise all persons of possible hazards that can cause serious injury should they encroach on the area. Flares should not be used within 300 ft (100 m) of the accident site to prevent ignition of fuel vapors.

7.4.3 Communications between all security checkpoints and the command post or emergency operations center or both should be implemented as soon as possible.

7.4.4 Appropriate means of identification, such as identifying arm bands, site passes, I.D. tags, or other indications of empowerment should be issued by the authority having jurisdiction and monitored by the security services.

7.4.5 Special security provisions should be made to protect the flight data and cockpit voice recorders, any mail involved, or dangerous goods that might be present. Flight crews should always be afforded specific security provisions to preclude physical attack resulting from emotional outbursts predicated upon "fault" assignment.

7.5 Action by Emergency Medical Services. The medical coordinator should coordinate with the medical transportation officer and medical services to do the following:

(1) Verify that mutual aid medical and ambulance services have been alerted and verify their subsequent arrival at the rendezvous point or staging area and that a medical communication network is established
(2) Organize the necessary action for triage and treatment of the casualties and their eventual evacuation by appropriate means of transportation
(3) Provide control and dispatch of the casualties to the appropriate hospitals by land, sea, or air
(4) Maintain an accurate list of the casualties including their names (as available) and their destination for treatment
(5) Coordinate, with the aircraft operator concerned, the transportation of the uninjured to the designated holding area
(6) Arrange for the restocking of the medical supplies, if necessary
(7) Provide medical analysis of the walking wounded and uninjured

7.6 Action by Hospitals. Hospitals listed in the emergency plan should be prepared to do the following:

(1) Ensure that adequate doctors and nurses and operating room, intensive care, and surgical teams are available for emergency situations, including aircraft accidents
(2) Provide medical care to the casualties when they arrive
(3) Provide trauma teams to the accident site in accordance with the Plan
(4) Notify coroner/medical examiner

7.7 Action by Airport Operator. If previously agreed on in the airport mutual aid emergency agreement with the surround-

ing community, the following actions can be taken by the airport operator:

(1) Report to the accident site
(2) Ensure that, if required, the airport emergency operations center and the mobile command post are activated
(3) Extend as much emergency aid as requested by the jurisdiction agency in command of the off-airport accident/incident
(4) Notify the aircraft operator involved
(5) Notify other agencies as required

According to the mutual aid emergency agreement with the surrounding community, the airport operator can provide, if requested and if available, a part of its medical equipment (i.e., first aid equipment, stretchers, body bags, mobile shelters, etc.) and assistance at the accident site of emergency medical teams.

7.8 Action by Aircraft Operators.

7.8.1 A aircraft operator representative should report to the command post to coordinate with the incident commander.

7.8.2 The aircraft operator representative should provide information regarding occupants and dangerous goods on the aircraft. These include explosive substances, gases, flammable liquids or solids, oxidizing substances, poisonous substances, radioactive materials, and corrosives. Information of this nature should be relayed as soon as possible to the chief fire officer and the medical coordinator.

7.8.3 The aircraft operator should make arrangements with the airport for transportation from the accident site to the designated holding area. Transportation of the walking wounded from the scene should be permitted only after consultation with the medical coordinator.

7.8.4 The aircraft operator staff should proceed to the designated holding area. The aircraft operator representative at the holding area should appoint a receptionist, registrars, and welfare coordinators from staff who have been previously trained in these functions.

7.8.5 The aircraft operator representative who is in command of the holding area should oversee the overall operations by making arrangements for commissary items, clothing, telephone facilities, and additional medical services if required.

7.8.6 The receptionist should meet the transportation vehicles as they arrive from the scene of the accident and direct the passengers to the registrars' tables where they will be processed. The receptionist should know where support facilities such as toilet facilities, telephones, clothing, and drinking water are located.

7.8.7 The registrar should record the passenger's name on the manifest and determine what reservation requirements are desired, that is, hotel accommodation, air transportation, or other modes of transportation, and so forth, and names of any persons to be notified of the passenger's physical or mental condition and potential plans. The registrar should make out an identification tag or sticker (available from the emergency kit) and place it on the passenger. When the registration is completed, the registrars then should direct the passenger to the welfare coordinators.

7.8.8 Where necessary, the aircraft operator should provide notification of the aircraft accident to the following:

(1) Health and welfare agencies
(2) Customs, where applicable
(3) Immigration, where applicable
(4) Post office
(5) Agriculture agencies
(6) Environmental agency
(7) Accident investigation board

7.8.9 A senior aircraft operator official should be responsible for the initial notification of relatives and friends.

7.8.10 News releases by aircraft operators should be prepared in conjunction with the airport public information officer and liaison officers from other agencies responding to the accident.

7.8.11* The aircraft operator is responsible for the removal of the wrecked or disabled aircraft, as soon as authorized by the aircraft accident investigation operator.

7.9 Action by Government Agencies. The following government agencies, after being notified, can be required to take appropriate action as indicated in their emergency plan:

(1) Government accident investigation personnel
(2) Health and welfare
(3) Post office
(4) Customs
(5) Immigration
(6) Agriculture

7.10 Action by the Public Information Officer.

7.10.1 The responsibility for news releases concerning an off-airport emergency should belong to the following:

(1) The representative of the aircraft operator
(2) A public information officer designated by the government operator in command
(3) A public information representative designated by the airport operator

7.10.2 Under no circumstances should the media or other personnel not directly involved in the fire fighting, rescue, or emergency medical care be permitted inside security lines until all rescue operations have been completed and the area is declared safe for entry by the incident commander/chief fire officer.

Chapter 8 Airborne Emergencies

8.1 Full Emergency Incident — Aircraft in Flight.

8.1.1 The agencies involved in the airport/community emergency plan should be alerted to "full emergency" status when it is known that an aircraft approaching the airport is, or is suspected to be, in such trouble that there is a strong likelihood of an accident.

8.1.2 Action by Air Traffic Control Services.

8.1.2.1 The air traffic control provider should alert the airport and provide as many of the following details as possible:

(1) Type of aircraft
(2) Nature of trouble
(3) Runway to be used
(4) Estimated time of landing
(5) Aircraft operator, if appropriate
(6) Fuel on board
(7) Number of occupants, including special occupants — handicapped, immobilized, blind, deaf, and so on

(8) Any dangerous goods on board, including type, quantity, and location, if known
(9) A discrete VHF communications frequency to the incident commander

8.1.2.2 The calling of the mutual aid fire department(s) and other appropriate organizations should be initiated in accordance with procedures laid down in the airport/community emergency plan.

8.1.3 Action by Other Agencies. The specific responsibilities and roles of the various agencies itemized in Sections 6.2 to 6.10 for responding to an aircraft accident on the airport can be applied for "full emergency" as required by local operating requirements.

8.2 Local Standby.

8.2.1 The agencies involved in the airport/community emergency plan should be alerted to "local standby" status when an aircraft approaching the airport is known or is suspected to have developed some defect, but the trouble is not such that would normally involve any serious difficulty in effecting a safe landing.

8.2.2 Action by Air Traffic Control Services.

8.2.2.1 Air traffic control should call the airport rescue and fire fighting service to stand by as requested by the pilot or to stand by as local airport agreements require at the predetermined standby positions applicable to the runway to be used. As many of the following details as possible should be provided:

(1) Type of aircraft
(2) Nature of trouble
(3) Runway to be used
(4) Estimated time of landing
(5) Fuel on board
(6) Number of occupants, including special occupants — handicapped, immobilized, blind, deaf, and so on
(7) Aircraft operator, if appropriate
(8) Any dangerous goods or hazardous materials on board, including quantity and location, if known

Chapter 9 Other Emergencies

9.1 General. Procedures and techniques should be developed to mitigate a threat to life or property on the airport. It should be recognized that medical and fire emergencies, hazmat incidents, bomb threats, civil disobedience, and so forth can arise at any location on the airport. At airports this problem can be severe because of the large number of persons exposed.

9.1.1 The diverse character of persons traveling by air suggests the need for the airport operator to arrange to have available emergency medical services to treat conditions such as cardiac arrest, abdominal pains, burns, cuts, abrasions, and other medical problems. This can require immediate care facilities and detailed mutual aid plans with outside agencies. Automatic external defibrillators (AEDs) have been shown to be effective in certain cardiac events. Strategic positioning of AEDs throughout the airport is strongly recommended.

9.1.2 Where the Aircraft Rescue and Fire Fighting (ARFF) provides a commitment to assist in non-aircraft-related emergencies, attendance at those incidents should not compromise their immediate level of response to aircraft accidents or incidents.

9.1.3 The natural disasters airports can be subjected to include storms, floods, earthquakes, and seismic sea waves. The vulnerability of an airport to any of these will, in good measure, be affected by geography. While nothing can be done to avert them, there are actions that can be taken to minimize damage and expedite restoration of aircraft operations.

9.1.4 ARFF services and the local fire department(s) should undertake a joint risk assessment to assess the potential hazards on the airport to establish a joint plan of action. This plan should be reviewed annually.

9.1.5 Development of weather patterns, prediction and tracking of storm movement, and notification to the public of potential danger resulting therefrom will normally be carried out by a meteorological service in the area.

9.1.6 The airport/community emergency plan should provide for initial protective measures, personnel shelter, and post-storm cleanup and restoration. Aircraft operations might be interrupted for several hours before the arrival of the storm and until several hours after it passes.

9.1.7 As soon as severe storm warnings are received, all owners of aircraft based or on the ground at the airport should be notified and warnings issued to all aircraft pilots en route to the airport. Aircraft owners and pilots should be responsible for their aircraft but, if possible, all aircraft on the ground should be evacuated to airports outside the storm area. Aircraft in flight should be advised to divert to an alternative destination. Aircraft on the ground that cannot be dispersed should be put under cover or tied down so as to face into the approaching winds.

9.1.8 Power interruptions are common during a natural disaster, either by damage to generating plants or by destruction of transmission lines. Airports located in severe storm areas should take measures to ensure minimum interruption to power supply, either by providing standby electrical generators or dual sources of commercial power for essential functions.

9.1.9 Regarding building protection, specific personnel assignments should be made in the airport/community emergency plan to collect or secure all loose objects that can be blown about by the winds and to fill and place sandbags if there is any possibility that the storm is accompanied by floods.

9.2 Sample Notification Charts.

9.2.1 The examples illustrated in Figure 6.2.1 and Figure 7.2.1 can assist in rapid communication in the event of an emergency. Accordingly, they should contain all the vital telephone numbers.

9.2.2 Separate sample notification charts should be developed for each type of emergency included in the Plan. It is important that the method of notification be clearly outlined in the airport/community emergency plan.

9.2.3 Telephone numbers should be verified monthly and a revised list issued if necessary. In order to require only one page to be reissued when a change occurs, each sample notification chart should be printed on one sheet.

Chapter 10 Emergency Operations Center and Mobile Command Post

10.1 General. The emergency operations center is a fixed designated area on the airport that is usually used in supporting

and coordinating operations in accidents/incidents, unlawful seizure of aircraft, and bomb threat incidents. The unit should have the necessary communication equipment and personnel to communicate with the appropriate agencies involved in the emergency, including the mobile command post, where this is deployed. The communication and electronic devices should be checked regularly.

10.2 Emergency Operations Center.

10.2.1 An emergency operations center should be available for the purpose of dealing with emergency situations at each airport.

10.2.2 The emergency operations center should provide the following:

(1) A fixed location
(2) Support of the incident commander in the mobile command post for aircraft accidents/incidents
(3) A command, coordination, and communication center for unlawful seizure of aircraft and bomb threats
(4) Operational availability 24 hours a day

10.2.3 The location of the emergency operations center should provide a clear view of the movement area and isolated aircraft parking position, wherever possible.

10.3 Mobile Command Post. *(See Figure 10.3.)*

FIGURE 10.3 Mobile Command Post.

10.3.1 Certain emergency situations also will require a mobile command post at the scene. This mobile unit is normally provided by the airport operator and, during the emergency, is normally under the direction of the incident commander.

10.3.2 The mobile command post is a point where cooperating agency representatives assemble to receive and disseminate information and make decisions pertinent to the operations. The main features of this unit are the following:

(1) It is a mobile facility capable of being rapidly deployed.
(2) It serves as command, coordination, and communications center for aircraft accidents or incidents.
(3) It is operational during aircraft accidents or incidents.

10.3.3 In the event of any accident or incident, a designated, recognizable, and highly visible mobile command post should be a high-priority item. It should be established as quickly as possible and preferably with the initiation of fire control and rescue activities. It is important that a continuity of command be maintained so that each agency reporting to the mobile command post can be adequately briefed on the situation before proceeding to assume control of its individual responsibilities.

10.3.4 The mobile command post unit should contain the necessary communications equipment and personnel to communicate with all agencies involved in the emergency, including the emergency operations center. The communication and electronic devices should be checked regularly as required by local conditions.

10.3.5 Maps, charts, and other relevant equipment and information should be immediately available at the mobile command post.

10.3.6 The mobile command post should be easily recognizable by provision of an elevated distinguishing marker, such as a checkered flag, colored traffic cone, balloon, or flashing light.

10.3.7 In some cases it might be necessary to establish a subcommand post. Where this is required, one location should be designated as a "master" command post with adequate communications to the subcommand post.

Chapter 11 Communications

11.1 Communications Network.

11.1.1 A coordinated communications network should be a prerequisite to any large-scale operation that involves agencies from more than one jurisdiction.

11.1.2 A communications network should consist of a sufficient number of radio transceivers, telephones (both mobile and land line), and other communication devices to establish and maintain a primary and a secondary means of communication. These networks should link the emergency operations center and the command post with each other as well as with all participating agencies. *(See Figure 12.2.)*

11.1.3 The operational communications network should provide a primary and, where necessary, an alternate, effective means for direct communications between the following, as applicable:

(1) The alerting authority (control tower or flight service station, airport manager, fixed-base operator, or airline office) and the RFF units serving the airport
(2) Air traffic control tower or flight service station or both, the appropriate fire department alarm room/dispatch center(s), and the fire fighting and rescue and medical services personnel en route to an aircraft emergency and at the accident/incident site

(3) Appropriate mutual aid agencies located on or off the airport, including an alert procedure for all auxiliary personnel expected to respond
(4) The RFF vehicles including a communications capability between crew members on each RFF vehicle

11.2 Communications Equipment.

11.2.1 It is important to provide communications equipment in sufficient quantity to ensure rapid response of personnel and equipment to an emergency. The following communications equipment should be available for immediate use in the event of an emergency.

11.2.2 Portable Radios. A sufficient number of portable, two-way radios should be available to provide each participating agency with the ability to communicate with the command post.

11.2.3 Strict communication discipline should be employed to prevent jamming of emergency frequencies. Each agency should operate on its own frequency, and there should be a designated command frequency.

11.2.4 Radios should be available at the command post to provide direct communication with the aircraft or ground controllers should it become necessary. Direct communications also can be established between the pilot or the aircraft cockpit by use of cockpit-to-ground lines. This requires a proper connector, wire, microphone, and headset. Cooperation and coordination between the airport fire and rescue service and the individual air carrier(s) are needed to establish this type of communication capability. Normally this communication capability results from the use of a ground service headset that is plugged into a wheel well interphone jack.

11.2.5 A sufficient number of telephone lines (both listed and unlisted) or cellular phones should be available at the command post to provide direct communication with agencies outside the airport, as well as within the airport. Direct lines save time and reduce the probability of overwhelming radio communication channels.

11.2.6 Medical facilities and ambulances need communications capability in order to take advantage of advance life support systems within the medical community.

11.2.7 A dedicated vehicle equipped with necessary communications equipment and self-contained electrical power is a definite asset to a good communication system. A well-equipped communications vehicle is an indispensable part of an efficient, well-managed command post. Planning should always include a qualified vehicle driver/operator.

11.2.8 Recording devices, with time and date insertion units, should be installed at the operations center or mobile command post or both to ensure that all communications are recorded for later analysis. All emergency communications, including printed communication, should be recorded.

11.2.9 Runners should be assigned to the command post to augment other modes of communication. Their use can prove invaluable should a temporary lapse of communication occur.

11.3 Testing and Verification.

11.3.1 The communications system should be tested daily to verify the operability of all radio and telephone networks.

11.3.2 A complete and current list of interagency telephone numbers should be available to all agencies and to personnel responsible for the airport/community emergency plan. These phone numbers should be verified monthly to ensure that they are correct.

Chapter 12 Command and Coordination for Airport/Community Emergency Plan

12.1 General.

12.1.1 Once an accident has occurred on the airport, the direction and control of rescue and fire fighting operations should be the responsibility of the airport rescue and fire fighting service incident commander. Any transition of authority and command responsibility should be established previously in the emergency plan and exercised accordingly. Off-airport accidents should be under the direction and control of the jurisdiction where the accident occurred.

12.1.2 The Plan should be very specific in its designation of other responsible entities and their authority and function in the command organization.

12.2* Incident Command System. The Plan should include a flexible organization system that enhances management of all activities at the accident site. This system should include a description of each element of the Plan, the agency assigned to the specific element, and a brief summary of the authority and responsibility necessary to execute the element. A diagram of an organization chart from a typical incident command system is shown in Figure 12.2.

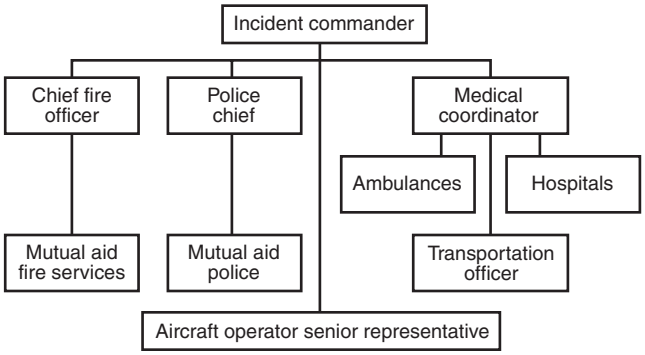

FIGURE 12.2 Command Flow Diagram.

Chapter 13 Emergency Medical Care

13.1 Basis of Recommendations.

13.1.1 These recommendations are based on the existence of an established level of emergency medical service that can be expanded into a comprehensive emergency medical system at the scene of an aircraft accident with numerous casualties. *(See Annex G.)*

13.1.2 Responsibilities of the emergency medical organization should include all aspects of medical care at the scene of an aircraft accident: triage, stabilization, and transportation.

13.2 Emergency Medical Training of Airport Personnel.

13.2.1 ARFF personnel should be trained in emergency medical care and should be available to respond to any airport emergency.

13.2.2 The following subjects are the minimum that should be covered in a course of instruction to enable airport personnel to function effectively in providing emergency medical services:

(1) Airway management and cardiopulmonary resuscitation (CPR)
(2) Control of bleeding
(3) Fractures and splinting with emphasis on spinal injuries
(4) Burns
(5) Shock
(6) Emergency childbirth and immediate care of newborns, including prematures
(7) Common medical diseases that can influence the outcome of injury (allergies, high blood pressure, diabetes, pacemaker, etc.)
(8) Basic measures for treatment and protection subsequent to spills or leaks of radioactive materials or toxic or poisonous substances
(9) Basic measures for handling emotionally disturbed persons
(10) Recognition and first aid for poisons, bites, and anaphylactic shock
(11) Transportation techniques for injured persons
(12) Heimlich maneuver—treatment of choking victims
(13) Protection against the spread of communicable diseases

13.3 Airport Emergency Medical Supplies and Equipment.

13.3.1 Sufficient medical supplies to treat the capacity of the largest aircraft normally utilizing the airport should be available on or adjacent to the airport. Adequate supplies should be kept on hand to deal with routine medical emergencies (i.e., on-the-job injuries, cardiac arrest, etc.).

13.3.2 The type and quantity of such supplies should be determined by the principal medical authority for the airport. Recent incidents have demonstrated that the unique characteristics presented by any given location should be taken into consideration when deciding on the type and quantity of supplies to be kept available for major incidents. For instance, extremes in temperatures should be considered and appropriate supplies stockpiled. Geographical conditions or topographical conditions or both also should be taken into consideration. The type and quantity of all medical supplies stockpiled should be determined by the agency responsible for providing emergency medical service to the airport.

13.3.3 Stretchers, blankets, cervical collars, backboards, and body bags should be located on the airport, preferably on a suitable vehicle (e.g., trailer) that can be transported to the accident site. Blankets are needed to alleviate the victims' exposure to shock and possible adverse weather conditions. The backboards and spine boards should be of a type designed to fit through access ways and aisles of commercial and business aircraft. They should have restraining straps available so the patient can be secured to the board. A cleat should be attached to the underside of the backboard to facilitate lifting by carrying personnel.

13.3.4 Sufficient resuscitation equipment should be available to treat smoke inhalation victims. This equipment should not be used around fuel or fuel-soaked clothing.

13.4 Airport Medical Service.

13.4.1 Emergency medical service should be readily available to an airport. Minimum considerations for level of service should include the following:

(1) Number of passengers served
(2) Number of persons employed at the airport
(3) Industrial activity on airport property
(4) Distance from adequate medical facilities

Ideally, each airport should have a properly staffed and equipped first aid room/medical facility on site and in addition should arrange for the emergency response of trained medical personnel with the capability to treat serious injuries and transport them to proper medical facilities.

13.4.2 The primary purpose of emergency medical services is to provide triage, stabilization, and transportation.

13.4.3 The delivery to the accident site of trained medical personnel capable of treating and transporting injured victims of an aircraft accident is a vital component of the airport/community emergency plan. The Plan should determine who will provide this service and should make all necessary legal and financial arrangements before the accident occurs. This includes integration with local community plans or mutual aid agreements or both.

13.4.4 Medical and ambulance services can be an integral part of the airport services, particularly the ambulance service that is, in many cases, part of the airport rescue and fire fighting service. If medical and ambulance services are not available at the airport, prearrangements with local agencies providing these services should be made. The Plan should ensure the dispatch of a satisfactory assignment of trauma-trained emergency service medical personnel, equipment, and medical supplies. The Plan should address the location of surrounding medical facilities and the level of service each provides.

13.4.5 The Plan should provide for the control of patient transport from the scene to the receiving medical facilities. The Plan's incident command system should include a transportation control officer. This position's responsibilities should include the following:

(1) Communications with medical facilities or the central communications point or both for local medical facilities
(2) Overseeing and ensuring effective priority casualty transportation to the appropriate medical facilities
(3) All other aspects of medical transportation

13.4.5.1 This has proven to be a very demanding and labor intensive responsibility, requiring a minimum of three subordinate positions that include the following:

(1) Transportation control (routing of ambulances to and from the scene)
(2) Transportation recorder (responsible for documentation of all patient movement)
(3) Medical communications (responsible for all communications regarding medical transportation)

A fourth position, that of ambulance staging leader, also should be considered.

13.4.6 Participating hospitals should have contingency emergency plans to provide for mobilization of necessary medical teams. Availability of qualified personnel and adequate facilities at the hospitals to deal with airport emergency situations is vital. In this respect, it should be mandatory to establish in advance an accurate list of surrounding hospitals classified according to their effective receiving capacity and specialized features such as neurosurgical ability, burn treatment, and so forth.

13.4.7 The distance from the airport and the ability to receive helicopters should be considered. Reliable two-way communications should be provided between hospitals and ambulances and helicopters. The alert of an aircraft accident should be made to a single communication controlling medical facility, which then alerts all other facilities according to the local medical communications network. Prior provision for police escort vehicles and helicopters for medical staff should be arranged in the Plan.

13.5 Airports without a Medical Care Facility. At an airport where a medical care facility is not available, the airport operator should make arrangements to have available trained personnel sufficiently equipped to the level of emergency medical capability prevailing in the community during all hours of airport operation.

13.6 Immediate Need for Care of Injured in Aircraft Accidents. *(See Figure 13.6.)*

13.6.1 In the aftermath of an aircraft accident many lives can be lost and many injuries aggravated if immediate medical attention is not provided by trauma-trained rescue personnel. Survivors should be examined, given available emergency medical aid as required, and then promptly transported to appropriate medical facilities.

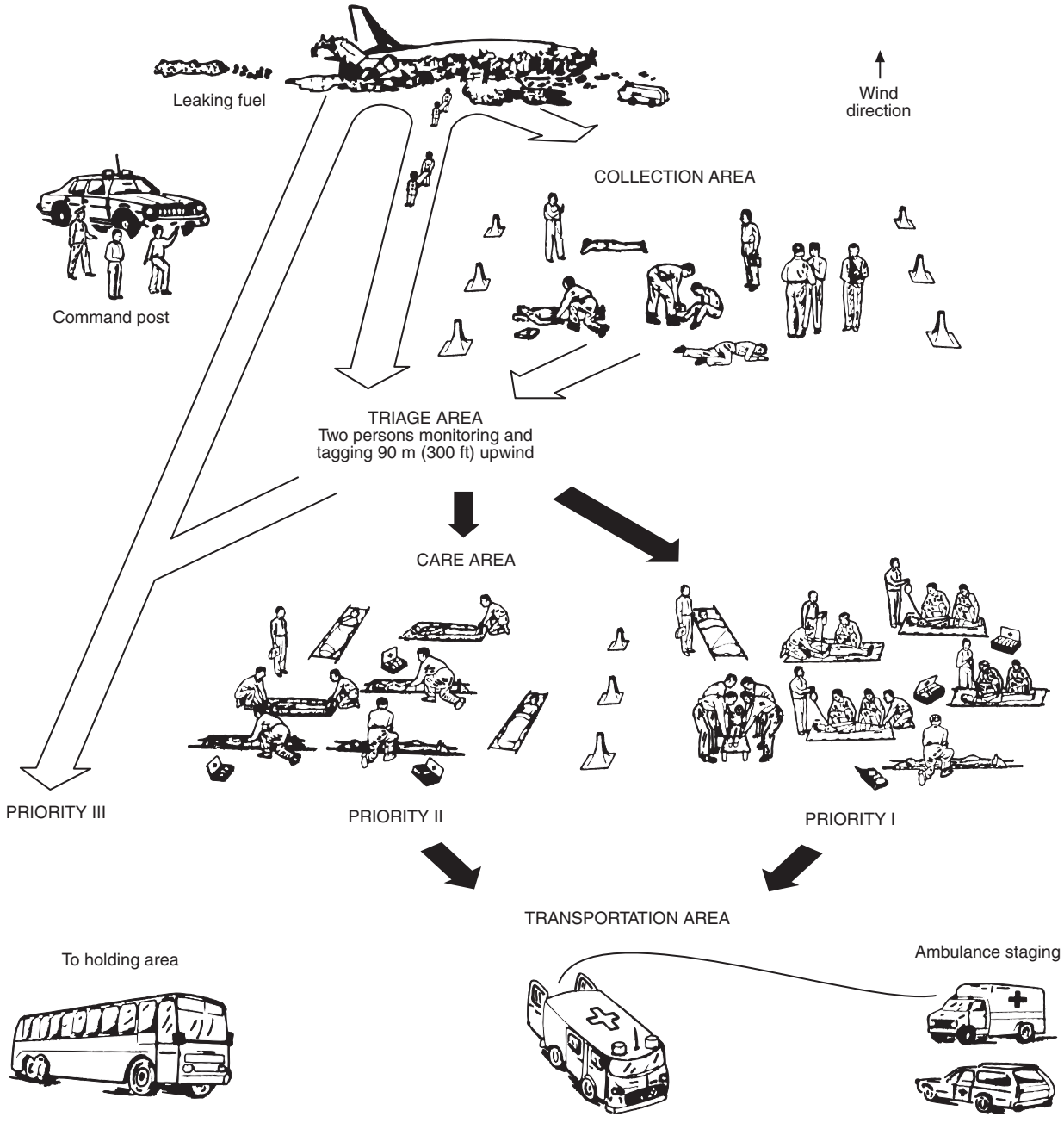

FIGURE 13.6 Triage and Medical Care at Aircraft Accident Site.

13.6.2 Triage is the sorting and classification of casualties to determine the order of priority for treatment and transportation. Casualties should be classified into the following four categories:

(1) Priority I, immediate care
(2) Priority II, delayed care
(3) Priority III, minor care
(4) Priority 0, deceased

13.6.3 Triage should begin immediately. Qualified medical personnel should be assigned to this task. Victims are moved from the triage area to the appropriate care holding areas before definitive treatment is rendered. Casualties should be stabilized at the care holding areas and then transported to an appropriate facility.

13.6.4 Every effort should be made to ensure that Priority I casualties are treated first and receive immediate ambulance transportation priority once they are stabilized. This should be the responsibility of the immediate care leader.

13.6.5 Triage is most efficiently accomplished in place. However, the conditions of an accident scene and wind direction can demand the immediate movement of casualties before triage can be safely accomplished. In that case, the casualties should be moved the shortest distance possible, well away from fire fighting operations, and upwind and uphill from the scene.

13.6.6* Triage of casualties should include the use of casualty identification tags to aid in the sorting and transportation of the injured to hospitals. This technique is especially suited to multilingual situations.

13.7 Care Principles.

13.7.1 Stabilization of the seriously injured should be accomplished at the accident scene. The immediate transportation of the seriously injured before stabilization should be avoided.

13.7.2 In accidents occurring on or adjacent to the airport, rescue and fire fighting personnel are generally the first emergency personnel on the scene. It is imperative that seriously injured casualties be located and stabilized as quickly as possible. In cases where fire control or prevention does not require the efforts of all rescue and fire fighting personnel, casualty stabilization should be commenced immediately under the direction of the most qualified trauma-trained individual on the scene. First response rescue vehicles should carry initial supplies of victim-care equipment.

13.7.3 Usually, the first few minutes of medical treatment are aimed at stabilizing the casualties until more qualified medical care is available. When specialized trauma teams arrive, medical care should be more sophisticated.

13.7.4 The triage procedure and subsequent medical care should be placed under the command of one authority, the designated medical coordinator, upon arrival. Prior to arrival, the command of triage should be assumed by the designee of the incident commander until relieved by the predesignated medical coordinator.

13.7.5 The medical coordinator should report directly to the incident commander and has responsibility for all medical aspects of the incident. The primary function should be administrative, not as a participant of the medical team treating the injured.

13.7.6 For distinctive and easy identification, the medical coordinator should wear a standard distinctive uniform. In addition, the Plan should provide for a highly visible vest, or other apparel, with reflective lettering, front and back, that reads "MEDICAL COORDINATOR," or other appropriate lettering, given the terminology used in the Plan.

13.7.7 Care of Priority I "Immediate" Casualties. This type of casualty includes but is not necessarily limited to the following:

(1) Major hemorrhages
(2) Severe smoke inhalation
(3) Asphyxiating thoracic and cervico-maxillo-facial injuries
(4) Cranial trauma with coma and rapidly progressive shock
(5) Open fractures and compound fractures
(6) Extensive burns (more than 30 percent)
(7) Crush injuries including internal organs
(8) Any type of shock
(9) Spinal cord injuries

13.7.8 Care of Priority II "Delayed" Casualties. This type of casualty includes but is not necessarily limited to the following:

(1) Nonasphyxiating thoracic trauma
(2) Closed fractures of the extremities
(3) Limited burns (less than 30 percent)
(4) Cranial trauma without coma or shock
(5) Injuries to soft parts

13.7.9 Care of casualties sustaining injuries that do not need emergency medical treatment to sustain life can be delayed until Priority I casualties are stabilized. Transportation of Priority II casualties should be performed following appropriate care given on site.

13.7.10 Care of Priority III "Minor" Casualties. This type of casualty includes minor injuries only. Certain accidents/incidents will occur where passengers have either minor injuries or no injuries, or appear to be uninjured. Because this type of casualty can interfere with other priorities and operations, it is important that these passengers be transported away from the accident/incident site to the designated holding area where they can be re-examined.

13.7.11 It is important that provisions be made for Priority III casualty care, comfort, and identification. This should be provided through the aircraft operator, where involved, airport operations, or international relief organizations (Red Cross, etc.). Specific treatment areas such as an empty hangar, a designated area in a passenger terminal, a fire station, or other available sites of adequate size (hotel, school, etc.) should be predesignated for this purpose. Any such area selected should be equipped with heating or cooling systems, electric light and power, water, and toilet facilities. Adequate telephones should be available. A number of such preselected sites should be chosen so that when an accident occurs, the most convenient in regard to travel distance and space needs (number of casualties involved) can be selected. All aircraft operator personnel and airport tenants should know the location of such designated facilities.

13.8 Control of the Flow of the Injured.

13.8.1 The injured should pass through four areas that should be carefully located and easily identified *(see Figure 13.6)*. The four areas are as follows:

(1) *Collection Area.* The location where initial collection of the seriously injured from the aircraft or debris is accom-

plished. Need for the establishment of this area will be dependent upon the type of accident and the circumstances surrounding the accident site. Custody of casualties is normally transferred from fire rescue personnel to medical services at this point.

(2) *Triage Area.* The triage areas should be located at least 90 m (300 ft) upwind of the accident site if fire and smoke is imminent. If necessary, more than one triage area should be established.

(3) *Care Area.* Initially this will be a single care area only. Subsequently it should be subdivided into three subareas according to the three categories of injured, that is, Immediate Care (Priority I), Delayed Care (Priority II), and Minor Care (Priority III). Care areas can be identified by colored traffic cones, bicycle flags, colored blankets, and so forth (Red, Immediate; Yellow, Delayed; and Green, Minor).

(4) *Transportation Area.* A transportation area for the recording, dispatching, and evacuation of survivors should be located between the care area and the egress road. Only one transportation area is normally required; however, if there is more than one transportation area it is essential to have communication between them.

13.8.2 In remote areas, where transportation to appropriate medical facilities will be delayed, or where climatic conditions dictate, consideration should be given to the provision of mobile quarters for the stabilization and medical treatment of immediate care and delayed care casualties. Ideally, these quarters should be operational upon arrival or in less than half an hour. Their design should therefore permit rapid response to the site and rapid activation to receive casualties. *[See 3.3.20, Mobile Emergency Hospital (MEH).]*

13.9 Standardized Casualty Identification Tags.

13.9.1 Need for Standardized Tags. Casualty identification tags should be standardized through color coding and symbols to make the tags as simple as possible. Tags can help to expedite the treatment of mass casualties in a triage situation and thus permit more rapid evacuation of the injured to medical facilities.

13.9.2 Tag Design. Standardized tags that require only minimal information to be entered thereon, are usable under adverse weather conditions, and are water resistant have been designed. An example of such a tag is illustrated in Figure A.13.6.6(a) and Figure A.13.6.6(b). In this tag, numerals and symbols indicating medical priority classify casualties as follows:

(1) *Priority I or Immediate Care.* RED colored tag; roman numeral I; rabbit symbol.

(2) *Priority II or Delayed Care.* YELLOW colored tag; roman numeral II; turtle symbol.

(3) *Priority III or Minor Care.* GREEN colored tag; roman numeral III; ambulance with X symbol.

(4) *Priority 0 or Deceased.* BLACK colored tag; cross symbol.

13.9.3 Where tags are unavailable, casualties can be classified using roman numerals on adhesive tape or by markings made directly on the forehead or on other exposed skin area to indicate priority and treatment needs. Where marking pens are unavailable, lipstick can be used. Felt-tipped pens are not advisable as they can smear in rain, snow, and under other climatic and body conditions.

13.10 Medical Care of Ambulatory Survivors.

13.10.1 The aircraft operator (where involved), the airport operator, or other predesignated agency selected for the purpose should be available to do the following:

(1) Select from among the predesignated passenger holding areas designated in the airport/community emergency plan the most suitable area for the particular emergency

(2) Provide for the transportation of uninjured passengers from the accident site to the designated holding area

(3) Arrange for emergency medical personnel to examine and treat apparently uninjured passengers

(4) Interview uninjured passengers and record their names, addresses, and phone numbers, and where they can be reached for the next 72 hours

(5) Notify relatives or next of kin where deemed necessary

(6) Coordinate efforts with the designated welfare agency (Red Cross, etc.)

(7) Provide security from unauthorized interference by persons not officially connected with the rescue operation in progress

13.10.2 Prearrangements should be made for the immediate transportation by bus or by other suitable transport of the walking wounded and uninjured from the accident site to the designated holding area. This should be implemented automatically following notification of the emergency. Emergency medical personnel should accompany these survivors to the designated holding area. Each and every passenger should be examined for shock and smoke inhalation. Cold or inclement weather can require additional provisions for the passengers' protection and comfort.

13.10.3 Occupants evacuating an aircraft might have been barefoot when evacuation slides were used and also might be without proper wearing apparel. Prior planning should recognize this potentiality, and emergency footwear, eyeglasses, clothing, and blankets should be available to take care of this situation. Where the aircraft accident occurred in water or in a marshy area, survivors will be wet and uncomfortable. Where such a potential exists, it might be necessary to establish a special designated staging area where survivors can be stabilized prior to transporting them to the normal holding area and to preplan provision for blankets and temporary protective clothing to prevent hypothermia.

Chapter 14 Care of Deceased (Black Tag, Cross Symbol)

14.1 Basis for Recommendations.

14.1.1* The concept of preservation of evidence should be applied at an aircraft accident site. It is important to realize that an undisturbed site can produce the most reliable evidence for determining cause and corrective action that would help prevent a similar incident in the future. The Plan should include contingencies that address management of the deceased at the scene of the emergency. The Plan needs to designate the person responsible for contacting and coordinating with the medical examiner/coroner.

14.2 Care Prior to Site Investigation.

14.2.1 Airport fire fighters and other rescue personnel should understand the basic need for and the techniques and procedures used in aircraft accident investigation. Wherever

possible, the wreckage should remain undisturbed until the arrival of the appropriate investigating agency.

14.2.2 Areas immediately surrounding the location of the deceased should be completely secured. Areas where a large number of deceased or dismembered casualties are located should be left undisturbed until the arrival of the forensic doctor and the Accident Investigation Board investigator or his or her designee.

14.2.3 If it becomes necessary to move bodies or parts of the wreckage, photographs should be taken showing their relative position within the wreckage and their respective positions prior to removal. In addition, tags should be affixed to each body or part of the wreckage that was displaced, and corresponding stakes or tags should be placed where they were found in the wreckage. A journal should be kept of all tags issued. Special precautions should be taken to avoid disturbing anything in the cockpit area. Should any control be displaced, photographs, drawings, or notes should be taken.

14.2.4 Extrication of the deceased and removal of personal effects prior to the arrival of the coroner or appropriate authority should be performed only when necessary to prevent their destruction by fire or other similar compelling reasons. Where bodies must be moved, previously mentioned precautions should apply. Provisions should be made to obtain sufficient body bags to contain all bodies as well as personal effects.

14.2.5 Body bags are normally available from major local suppliers of caskets, funeral directors and their equipment and supply firms, and from nearby military facilities. Stocks of body bags at each airport are desirable.

14.3 Care after Site Examination.

14.3.1 Body identification and determination of cause of death should be conducted with the concurrence of the authority designated for this duty. This operation is generally conducted with the cooperation of forensic teams and other specialists.

14.3.2 Accidents that produce a large number of fatalities can overload normal morgue facilities. In areas where delay or temperature can contribute to the deterioration of tissue, refrigerated storage should be available. This can be provided either through a permanently located cooler or refrigerated semitrailers. The area for postmortem examination should be located near the refrigerated storage and should be arranged to provide a high level of security. This area should be large enough for initial body sorting. Electricity and running water should be provided, in addition to a suitable working area.

14.3.3 The morgue should be isolated and in an area remote from places where relatives or general public have access.

14.3.4 After identification of victims, efforts to contact next of kin should commence. Agencies such as aircraft operators representatives, public service organizations (i.e., Red Cross, Salvation Army), or clergy should be utilized.

14.3.5 The accident investigation team generally has the authority to require autopsies and toxicological analyses on crew members and, in special cases, passengers. The need for these tests should be established prior to the release of bodies.

14.3.6 As soon as practical after the emergency, all participants in the fire fighting and rescue effort should be debriefed. Their observations should be recorded by the proper authorities. Sketches, diagrams, photographs, movie films, and tape and video recordings made on the accident site as well as appropriate details on the tagging of bodies and parts of the wreckage removed from their positions can be invaluable tools for investigators.

Chapter 15 Airport/Community Emergency Plan Exercise

15.1 Emergency Plan Exercise.

15.1.1 The purpose of an airport/community emergency plan exercise is to test the adequacy of the following:

(1) The airport/community emergency plan and related procedures
(2) Response of all personnel involved
(3) Emergency equipment and communications

15.1.2 It is therefore important that the Plan contain procedures requiring that the airport/community emergency plan be tested so as to correct as many deficiencies as possible and to familiarize all personnel and agencies concerned with the airport environment, the other agencies, and the role of each agency/person in the emergency plan.

15.2 Need for and Types of Airport/Community Emergency Plan Drills.

15.2.1 The airport/community emergency plan should be subject to full-scale emergency exercises to test all facilities and associated agencies at intervals of about one year. The exercise should be followed by a full debriefing, critique, and analysis. Representatives of all organizations that participate in the exercise also should actively participate in the preparation for the exercise and the final critique.

15.2.2 It is important that small-scale simulated emergency exercises be held at more frequent intervals than the full-scale emergency exercise. These more frequent exercises should be aimed at testing and reviewing the response of individual participating agencies, such as the rescue and fire fighting service, as well as parts of the plan such as the communications system.

15.2.3 It is desirable that, in addition to the full-scale and simulated emergency exercises, a "tabletop" exercise, involving the airport/community emergency plan coordinating committee, be held at least annually but not coincidental with any of the above emergency exercises.

15.2.4 A liaison program should be implemented with the emergency services surrounding the airport, with regular direct points of contact established.

15.3 Planning for Full-Scale Emergency Exercises.

15.3.1 The first step in planning full-scale emergency exercises should be to have the support of all airport and community authorities concerned.

15.3.2 Each agency head should be thoroughly familiar with the airport/community emergency plan and should develop a plan for his or her department in coordination with the general plan. The agency heads should meet in regular sessions to develop an understanding of their agencies' responsibilities and requirements in cooperation with other agencies.

15.3.3 An aircraft representative of the largest aircraft using the airport should be sought for the full-scale emergency exer-

cise to add realism to the exercise and to familiarize participants with the problem of removing casualties from aircraft. If an aircraft is not available, a bus or similar large vehicle can be used.

15.3.4 The emergency exercises should be held in locations that will provide maximum realism while ensuring minimum disruption to the operations of the airport or the orderliness of the community.

15.3.5 At least 120 days prior to the scheduled full-scale emergency exercise, a meeting of all key supervisory personnel of principal participating agencies should be called by the authority in charge. At this time, the aims of the exercise should be outlined, a scenario formulated, work tasks assigned, and duties of all agencies and personnel defined. A suggested time schedule and checklist are as follows:

(1) *120 Days Prior.* Organizational meeting of supervisory personnel of participating agencies. Aims outlined, scenario formulated, work tasks assigned, emergency plan coordinators selected.
(2) *90 Days Prior.* First progress report on arrangements.
(3) *70 Days Prior.* First meeting of all participating agencies (individual committee representatives).
(4) *60 Days Prior.* Complete arrangements for full-scale emergency exercise site or staging area. Written scenario completed.
(5) *50 Days Prior.* Training for moulage team begins. Second meeting of the individual committee representatives. A moulage chairperson can be selected from hospitals, rescue and fire fighting personnel, civil defense, military personnel, and so forth.
(6) *40 Days Prior.* Arrangements for transportation, feeding, stretcher bearers, and volunteer workers completed.
(7) *30 Days Prior.* Third meeting of the individual committee representatives. A preliminary "warm-up" communications exercise is held.
(8) *21 Days Prior.* Fourth meeting of the individual committee representatives. Make-up team training and arrangements for volunteer casualties completed.
(9) *14 Days Prior.* Final meeting and briefing for all participants, including critique team.
(10) *7 Days Prior.* Final meeting of supervisory personnel to review assignments.
(11) *Day of Exercise.*
    (a) *1–7 days after.* A critique following the exercise so that all participants can hear the observers' reports.
    (b) *30 days after.* The supervisory personnel meet to review written critiques submitted by observers and participants and revise procedures to correct mistakes and shortcomings indicated in the exercise.

15.3.6 In preparing the scenario, the use of real names of aircraft operators and types of aircraft should be avoided. This will prevent any possible embarrassment to companies or agencies involved in civil aviation.

15.3.7 In order to obtain the maximum benefit from a full-scale emergency exercise, it is important to review the entire proceedings. An observer critique team comprised of members who are familiar with mass casualty accident proceedings should be organized. A chairperson of the team should be appointed and should be present at all meetings. The team should be present at the final organizational meeting (seven days prior to the exercise) and, in coordination with the authority in charge, ensure that significant problems are introduced into the exercise. Each member of the critique team should observe the entire exercise and complete the appropriate emergency exercise critique forms.

15.4 Review of the Airport Emergency Plan Drill.

15.4.1 Experience has shown that quite often the provisions set forth in the airport emergency plan are found not to be practical during an exercise or an actual emergency, resulting in confusion and undue inefficiency by some of the participants.

15.4.2* A critique and review of the procedures followed by the participants in an emergency exercise or an actual accident/incident should be scheduled as soon as all data can be acquired from all agencies. This critique should be held not more than seven days after the exercise or emergency.

15.4.3 The airport operator should make every effort to contact other airport authorities involved in actual aircraft accidents and those who have conducted full-scale emergency exercises to acquire data and procedures to correct and upgrade their airport emergency plan.

Annex A Explanatory Material

Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.3.1 A wide variety of terms are in use throughout the world to describe facilities, procedures, and services related to airports. Wherever possible the terms used in this guide are those that have the widest international use and the meanings given in Chapter 3.

A.3.2.1 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A.3.2.2 Authority Having Jurisdiction (AHJ). The phrase "authority having jurisdiction," or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A.5.2 The opening or closure of an airfield or portion thereof is the responsibility of the airport operator. However, in the fast developing dynamics that occur immediately after an accident or incident, the airport operator may not be in the best position to assess the situation and make a decision on continuing operations or closing the airfield. To ensure the safety of airfield operations, it might be beneficial to establish procedures with the airport traffic control tower that give the authority for closing the airfield to controllers under defined circumstances and guidelines. This can be accomplished through a Letter of Agreement with the Air Traffic Control Tower. Such procedures must provide safeguards to ensure that airport operations are continued or resumed only after it is determined that there is not an adverse effect on persons or property on the airfield and that appropriate level of ARFF coverage is available. In addition, operations should resume (1) only after it can be ascertained that the rescue and evacuation activities associated with the event will not be impacted negatively by resumption of airfield operation, and (2) the accident event does not pose a hazard to the resumption of airfield operations.

Because these kinds of plans must be formulated as part of the Emergency Plan for the airport and require cooperation and coordination of various airport interests, the importance of advance preparation cannot be overemphasized.

Aircraft ground emergencies. Additionally, the emergency declarations associated with preflight and post-flight aircraft operations, maintenance, and servicing are generally referred to as aircraft ground emergencies.

A.5.3.1 For a comprehensive description of training and skills required see NFPA 1003, *Standard for Airport Fire Fighter Professional Qualifications.*

A.5.4.2 The first security officer to arrive should assume security responsibility, survey the scene, and request reinforcements as needed. This security officer should remain in command until relieved by the appropriate security authority with jurisdiction over the area.

The security chief should be highly visible. Typically, a blue industrial hard hat with reflective lettering displayed fore and aft, and imprinted "SECURITY CHIEF," should be issued to the security incident commander.

Security personnel and police will be needed to handle traffic, to keep unauthorized personnel from the crash site, and to assume custody of personal effects removed from the aircraft. Ingress and egress roads should be established as congestion-free traffic lanes for emergency vehicles.

Normal traffic should be routed away from and around the crash site.

The emergency site should be cordoned off as soon as possible to exclude intruders, sightseers, onlookers, and souvenir hunters. Appropriate markings should be prominently displayed to advise all persons of possible hazards that can cause serious injury should they encroach on the area.

Arm bands, site passes, or I.D. tags should be issued by the controlling authority and monitored by the security coordinator and his or her team.

A mutual aid program should be instituted between all potentially involved security agencies, for example, airport, city, county, state, and federal security forces; mail inspectors; and, where appropriate, military police and customs officials.

Special security provisions are necessary to protect any mail involved and any dangerous goods that can be present, and to protect against radioactive materials exposure.

A.5.8.1 Table A.5.8.1 provides data for some common aircraft.

A.5.15.1 The close proximity of an airport to surrounding communities and the possibility of an off-airport aircraft accident give rise to the need for mutual aid emergency agreements.

A mutual aid emergency agreement should specify initial notification and response protocols.

Mutual aid emergency agreements should be prearranged and duly authorized. A sample of a letter of emergency mutual aid agreement[1] is included in Figure A.5.15.1. Should more complicated jurisdictional or multiagency agreements be necessary, the airport operator may have to act as coordinating agency. This annex contains guidelines compiled to assist with preparation of mutual aid emergency agreements with local fire departments for accidents occurring on and off the airport.

AGENCY: (Name and Address)

_____

_____

Endorses the XYZ (International) Airport Emergency Plan, associated airport emergency plan document dated (insert date), and attached procedures and agrees to comply with all the procedures and instructions, and fulfill all applicable responsibilities therein.

_____

Signature of Authorized Representative

_____

Date

FIGURE A.5.15.1 XYZ (International) Airport Emergency Plan Letter of Emergency Mutual Aid Agreement.

Procedure for Local Fire Department(s) — Aircraft Accident On-Airport. The following should occur:

(1) A call to an aircraft accident on the airport will normally be received from air traffic control services.
(2) The mutual aid fire department(s) should report to the rendezvous point or staging area on arrival at the airport. Escort by airport police/security should be provided from the rendezvous point or staging area to the accident site.
(3) Upon arrival at the accident site, the following should occur:
    (a) The senior officer of the airport rescue and fire fighting service receiving mutual aid should have full authority at the scene unless other laws or agreements contradict this statement.
    (b) Fire department mutual aid communications should be carried out on the predesignated communications channel.

[1] See Annex E, "Sample Mutual Aid Agreements," of NFPA 402, *Guide for Aircraft Rescue and Fire-Fighting Operations*

Table A.5.8.1 Aircraft Data

Aircraft Type	Span (ft)	Span (m)	Length (ft)	Length (m)	Gross Weight (lb)	Gross Weight (kg)
AIRBUS IND						
A-300	147.08	44.83	177.33	54.05	363,800	165,016.8
A-310	144	43.89	153.08	46.66	305,600	138,617.7
A-320	111.25	33.91	123.25	37.57	162,000	73,481.9
ANTONOV AN22	211	64.31	167	50.90	500,000	226,796
ANTONOV AN225	290	88.39	275.58	84.00	1,000,000	453,592
ATR 72	88.58	27.00	89.08	27.15	44,100	20,003.41
BEECHCRAFT 1900	54.5	16.61	57.83	17.63	16,600	7529.627
BEECHCRAFT KING AIR (350)	57.92	17.65	46.67	14.23	15,000	6803.88
BOEING 727	108	32.92	153.17	46.69	191,000	86,636.07
BOEING 737-300	94.67	28.86	119.5	36.42	139,000	63,049.29
BOEING 747-400	211	64.31	231.75	70.64	870,000	394,625
BOEING 757	124.67	38.00	155.25	47.32	240,000	108,862.1
BOEING 767-300 ER	156.08	47.57	180.25	54.94	407,000	184,611.9
BRITISH AEROSPACE/ CONCORDE AEROSPATILE	83.67	25.50	203.67	62.08	408,000	185,065.5
CASA 235 CN235	84.5	25.76	70	21.34	31,746	14,399.73
CESSNA CITATION 5	53.42	16.28	48.67	14.83	16,100	7302.831
DEHAVILLAND DASH 8	85	25.91	73	22.25	34,500	15,648.92
GRUMMAN GULFSTREAM 4	77.67	23.67	88.25	26.90	73,600	33,384.37
ILYUSHIN-IL86	158.5	48.31	191.75	58.45	413,600	187,605.7
LOCKHEED L-1011-500	164.25	50.06	164.17	50.04	504,000	228,610.4
McDONNELL DOUGLAS DC 10-40	165.25	50.37	180.5	55.02	572,000	259,454.6
McDONNELL DOUGLAS MD11	169.25	51.59	200.67	61.16	602,500	273,289.2
McDONNELL DOUGLAS MD88	107.67	32.82	147.75	45.03	149,500	67,812
SHORT 360	74.83	22.81	70.83	21.59	26,000	11,793.39
TUPOLEV Tu154	123.17	37.54	157.17	47.91	198,450	90,015.33

(c) Communications transmissions should be prefaced by a call sign.

Procedure for Local Fire Department(s) — Aircraft Accident Off-Airport. The following should occur:

(1) A call to an aircraft accident off-airport will normally be received from air traffic control services or police. Should that not be the case, the local fire department should notify air traffic control services or police via radio or telephone that an accident has occurred, giving the approximate location on the grid map.

(2) Upon arrival at the accident site, the local fire department should do the following:

(a) Ensure that the mutual aid emergency agreement is initiated.

(b) Establish a command post. (This can be a temporary post until the airport operator mobile command post is available and operative.)

(c) Ensure that all communications are on the designated aircraft accident channel.

(3) The local fire department should advise air traffic control services or police of the following:
   (a) Exact location of the accident site.
   (b) Location of the command post.
   (c) Specific location/rendezvous points on the grid map to which fire units should respond.
   (d) Any request for specialized equipment, if necessary.

A.6.1 Full emergency plan implementation is not necessarily where general aviation or small- to medium-size business aircraft are involved. Large passenger and cargo aircraft and some military aircraft (med-evac, explosive laden, large passenger or cargo aircraft) would necessitate full implementation.

A.6.2.2 See Figure A.6.2.2.

A.7.1 Full emergency plan implementation is not necessarily where general aviation or small- to medium-size business aircraft are involved. Large passenger and cargo aircraft and some military aircraft (med-evac, explosive laden, large passenger or cargo aircraft) would necessitate full implementation.

A.7.2.2 See Figure A.7.2.2.

A.7.8.11 For aircraft removal technique, see *International Civil Aviation Organization Airport Services Manual*, Part 5, "Removal of Disabled Aircraft."

A.12.2 Security measures within the wreckage area should be established as soon as possible. All authorized personnel should have and display proper "Emergency Access" identification as required by the airport/community emergency plan.

All security personnel should be briefed on proper identification procedures. Two-way radio communication with appropriate authorities on the site can help identify any person seeking entry whose credentials are questionable.

Accident sites can be exceptionally dangerous areas, owing to the possible presence of flammable fuels, dangerous goods or hazardous materials, and scattered pieces of wreckage. All necessary safety precautions in the emergency area should be carried out rigidly; this includes exercising good judgment during fire control and throughout all rescue efforts. Safety equipment and approved protective clothing should be worn by all personnel involved. All other personnel should remain outside the security perimeter until the chief fire officer declares the area safe.

A.13.6.6 Figure A.13.6.6(a) and Figure A.13.6.6(b) illustrate an example of a casualty identification tag suitable for multilingual applications.

A.14.1.1 In the United States major aircraft accidents are investigated by the National Transportation Safety Board, 800 Independence Avenue SW, Washington, DC 20591, except those delegated by the Board to the Federal Aviation Administration. Part 430 (Rules Pertaining to Aircraft Accidents, Incidents, Overdue Aircraft, and Safety Investigations) of the National Transportation Safety Board, Section 430.10 reads as follows:

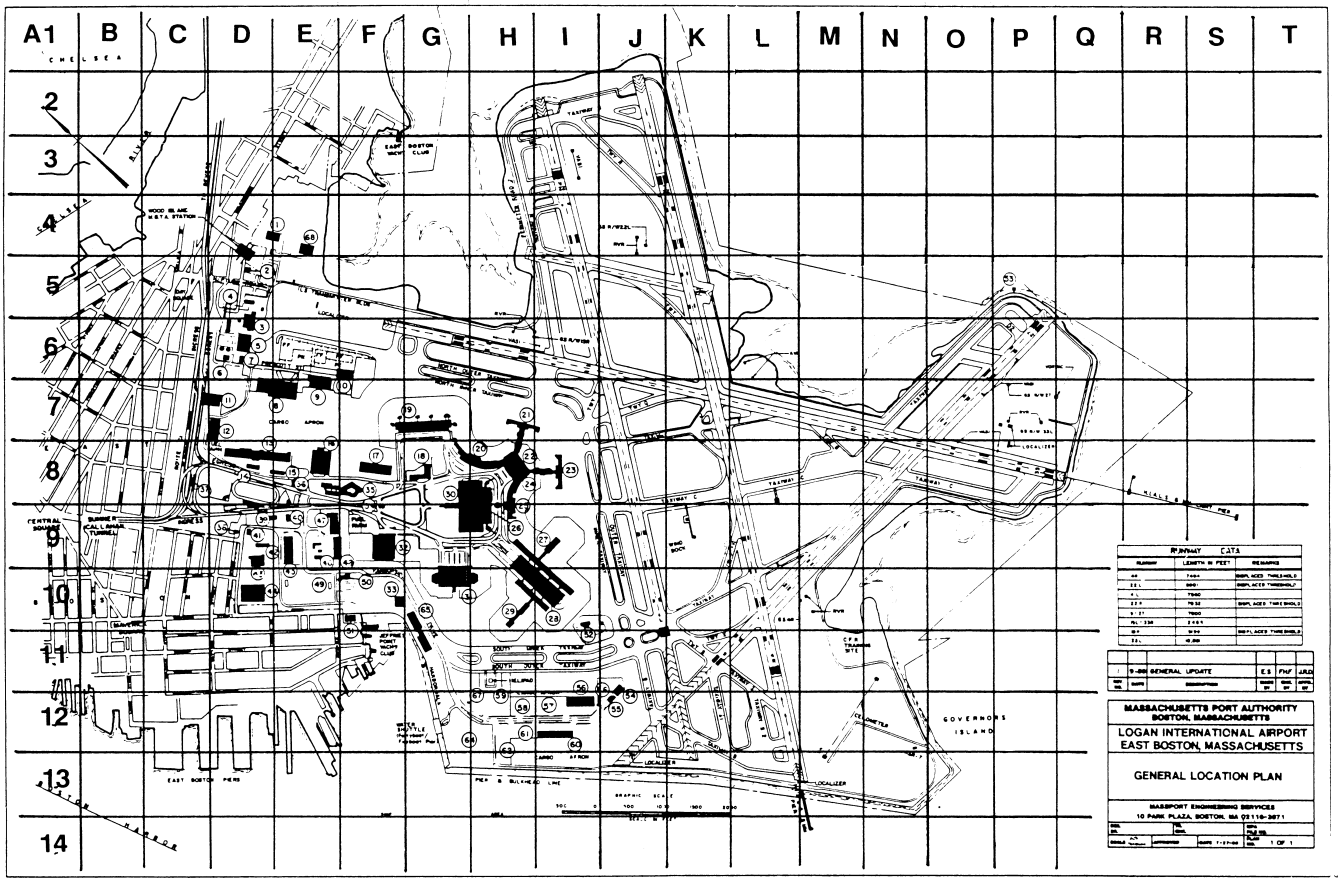

FIGURE A.6.2.2 Typical Airport Grid Map.

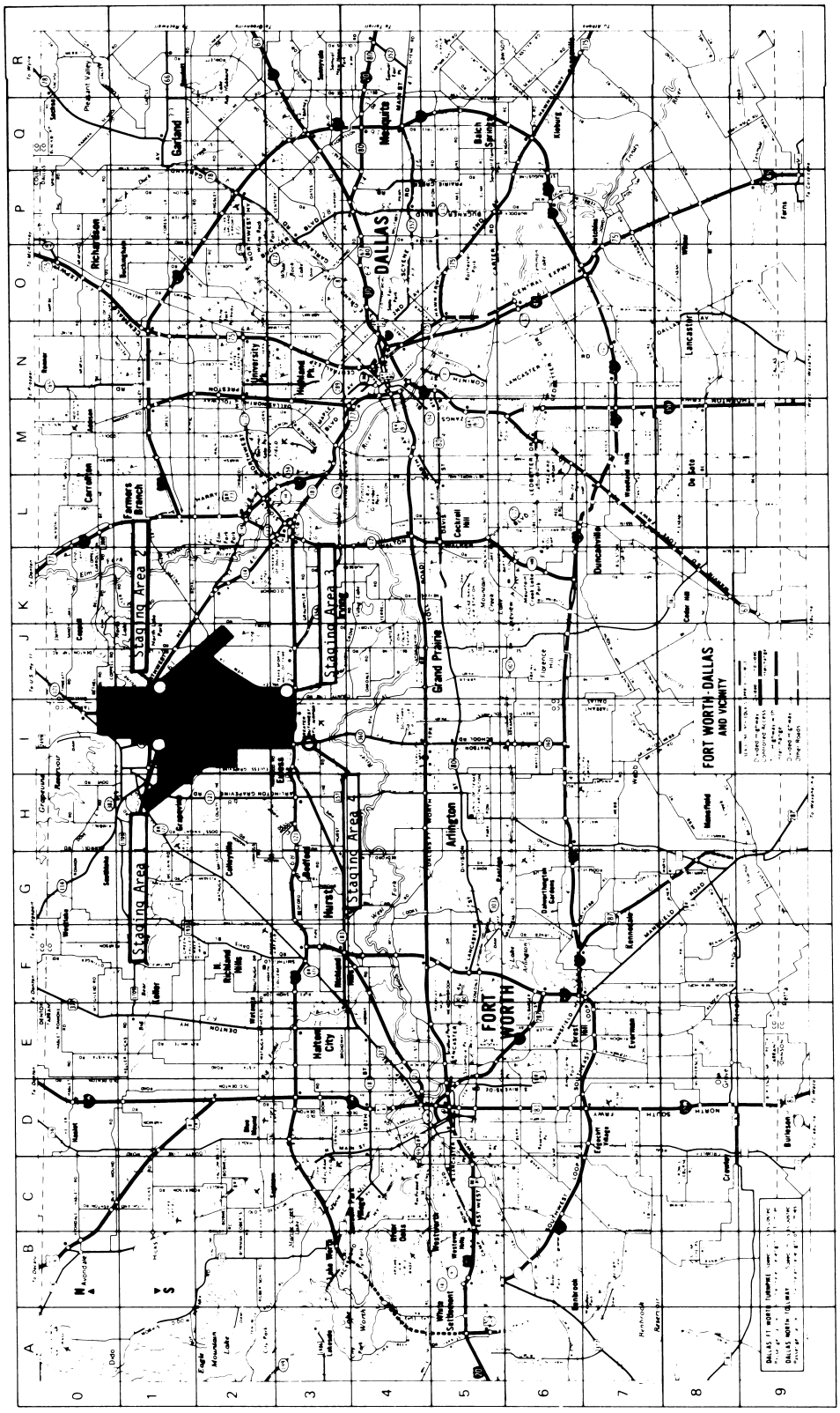

FIGURE A.7.2.2 Another Typical Airport Grid Map.

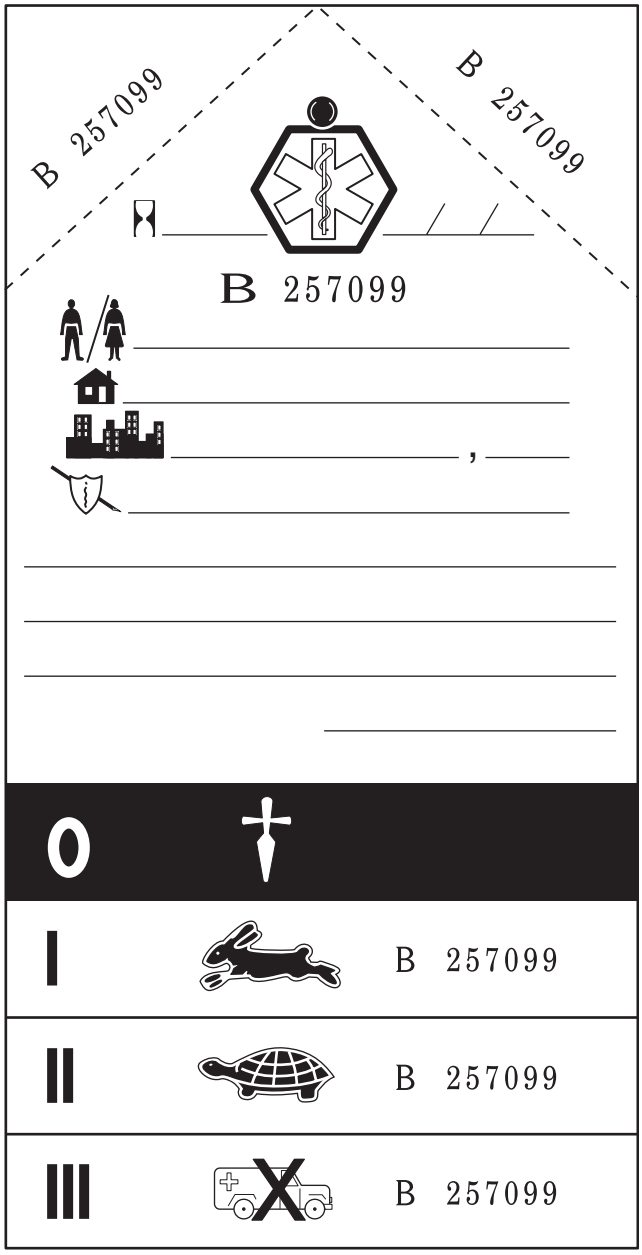

FIGURE A.13.6.6(a) Casualty Identification Tag (front).

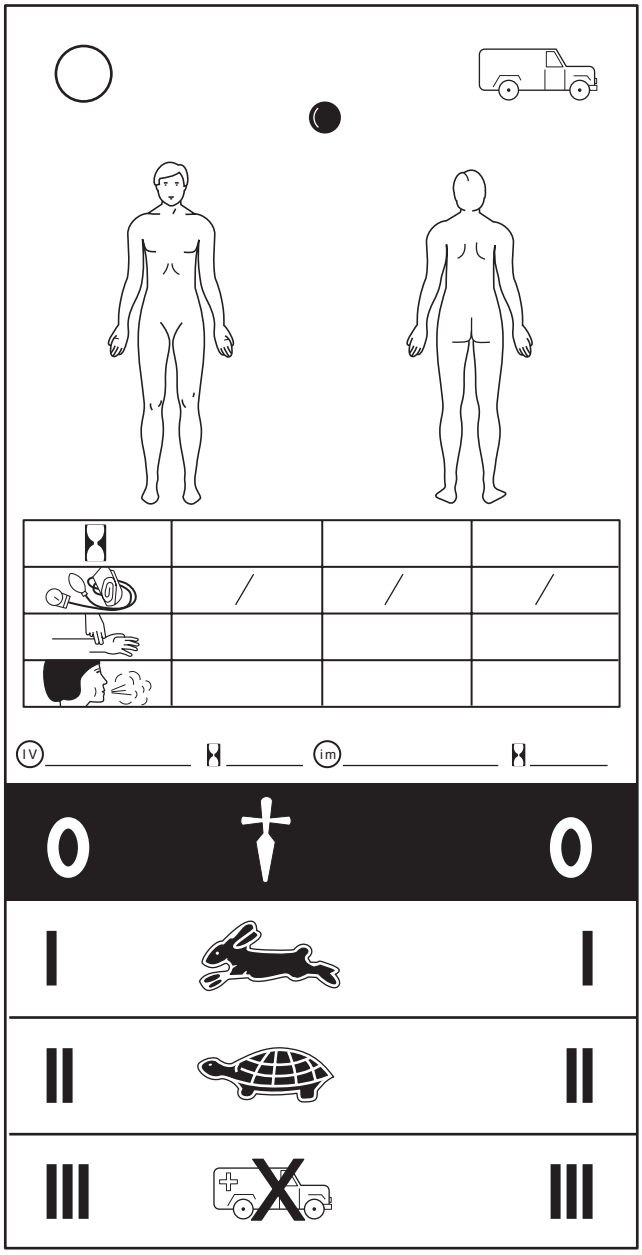

FIGURE A.13.6.6(b) Casualty Identification Tag (back).

"Civil aircraft accident investigation is normally conducted by a number of investigators of the National Transportation Safety Board or their designees interested in establishing the probable cause. Federal or state governments are usually charged with the official responsibility but the operators, pilot groups, airport management, and others may be active in accident investigation work. Fire officials normally make their own investigation."

For guidance on preservation of evidence, see NFPA 402, *Guide for Aircraft Rescue and Fire Fighting Operations*, Section 11.7 and Annex E.

A.15.4.2 Figure A.15.4.2 shows an emergency exercise critique form.

EMERGENCY EXERCISE CRITIQUE FORM
XYZ INTERNATIONAL AIRPORT

Person performing critique _____

General

1. Date and time of emergency _____
2. Emergency location _____
3. Type of emergency _____

Rescue Operations

Person performing critique _____
Organization _____

4. Time of emergency notification _____

5A. First agency or individual to arrive at emergency _____
B. Time of arrival _____

6A. Arrival time of airport rescue fire-fighting service at emergency _____
B. Approximate number of fire personnel at site _____
C. Time and type of first fire protection action (foam, dry chemical, etc.) _____

7A. Time first casualty evacuated from airport _____
B. How evacuated _____
C. Number of casualties evacuated from inside aircraft _____
D. Time last casualty evacuated from aircraft _____
Comments: _____
_____

8A. Number of injured _____
B. Number of noninjured _____
C. Number of dead _____

9A. Time first casualty transported to triage area _____
B. Time last casualty transported to triage area _____

10A. Name of other services participating in first aid _____
B. Who was in charge of these services? _____
C. How many persons involved? _____

11A. Name of other organizations participating in rescue operations _____
B. How many persons involved? _____

12. Was the moulage realistic? _____

Security

Person performing critique _____
Organization _____

13A. Time of emergency notification to police/security _____
B. Who was first police/security officer to arrive at emergency site? _____
C. Time of arrival _____

14A. How many persons involved? _____
B. Did command of security at emergency site change at any time? If so, give sequence of command change and agency represented _____
_____

15. Was the traffic satisfactorily controlled? _____
16. Was there any provision for the security of personal effects? _____
17. Any special problems at accident site with security (spectators, etc.)? _____
_____

Medical Services

Person performing critique _____
Organization _____

18A. Who was the first medical official to arrive at emergency site? Medical facility associated with? _____
_____
B. Time of notification _____
C. How notified? _____
D. By whom? _____
E. Arrival time at emergency site _____

19A. Who was the medical coordinator in charge of medical care and evacuation of casualties? _____
B. Time of notification _____
C. How notified? _____
D. By whom? _____
E. Arrival time at emergency site _____

20A. Number of physicians responding _____
B. Number of nursing personnel responding _____

21A. Was a triage area designated at emergency site? _____
B. Was the triage area located to expedite the flow of casualties? _____
C. Were the casualties properly classified and tagged? ___
D. Were the casualties moved quickly to receiving hospitals? _____

22. How were medical and first aid personnel identified?
_____

23A. What time were relief agencies (International Red Cross, Salvation Army, etc.) notified? _____
B. How notified? _____
C. By whom? _____
D. Arrival time _____
E. Personnel participating _____

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FIGURE A.15.4.2 Emergency Exercise Critique Form XYZ International Airport.

Ambulances

Person performing critique _____
Organization _____

24A. Time of notification to ambulances _____
B. How notified? _____
C. By whom? _____
D. Name of ambulance company _____
E. Time of arrival at accident site of first ambulance _____
25A. How many casualties did ambulance handle? _____
B. Time of departure _____
C. Hospital _____
D. Arrival time at hospital _____
26A. Was ingress or egress to accident site a problem? _____
Explain: _____

B. Any special problems driving from accident site to hospital? _____
Explain: _____

Hospitals

Person performing critique _____
Organization _____

27. Number of physicians responding _____
28. Number of nursing personnel responding _____
29. Number of other hospital personnel responding _____
30. Number of casualties received _____
31. Kind of casualties received _____

32A. Time first alert was received _____
B. Time disaster message authenticated _____
C. Time first casualties arrived _____
D. Time first casualties were seen by a physician _____
E. Time last casualties arrived _____
F. Time last casualties were seen by a physician _____

Leadership

Person performing critique _____
Organization _____

33. Did leadership by incident commander cause people to take effective action? _____

34. Were there any problems in the coordination of medical, fire, police, and other services? _____

35. Was the general spirit of the participants conducive to the success of the exercise? _____
36. Who demonstrated leadership? _____

Public Information

Person performing critique _____
Organization _____

37A. Time of notification to airport public information officer _____
B. How notified? _____
C. Arrival time _____
38A. Who was the public relations officer? _____
B. From what organization? _____
39. What special problems were indicated? _____
Explain: _____

Communications and Control

Person performing critique _____
Organization _____

40. Did the command post perform effectively? _____
41. Did the emergency operations center perform effectively? _____
42. Was the personnel call system effective? _____
43. Was the physician call system effective? _____
44. Was the emergency message accurately received? _____
45. Were communications with the hospital effective? _____
46. Were there any problems with internal communications? _____
47. What kinds of communications systems were used? _____

A. Two-way radio _____
B. Telephone _____
C. Walkie-talkie _____
D. Messenger _____
E. Other _____

NARRATIVE: Make any comments that may be helpful in evaluating this exercise. _____

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FIGURE A.15.4.2 ***Continued***

Annex B Table for International Aircraft Markings

This annex is not a part of the recommendations of this NFPA document but is included for informational purposes only.

B.1 Table B.1 provides the international markings for aircraft.

Table B.1 International Aircraft Markings

Code	Country
A2-	Botswana
A3-	Tonga
A5-	Bhutan
A6-	United Arab Emirates
A7-	Qatar
A9C-	Bahrain
A40-	Oman
AP-	Pakistan
B-	China
C2-	Nauru
C5-	Gambia
C6-	Bahamas
C9-	Mozambique
CC-	Chile
C-, CF-	Canada
CN-	Morocco
CP-	Bolivia
CR-, CS-	Portugal
CU-	Cuba
CX-	Uruguay
D-	Germany
D2-	Angola
D4-	Cape Verde
DQ-	Fiji
EC-	Spain
EI-, EJ-	Ireland
EK-	Armenia
EL-	Liberia
EP-	Iran
ER-	Republic of Moldavia
ES-	Estonia
ET-	Ethiopia
EW-	Belarus
EX-	Kyrgyzstan
EY-	Tajikistan
EZ-	Turkmenistan
F-	France
G-	United Kingdom
H4-	Solomon Islands
HA-	Hungary
HB- (plus nat.emblem)	Switzerland
HB- (plus nat.emblem)	Liechtenstein
HC-	Ecuador
HH-	Haiti
HI-	Dominican Republic
HK-	Colombia
HL-	Korea (Rep. of)
HP-	Panama
HR-	Honduras
HS-	Thailand
HZ-	Saudi Arabia
I-	Italy
J2-	Djibouti
J3-	Grenada
J5-	Guinea Bissau
J6-	St. Lucia
J7-	Dominican Republic
J8-	Grenadines
J8-	St. Vincent
JA-	Japan
JY	Jordan
LN-	Norway
LV, LQ	Argentina
LX-	Luxembourg
LV	Lithuania
LZ-	Bulgaria
N-	U.S.A.
OB-	Peru
OD-	Lebanon
OE-	Austria
OH-	Finland
OK-	Czech Republic
OO-	Belgium
OY-	Denmark
P-	North Korea
P2-	Papua New Guinea
P4-	Aruba
PH-	Netherlands
PI-	Netherlands Antilles
PK-	Indonesia
PP-, PT-	Brazil
PZ-	Surinam
RA	Russian Federation
RP-	Philippines
RDPL-	Laos
S2-	Bangladesh
S5-	Slovenia
S7-	Seychelles
S9-	Principe & San Tome
SE-	Sweden
SP-	Poland
ST-	Sudan
SU-	Egypt
SX-	Greece
T9-	Bosina/Herzegovina
TC-	Turkey
TF-	Iceland
TG-	Guatemala
TI-	Costa Rica
TJ-	Cameroon
TL-	Central African Rep.
TN-	Congo
TR-	Gabon
TS-	Tunisia
TT-	Chad
TU-	Ivory Coast
TY-	Benin
TZ-	Mali
VH-	Australia
VP-, VQ-, VR-	U.K. Colonies & Protectorates
VT-	India

Table B.1 *Continued*

Code	Country
XA-, XB-, XC-	Mexico
XT-	Burkina Faso
XU-	Democratic Kampuchea
XV-	Vietnam
XY-, XZ-	Myanmar
YA-	Afghanistan
YI-	Iraq
YK-	Syrian Arab Rep.
YL-	Latvia
YR-	Romania
YS-	El Salvador
YV-	Venezuela
Z	Zimbabwe
ZK, ZL, ZM	New Zealand
ZP-	Paraguay
ZS-, ZT-, ZU-	South Africa
3A-	Monaco
3B-	Mauritius
3C-	Equatorial Guinea
3D-	Swaziland
3X-	Guinea Bissau
4K-	Azerbajan
4L	Georgia
4R-	Sri Lanka
4X-	Israel
5A-	Libya
5B-	Cyprus
5H-	Tanzania
5N-	Nigeria
5R-	Madagascar
5T-	Mauritania
5U-	Niger
5V-	Togo
5W-	Western Samoa
5X-	Uganda
5Y-	Kenya
6O-	Somalia
6V, 6W	Senegal
6Y-	Jamaica
7O-	Yemen
7P-	Lesotho
7QY-	Malawi
7T-	Algeria
8P-	Barbados
8Q-	Maldives
8R-	Guyana
9A-	Croatia
9G-	Matta
9J-	Zambia
9K-	Kuwait
9L-	Sierra Leone
9M-	Malaysia
9N-	Nepal
9Q-	Zaire
9U-	Burundi
9V-	Singapore
9XE-	Rwanda
9Y-	Trinidad and Tobago

Annex C Outline of an Airport/Community Emergency Plan

This annex is not a part of the recommendations of this NFPA document but is included for informational purposes only.

C.1 This guideline is intended to ensure uniformity in the development of airport/community emergency plans. It is the function of the airport operator to develop a plan and procedures for emergencies applicable to the airport's particular characteristics and operations and, within these guidelines, to perform the following:

(1) Define the responsibilities of the airport operator and other participating agencies.
(2) Create effective lines of communication and adequate communication facilities as indicated by a flow chart, and develop a call system to include persons or agencies to be contacted. Where possible, a 24-hour coverage should be maintained.
(3) Arrange for the availability of a fixed emergency operations center and a mobile command post at the airport for use during an emergency.
(4) Integrate assistance from local support services such as fire departments, security, medical, civil defense, government agencies, local amateur radio organizations, and so forth.
(5) Describe the function of air traffic control services (airport control tower or airport flight information service) relating to emergency actions.
(6) Give instructions for response to accidents/incidents.

Sections of the airport/community emergency plan document should contain identifiable subjects pertinent to local airport and community conditions.

The emergency plans and procedures should be issued under the airport or appropriate operator, who will define and negotiate functions of all agencies and personnel on-or-off-airport who would or could be involved in an emergency affecting the airport.

In developing the emergency plan and procedures, it is vital that arrangements be simple and easily understood by all involved in the Plan.

C.2 Example of Contents of Emergency Plan Document.

C.2.1 Section 1 — Emergency Telephone Numbers. This section should be limited to essential telephone numbers according to site needs, including the following:

(1) Air traffic control services
(2) Rescue and fire fighting services (departments)
(3) Police and security
(4) Medical services
    (a) Hospitals
    (b) Ambulances
(5) Aircraft operators
(6) Government agencies
(7) Civil defense
(8) Others

C.2.2 Section 2 — Aircraft Accident On-Airport. This section should detail the following:

(1) Action by air traffic control services (airport control tower or airport flight information service)
(2) Action by rescue and fire fighting services
(3) Action by police and security services

(4) Action by airport operator
  (a) Vehicle escort
  (b) Maintenance
(5) Action by medical services
  (a) Hospitals
  (b) Ambulances
  (c) Doctors
  (d) Medical personnel
(6) Action by aircraft operator involved
(7) Action by emergency operations center and mobile command post
(8) Action by government agencies
(9) Communications network (emergency operations center and mobile command post)
(10) Action by agencies involved in mutual aid emergency agreements
(11) Action by transportation authorities (land, sea, and air)
(12) Action by the public information officer(s)
(13) Action by local fire departments when structures are involved
(14) Action by all other agencies

C.2.3 Section 3 — Aircraft Accident Off-Airport. This section should detail the following:

(1) Action by air traffic control services (airport control tower or airport flight information service)
(2) Action by rescue and fire fighting services
(3) Action by local fire departments
(4) Action by police and security services
(5) Action by airport operator
(6) Action by medical services
  (a) Hospitals
  (b) Ambulances
  (c) Doctors
  (d) Medical personnel
(7) Action by agencies involved in mutual aid emergency agreements
(8) Action by aircraft operator involved
(9) Action by emergency operations center and mobile command post
(10) Action by government agencies
(11) Communication networks (emergency operations center and mobile command post)
(12) Transportation authorities (land, sea, and air)
(13) Action by public information officer
(14) Action by all other agencies

C.2.4 Section 4 — Malfunction of Aircraft in Flight (Full Emergency or Local Standby). This section should detail the following:

(1) Action by air traffic control services (airport control tower or airport flight information service)
(2) Action by airport rescue and fire fighting services
(3) Action by police and security services
(4) Action by airport operator
(5) Action by medical services
  (a) Hospitals
  (b) Ambulances
  (c) Doctor
  (d) Medical personnel
(6) Action by aircraft operator involved
(7) Action by emergency operations center and mobile command post
(8) Action by all other agencies

C.2.5 Section 5 — Structural Fires. This section should detail the following:

(1) Action by air traffic control services (airport control tower or airport flight information service)
(2) Action by rescue and fire fighting services (local fire departments)
(3) Action by police and security services
(4) Action by airport operator
(5) Evacuation of structure
(6) Action by medical services
  (a) Hospitals
  (b) Ambulances
  (c) Doctors
  (d) Medical personnel
(7) Action by emergency operations center and mobile command post
(8) Action by public information officer
(9) Action by all other agencies

C.2.6 Section 6 — Sabotage Including Bomb Threat (Aircraft or Structure). This section should detail the following:

(1) Action by air traffic control services (airport control tower or airport flight information service)
(2) Action by emergency operations center and mobile command post
(3) Action by police and security services
(4) Action by airport operator
(5) Action by rescue and fire fighting services
(6) Action by medical services
  (a) Hospitals
  (b) Ambulances
  (c) Doctors
  (d) Medical personnel
(7) Action by aircraft operator involved
(8) Action by government agencies
(9) Isolated aircraft parking position
(10) Evacuation
(11) Searches (dog and human) or by aircraft
(12) Handling, identification, and safe declaration of luggage and cargo on board aircraft
(13) Handling and disposal of suspected bomb
(14) Action by public information officer
(15) Action by all other agencies

C.2.7 Section 7 — Unlawful Seizure of Aircraft (Hijacking). This section should detail the following:

(1) Action by air traffic control services (airport control tower or airport flight information service)
(2) Action by rescue and fire fighting services
(3) Action by police and security services
(4) Action by airport operator
(5) Action by medical services
  (a) Hospitals
  (b) Ambulances
  (c) Doctors
  (d) Medical personnel
(6) Action by aircraft operator involved
(7) Action by government agencies
(8) Action by emergency operations center and mobile command post
(9) Isolated aircraft parking position

(10) Action by public information officer
(11) Action by all other agencies

C.2.8 Section 8 — Incident On-Airport. An incident on-airport can require any or all of the action detailed in "Aircraft Accident on-Airport." Examples of incidents the airport operator should consider include fuel spills at the ramp, passenger loading bridge, and fuel storage area; dangerous goods (hazardous materials) occurrences at freight handling areas; collapse of structures; vehicle/aircraft collisions, and so forth.

C.2.9 Section 9 — Persons of Authority — Site Roles. To include but not be limited to the following according to local requirements:

(1) On-airport
  (a) Airport operator
  (b) Airport chief fire officer
  (c) Police and security — officer-in-charge
  (d) Medical coordinator
(2) Off-airport
  (a) Local chief fire officer
  (b) Government authority
  (c) Police and security — officer-in-charge
  (d) Medical coordinator

The incident commander should be designated as required from within the prearranged mutual aid emergency agreement.

Previous documented experience indicates that confusion in identifying command personnel in accident situations is a serious problem. To alleviate this problem it is suggested that distinctive colored vests with reflective lettering be issued to command personnel for easy identification. The following colors are examples:

(1) Red. Chief fire officer
(2) Blue. Police chief
(3) White (red lettering). Medical coordinator
(4) International orange. Airport administration
(5) Lime green. Transportation officer
(6) Dark brown. Forensic chief

An incident commander should be appointed as the person in command of the overall emergency operation. The incident commander should be easily identifiable and can be one of the persons indicated above or any other person from the responding agencies.

Annex D Types of Alerts

This annex is not a part of the recommendations of this NFPA document but is included for informational purposes only.

D.1 The terms used to describe various categories of aircraft alerts are not standardized. The Federal Aviation Administration (FAA) terms — Local Standby Alert, Full Emergency Alert, or Aircraft Accident Alert — and the International Civil Aviation Organization (ICAO) terms — Local Standby, Full Emergency, and Aircraft Accident — are equivalent.

D.2 Local Standby Alert — Local Standby. An aircraft that is known or suspected to have an operational defect should be considered local standby. This defect normally should not cause serious difficulty in achieving a safe landing.

Local Standby Alert also should be initiated when an aeromedical evacuation or presidential/VIP aircraft is arriving or departing.

Airports should have management policies for implementation of Local Standby Alert procedures whenever required response times cannot be achieved. Factors that can affect response time include construction work, field maintenance, and adverse weather conditions such as snow, ice, or low visibility.

Airports should have management policies for implementation of Local Standby Alert procedures during arrival and departures of certain categories or types of aircraft not normally utilizing the airport.

Under Local Standby Alert conditions, at least one aircraft rescue and fire fighting vehicle should be manned and positioned to permit immediate use in the event of an incident. The Aircraft Rescue and Fire Fighting (ARFF) personnel should be advised of the following:

(1) The type of aircraft
(2) The number of passengers and crew
(3) The type and amount of fuel
(4) The nature of the emergency
(5) The type, amount, and location of dangerous goods
(6) The number of nonambulatory passengers on board, if any

All other ARFF vehicles should be available for immediate response.

D.3 Full Emergency Alert — Full Emergency. An aircraft that is known or is suspected to have an operational defect that affects normal flight operations to the extent that there is danger of an accident is considered a Full Emergency Alert — Full Emergency. ARFF personnel should be provided with detailed information that allows preparation for likely contingencies. A full response should be made with the emergency equipment manned and positioned with engines running and all emergency lights operating so that the fastest response to the incident/accident site can be accomplished. It is important that appropriate radio frequencies be continuously monitored by ARFF personnel. One or more major aircraft rescue and fire fighting vehicles should be able to initiate fire suppression within the briefest period of time following the aircraft's coming to rest. Standby positioning of vehicles should be established for a variety of anticipated circumstances. The ARFF personnel should be informed of any changes in a distressed aircraft's emergency conditions that could affect the touchdown point or the ultimate behavior of the aircraft.

D.4 Aircraft Accident Alert — Aircraft Accident/Fire. This alert denotes an aircraft accident or serious aircraft fire has occurred on or in the vicinity of the airport. Regardless of the source of this alarm, full airport fire and rescue response procedures should be put into effect. Where possible, all known pertinent information should be relayed via radio by Air Traffic Control (ATC) to responding emergency units and include as accurately as possible the location of the accident using grid map coordinates and landmarks.

Where such information is not available, the ARFF personnel should anticipate the worst situation and prepare accordingly.

The incident commander should advise ATC of conditions at the site, particularly if such conditions could interfere with flight operations.

Emergencies not involving aircraft include the following:

(1) Nonaircraft accident related airport emergencies;
(2) Natural disasters; and
(3) Medical emergencies.

Annex E Responsibilities of Aircraft Operations Personnel Following an Aircraft Accident

This annex is not a part of the recommendations of this NFPA document but is included for informational purposes only.

E.1 Airline personnel often are the only force on the airport available for quick response to passenger service in an emergency since fire, police, and airport operation departments are usually required to respond to the accident site.

An air carrier emergency plan should be coordinated with the airport/community emergency plan so that airline personnel know which responsibilities the airport will assume and what response is required by the airline. A checklist form should be developed by the airline for the company coordinator's use. This form should be time correlated to the documented notification time of the accident, company communications, personnel assignments, response, and other actions taken. From this log of events a critique of airline and airport/community emergency plans can be analyzed for future improvement.

Training should be initiated by the airlines to prepare all station personnel for emergency procedures. In all emergencies the individuals involved are subjected to stresses of a severity not generally encountered. It is vital for all emergency workers to be familiar with common responses by the individuals to unusual stress and apprehension and to be able to cope effectively with disturbed persons. The best possible preparation for effective behavior under disaster conditions is education and practice. Education should include instructions in the nature and actions of disturbed individuals and the general type of reaction to be expected from each. There should be participation in simulated emergency exercises to help establish effective patterns of behavior under emergency conditions and practice the basic principles of "psychological first aid."

A holding area for uninjured persons should be designated in order to assemble and process passengers not injured in the emergency. The area selected should provide for both passenger comfort and security from the news media. Upon notification of an accident, designated airline personnel should immediately respond to the holding area to receive the passengers evacuated from the accident scene. The airline personnel should be at this station before the passengers arrive. Emergency kits should be prepared and be readily available for the passenger service representatives to effectively carry out their duties. While waiting for the evacuees, an organizational meeting should be held by the person in command, delegating a receptionist, registrar, and welfare coordinator for the survivors.

The organization and description of required duties given in E.2 through E.4 are suggested.

E.2 The Airline Coordinator. Normally this would be the senior representative from the airline whose aircraft had the accident. In the event of a charter or nonscheduled flight, the representative of the airline designated to provide ground services for that flight should take charge. In the event of an over-flight or carrier without personnel based at the airport, representative authority would have to be determined by those responding. The person in charge should have radio communication to the airline operations or other designated emergency center. Telephones should be available in the holding areas. The person in command oversees the overall airline operations, making arrangements for additional medical services if required, commissary items, and so forth.

The receptionist should meet the transportation vehicles as they arrive from the scene of the accident and direct the passengers to the registrars' tables where they will be processed. The receptionist should know where toilet facilities are located.

E.3 Registrars. The registrars should have emergency kits available to them. Two people should constitute one registrar team. Several teams can be required to process the passengers swiftly and efficiently. One member should enter the passenger's name on the manifest and determine what reservation requirements are desired, that is, hotel accommodations or another flight, transportation, and so forth, and any persons to be notified of the passenger's condition and plans. The other member of the registrar team should make out an identification tag or sticker (available from the emergency kit) and place it on the passenger. This can assist in identifying the passenger when accommodations have been made. More importantly, this will indicate that the passenger has been processed. The registrars should direct the victims to the welfare coordinators when their registration is completed.

Welfare coordinators are the nucleus of psychological first aid. They should attempt to stimulate passenger discussion. Special attention should be given to those who do not join in the group. In giving psychological first aid, it should be noted that some persons become more disturbed than others. Giving those persons sympathetic understanding can be the first step toward helping them. Overwhelming victims with pity may only increase their fear and feelings of helplessness. A person who exhibits bodily trembling, rapid breathing, rapid pulse, shortness of breath, and so forth, should be engaged in conversation and professional medical attention requested as soon as available.

A sizable personnel force can be provided by most air carriers; however, there can be a problem at airports with a small operation. As a result, a mutual aid assistance program of all airline personnel (and, if necessary, other airport tenants based at the airport) should be established. Training can be acquired from local mental health care and Red Cross units. This training is not extensive but would provide education for passenger service in an emergency. In addition to care for the victims evacuated from an accident site, training also should include a possible traumatic situation that could develop in the gate area of the terminal building.

E.4 Emergency Kits. Each airline should prepare an emergency kit that can be readily available to all airline personnel during all hours of operation. This kit should never be placed in an office that is locked during certain hours of the day. All station personnel should have knowledge of the location of the emergency kit. The contents of the kit should include the following:

(1) Tablets or forms to record the victims' names, addresses, and home phone numbers; name and phone number of person to be notified of passenger's condition; accommodation request of passenger (i.e., future flight, hotel, transportation within the local area, etc.)
(2) Stick-on, adhesive-type name tags to identify passengers who have been processed and for identification of victim when accommodations have been made.
(3) Telephone numbers of the following:
    (a) Doctors to attend to minor injuries. Each airline should have a letter of agreement with physicians who will respond to a designated holding area.

(b) Hotels where victims can be billeted. It is beneficial to place victims in the same hotel or at least in groups at hotels.
(c) Linguists. Preferably people who work on the airport for quick response.
(d) Caterer if commissary items are required.
(e) All airline reservations offices.
(f) Ambulance companies in case a victim requires hospitalization.
(g) Taxicab companies.

(4) A current copy of the *Official Airline Guide* (OAG). Local airline schedules can be helpful for registrars who will be making arrangements on future flights.
(5) Sample of Registrar's Form.

Passenger	Person(s) to Be Notified
NAME_____	NAME _____
ADDRESS_____	RELATION _____
PHONE NUMBER_____	PHONE NUMBER _____

ACCOMMODATIONS _____

_____

Flight_____, Hotel, Local Phone Number, etc.

Annex F Aircraft Accidents in the Water

This annex is not a part of the recommendations of this NFPA document but is included for informational purposes only.

F.1 Where airports are situated adjacent to large bodies of water (such as rivers or lakes) or where they are located on coastlines, special provisions should be made for rescue and fire fighting operations in event of an aircraft accident/incident in the water. Specialized equipment for rescue and fire fighting may include fire/rescue boats; air-cushion vehicles (ACV); helicopters; coastal patrol boats; and so forth. *(See Figure F.1.)* Also see FAA Advisory Circular A/C 150/5200-31A, *Airport Emergency Plan.*

FIGURE F.1 Hovercraft Used for Rescue.

The "Winchester" Class Hovercraft (built by the British Hovercraft Corporation) is in service at the Auckland International Airport in New Zealand. It is utilized to protect aircraft operations that are largely over the Manukau Harbor that borders the airport. The primary mission is rescue of occupants in the event of an accident in the harbor or mudflats (which exist at low tide).

Consideration of unusual terrain and water conditions, such as tidal flats, swamps, and so forth, can dictate the choice of the particular type of vehicle most suitable to these conditions. Helicopters and air-cushion and amphibious vehicles as well as conventional watercraft could be found to provide this specialized service.

In developing the water rescue service, consideration should be given to private or public services (such as military search and rescue units, harbor police, or fire departments) and private rescue services (such as rescue squads, power and communication companies, pipeline or oil field operators, lumbering industry, or shipping and waterway operators) that could be available and are capable of rendering assistance. A signal system for alerting private or public services in time of emergency should be prearranged.

Many aircraft do not carry personal flotation devices on board, especially those not engaged in extensive over-water operations. Such flotation devices should be available in numbers sufficient to meet the needs of the maximum passenger capacity of the largest aircraft in regular service at the airport. Where the largest aircraft is in scheduled over-water operation and all other operations are over-water in character, the airport can reduce the amount of personal flotation devices by 50 percent.

F.2 Probability of Fire. In incidents of aircraft accidents over water, the possibility of fire is normally reduced, hopefully because of the suppression of ignition sources by the water contact and the cooling of heated surfaces. In situations where fire is present, its control and extinguishment present unusual problems unless the proper equipment is available.

F.3 Spillage of Fuel on Water Surfaces. It should be anticipated that the impact of the aircraft hitting the water might rupture fuel tanks and lines. It is reasonable to assume that quantities of fuel will thus be found floating on the surface of the water. Boats with exhausts at the waterline can present an ignition hazard if operated where this condition is present. Wind and water currents should be taken into consideration in order to deal effectively with floating fuel to keep it from moving into areas where it would be hazardous to rescue operations or initiate fire. As soon as possible, pockets of fuel should either be broken up or moved with large volume nozzles, neutralized by covering them with foam or a special inerting material, or boomed to contain the fuel in a safe area prior to absorption, dilution, or removal. Preplanning with the EPA's Water Pollution Control Division can provide emergency assistance during this operation.

F.4 Rescue Boats. Rescue boats should be capable of shallow water operations. Boats powered by jet-type propulsion eliminate the dangers of propellers puncturing inflatable equipment or injuring survivors during rescue operations. Boats powered by conventional propellers can diminish the hazards of puncture and injury by being equipped with fan-type guards or cowls.

Boats and other rescue vehicles should be located so that they can be brought into action in minimum time, but in any event not more than 15 minutes within the area extending up

to 1000 m (3281 ft) from the end of the runway(s). Special boathouses or launching facilities should be provided where they will contribute materially to the rapidity of the launching process.

The boats should be of such size as to carry efficiently the flotation equipment required with adequate space for the crew and sufficient working space to permit rapid dispersal of the flotation devices. Inflatable life rafts should be the prime flotation equipment carried, and there should be an adequate number of life rafts to accommodate the largest aircraft occupancy served by the airport. Once this flotation equipment has been dispensed, there should be sufficient space to accommodate a limited number of litter cases brought aboard in the process of rescue.

In order to permit communications with other rescue units, such as helicopters, air-cushion or amphibious equipment, and water-land based units, adequate two-way radio equipment should be provided in all rescue boats.

A minimum of two floodlights should be provided for night operations.

Radar reflectors should be used to facilitate navigation and rendezvous efforts.

F.5 Organizing Diving Units/Use of Divers. Diving units should be dispatched to the scene. Where available, helicopters can be used to expedite the transportation of divers to the actual area of the crash. All divers who could be called for this type of service should be highly trained in both scuba diving and underwater search and recovery techniques. In areas where there are no operating governmental or municipal underwater search and recovery teams, agreements can be made with private diving clubs. The qualifications of the individual divers should be established by training and practical examination.

In all operations where divers are in the water, standard divers' flags should be flown and boats operating in the area should be warned to exercise extreme caution.

Where fire is present, approach should be made after wind direction and velocity and water current and swiftness are taken into consideration. Fire can be moved away from the area by using a sweeping technique with hose streams. Foam and other extinguishing agents should be used where necessary.

It should be anticipated that victims are more apt to be found downwind or downstream. This should be taken into consideration in planning the attack. Where only the approximate location of the crash is established upon arrival, divers should use standard underwater search patterns marking the locations of the major parts of the aircraft with marker buoys. If sufficient divers are not available, dragging operations should be conducted from surface craft. In no instance should dragging and diving operations be conducted simultaneously.

Where occupied sections of the aircraft are found submerged, the possibility remains that enough air may be trapped inside to maintain life. Entry by divers should be made at the deepest point possible.

F.6 Other Considerations. Where the distance offshore is within range, synthetic fiber-covered, rubber-lined fire hose can sometimes be floated into position by divers or boats and used to supplement other means of fire attack.

A command post should be established at the most feasible location on the adjacent shore. This should be located in a position to facilitate implementing the airport/community emergency plan in accordance with guidelines established by the authority having jurisdiction.

Great care should be exercised in maintaining the watertight integrity of occupied aircraft sections found afloat. Removal of the occupant(s) should be accomplished as smoothly and quickly as possible. Any shift in weight or lapse in time can result in its sinking, and rescuers should use caution to avoid becoming trapped themselves.

Annex G Airport Medical Services

This annex is not a part of the recommendations of this NFPA document but is included for informational purposes only.

G.1 Medical services and supplies should be available to an airport. Provision of medical services generally should not present great difficulties at large airports or airports near a large city, as the personnel and material normally will be available. What is required is the development of the necessary coordination between the airport and the emergency medical assistance system in the community.

Provision of medical services can present some difficulties at small airports not located near populated areas. These airports, however, should arrange to have available emergency medical services to provide medical care in the event of an aircraft accident, taking into account the largest aircraft using the airport.

The capability of medical personnel can be greatly enhanced by additional resources for improving the environment of the treatment area. Many airport/community areas contain valuable support equipment that is not utilized because it was never determined that such equipment was available. Local agencies such as transportation departments, boards of health, park departments, departments of natural resources, and so forth, can be good sources. Federal agencies such as the Corps of Engineers, Department of Transportation, and Armed Forces (both active and reserve elements) possess a wide variety of support equipment and material. Examples of support equipment are mobile structures, auxiliary power and heating devices, water tankers, fuel supplies, lighting devices, sawhorses and lighting for roadblocks, and so forth.

Portable shelters such as mobile hospitals, tents, and recreation vehicles can be used where extremes in climate or weather can affect patient survivability. Consider the use of adjacent buildings such as aircraft hangars, gymnasiums, auditoriums, warehouses, and so forth, if distance and transportation resources are favorable.

Ideally, all personnel assigned to rescue duties and "public-contact" airport employees should be given first aid and CPR (cardiopulmonary resuscitation) training.

Rescue and fire fighting personnel should have the ability to stabilize seriously injured casualties. At least two full-time members per shift of the airport rescue and fire fighting service or other on-airport personnel should be trained to an emergency medical treatment level as determined by the local medical authority. In addition, it is recommended that as many rescue and fire fighting personnel as is practicable receive training to meet minimum standards of medical proficiency and preferably be highly qualified in first aid, preferably certified as emergency medical technicians. Accordingly, they should have sufficient medical equipment at their immediate disposal to initiate stabilization until transportation of casualties to adequate medical facilities is provided.

As many airport personnel as practicable also should be trained in CPR (cardiopulmonary resuscitation) as taught by

the appropriate medical authority. Periodic exercises and drills in CPR techniques are necessary to maintain proficiency.

All rescue, fire fighting, and medical personnel should be trained to protect themselves from the spread of communicable diseases should they become exposed to blood or other body fluids during rescue or emergency medical care activities.

The everyday medical problems at large airports can serve to promote an increased proficiency in emergency medical techniques of airport-based emergency personnel. It should be noted, however, that proficiency in emergency medical techniques can be maintained only through constant practical application. Unless operations include providing advanced life support on a day-to-day basis, proficiency will decline or disappear.

Airports are encouraged to include volunteer on-airport personnel, other than rescue and fire fighting personnel, to provide an auxiliary response to assist casualties resulting from emergencies. Volunteers should be trained by accredited agencies in first aid or rescue response duties. In case of an emergency they should respond to a designated staging area for assignment. The question of liability is a matter for each appropriate authority.

Due to the many conflicting national and international standards and nomenclature of medical personnel, for the purpose of this guide, the following definitions are prescribed as guidelines:

(1) *Advanced First Aid.* 56 hours instruction
(2) *Emergency Medical Technician (EMT).* 114 hours instruction (100 hours classroom; 10 hours hospital emergency room apprentice service; 4 hours ambulance apprentice duty)
(3) *Paramedic.* 500 hours instruction (200 hours classroom; 100 hours hospital emergency room apprentice service; 200 hours ambulance apprentice duty)

Recurrent training should be provided in each specialty and recertification achieved at least on an annual basis, or as required by the local jurisdiction.

G.2 Emergency Medical Supplies and Equipment. The airport operator should arrange to have available on or in the vicinity of the airport sufficient medical supplies to treat the passenger capacity of the largest aircraft normally using the airport. Experience has shown, however, that more than one aircraft can be involved in an aircraft accident, and, consequently, medical supplies to handle this possibility should be considered. The type and quantity of such supplies should be determined by the principal medical operator for the airport using the statistical information given in Table G.2(a).

The figures in Table G.2(a) are based on the assumption that the maximum number of surviving casualties at an aircraft accident occurring on or in the vicinity of an airport is estimated to be no more than 25 percent of the aircraft occupants.

To cope with an emergency involving a large aircraft, it is recommended that the general emergency medical supplies and equipment included in Table G.2(b) be available at the airport or otherwise be available from outside sources. Table G.2(b) has been prepared to cope with the largest type of aircraft at present being used for commercial air transport operations, that is, B747, DC-10, Airbus. If, at any airport, only smaller aircraft will be handled during the foreseeable future, the suggested medical supplies and equipment should be adjusted to the largest aircraft expected to operate at the airport.

Stretchers, blankets, and backboards or immobilizing mattresses or both should be available for use, preferably on a suitable vehicle (e.g., trailer) that can be transported to the accident site. Blankets are needed to alleviate the casualty's exposure to shock and possible adverse weather conditions. Trauma victims in an aircraft accident sometimes sustain severe spinal injuries, so backboards should be used in removing such casualties from the aircraft in order to minimize the possibility of further spinal injury. The backboards should be of a type designed to fit through access ways and narrow aisles of commercial and business aircraft.

The following material describes some of the items included in Table G.2(b):

G.2.1 Immobilizing Mattress. This apparatus consists of a plastic bag designed like a mattress and filled with a lot of very small balls. An aspirator (mechanical or other) is used to take out the air so that the mattress is crushed by the atmospheric pressure and becomes as rigid as plaster. A human body, partly enveloped before the mattress is compressed, is completely wrapped and head, limbs, and backbone become immobilized, allowing any type of transportation, through the use of lateral rope loops. The apparatus is permeable to X-rays. Although the dimensions are variable, its length varies generally between 1.80 m (71 in.) and 1.90 m (74 in.) and its width between 0.80 m (31 in.) and 0.90 m (36 in.).

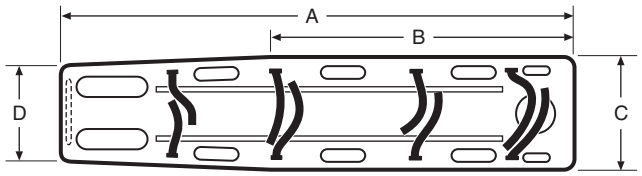
G.2.2 Backboards. These are classified as long and short backboards. The approximate dimensions for a long backboard are shown in Figure G.2.2(a). Although a backboard of 1.90 m (74 in.) is shown, some backboards of 1.83 m (72 in.) in length

Table G.2(a) Estimated Maximum Number of Casualties at an Aircraft Accident at an Airport

Aircraft Occupants	Number of Casualties	20 Percent Casualties Immediate Care Priority I	30 Percent Casualties Delayed Care Priority II	50 Percent Casualties Minor Care Priority III
500	124	24	38	62
450	112	22	34	56
400	100	20	30	50
350	87	17	26	44
300	75	15	23	37
250	62	12	19	31
200	50	10	15	25
150	38	8	11	19
100	25	5	8	12
50	12	2	4	6

Table G.2(b) General Emergency Supplies and Equipment

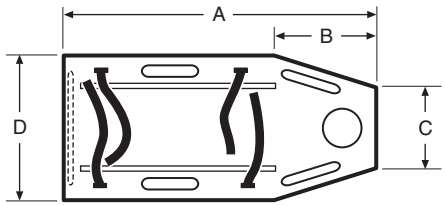
Quantity	Description
100	Stretchers, adaptable to the most commonly used ambulances
10	Immobilizing mattresses for backbone fractures
10	Backboards for backbone fractures
50	Splints, either conventional or inflatable, for the various types of fractures
50	First aid kits, each containing a set of 10 tags, hemostatic pads, tourniquets, respiratory tube, scissors, dressings
20	Resuscitation chests containing material for intubation, infusion, and oxygenation on the spot for about 20 casualties
2 or 3	Manual or mechanical respirators
2 or 3	Suction devices
300 to 500	Plastic bags for the deceased



A – 1.90 m (74 in.)
B – 1.10 m (43 in.)
C – 0.46 m (18 in.)
D – 0.25 m (10 in.)
Thickness: 19-mm (¾-in.) plywood
Head hole: 140-mm (5½-in.) diameter
Hand holes: 250 mm × 50 mm (10 in. × 2 in.)
Foot holes: 250 mm × 75 mm (10 in. × 3 in.)

Note: 25-mm (1-in.) cleats should be placed longitudinally on the underside of the blackboard to facilitate lifting.

FIGURE G.2.2(a) Long Backboard.



A – 0.91 m (36 in.)
B – 0.30 m (12 in.)
C – 0.20 m (8 in.)
D – 0.41 m (16 in.)
Thickness: 16-mm (⅝-in.) plywood
Head hole: 114-mm (4-in.) diameter
Hand holes: 150 mm × 38 mm (6 in. × 1 in.)

Note: 25-mm (1-in.) cleats should be placed longitudinally on the underside of the blackboard to facilitate lifting.

FIGURE G.2.2(b) Short Backboard.

should be available to move through the smallest aircraft emergency exits, 510 mm × 915 mm (20 in. × 36 in.). A 75-mm (3-in.) wide velcro restraining strap is normally required for legs, hips, upper torso, and head.

The appropriate dimensions for a short backboard are shown in Figure G.2.2(b). A 75-mm (3-in.) wide velcro restraining strap is normally required for lower and upper torso.

G.2.3 Miscellaneous Items. Miscellaneous items could include the following:

(1) Inflatable tents should have adequate heating and lighting where possible. A large tent can normally accommodate about ten serious cases and can be carried on a large all-purpose vehicle along with the other necessary medical equipment.
(2) Mobile emergency hospitals or inflatable tents, if available *[see Figure G.2.3(a), Figure G.2.3(b), and Figure G.2.3(c)]*, or shelters can be used for on-site treatment of Immediate Care (Priority I, Red) and Delayed Care (Priority II, Yellow) casualties. These units should be readily available for rapid response. Planning should also include the assignment of personnel who can operate/assemble this equipment. A cardiac care ambulance unit can be used as an ideal shelter for Immediate Care (Priority I, Red) casualties.

G.3 Emergency Medical Communication System. Communication is a primary requisite of an airport/community emergency medical plan. The medical service communication system should ensure adequate communication during emergencies to disseminate warning information and obtain support operations. Without communication, the hospital cannot know the number and type of casualties it will be receiving, ambulances cannot be directed to the facilities most capable of rendering the needed care, supplies available from outside sources cannot be called for, and medical personnel cannot be directed to the point where they are needed most.

The participating hospitals should have the capability of communicating with one another by means of a two-way radio communication network. Ideally, each hospital should have the capability of either calling other individual hospitals or, if the occasion arises, calling all other hospitals simultaneously. This capability is invaluable for hospitals experiencing an emergency such as a need for a certain blood type or an item of equipment in short supply. It is also recommended that the medical coordinator be able to communicate with participating hospitals directly.

G.4 Emergency Medical Transportation Facilities. The dispatch of casualties to hospitals from the accident site should take into consideration the hospital(s) medical personnel on staff, medical specialties, and beds readily available. Ideally, each airport should have available at least one on-call ambulance for routine medical emergencies. Written agreements with off-airport based ambulances should be prepared to provide for emergency transportation services.

In major emergency situations, other means of transportation can be substituted for ambulances. Vans, transportation vehicles, automobiles, station wagons, or other suitable airport vehicles can be used. Provision for immediate transportation should be available to transport the uninjured or apparently uninjured to a designated holding area.

An area grid map (with date of latest revision) of the airport's surrounding area should be carried by all rescue vehicles. All medical facilities should be depicted prominently on the grid map. *(See Figure A.6.2.2.)*