CHAPTER 7
Airspace Deconfliction

I. Introduction

Studies of midair collisions have revealed some interesting and surprising information. According to Air Safety Foundation, a sub-group of the Aircraft Owner's and Pilot's Association (AOPA) and the National Transportation Safety Board (NTSB), nearly all midair collisions occur during daylight hours, in visual flight rules (VFR) conditions with visibility of at least three miles, and involve aircraft flying in areas where a concentrated number of aircraft normally operate, such as around airports, emergency operations and other areas of high traffic congestion. In the end it comes down to a failure of the "See and Avoid" system but there usually are a number of factors leading up and contributing to this failure. Agency personnel can take a number of steps to reduce the risk of a midair collision.

The US Air Force has an airspace program known as MidAir Collision Avoidance (MACA). The objective of a MACA program is to prevent airspace conflicts through improvement of airspace coordination procedures. Agency personnel involved in airspace deconfliction employ a program similar to MACA that enhances communications, quality of information, and situational awareness among dispatchers, coordination centers, pilots, aircrews, aerial supervisors, air tanker and air attack base managers and ground-based personnel.

Several agency guides identify airspace procedures and policies for federal firefighting agencies (i.e. the Interagency Air Tactical Supervisor and Lead Plane Operations Guides). The procedural information in these Guides is relevant to all issues regarding airspace coordination. These guides are referenced where appropriate.

II. Airspace Deconfliction

The word 'deconflict' is not in the dictionary. The prefix means "to free from" (e.g. decontaminate) or to remove (e.g. debug, declassify). Airspace deconfliction is a term used to describe the process of reducing the risk of a near mid air collision or TFR intrusion by sharing information regarding flight activity with DoD military units, general aviation and other agency aviation programs. Airspace deconfliction can occur for both emergency and non-emergency aviation activities.

The act of deconflicting airspace often centers around "courtesy phone calls" which are calls placed by a dispatcher to inform another party (DoD, etc) of aviation activity. The contacts are considered "courtesy calls" because the FAA manages the nations airspace and the FAA will issue the appropriate NOTAMS and make notification when appropriate.

The role of a "courtesy phone call" can be critical for providing deconfliction information to an Air Tactical Group Supervisor or other airborne incident personnel. For example, when an incident occurs on a MTR, dispatch can call the either the FAA ARTCC or FAA FSS to see if the route is "hot." The FSS generally has a schedule received the evening before from the DoD Scheduling Activity for the MTR. Many times the schedule is out dated due to changes on the schedule. When Dispatch places a courtesy call to the DoD Scheduling Activity, they can usually find out not only if the route is "hot" but how many aircraft are scheduled on the route for the rest of the day. This information can then be relayed to the field. This valuable information can be crucial in avoiding a mid air collision. DoD will usually participate in deconfliction procedures especially if notified that a TFR will be going into place.

Deconflicting airspace can occur for a variety of missions ranging from blasting activity, reconnaissance flights, aerial photography, etc. In the case of non emergency activities, the Department of Defense may choose to voluntarily deconflict involved airspace in order to reduce the risk of a mid air collision. See and Avoid principles will always apply.

Agency personnel should be aware of their agency guidelines regarding the radius of airspace to be deconflicted. The location and types of airspace involved will influence the scope of airspace deconfliction. Agency guidelines should also spell out deconfliction applications for end product contracts.

A.   Boundary Issues

When resources are being dispatched by more than one unit or agency to an incident along a common boundary, special care should be taken to ensure safe separation and communication. Airspace boundary plans should be developed in areas where this occurs. Boundary plans often focus on an 10 mile wide "neutral air" corridor for mutual or exchanged initial attack areas or zones. Agencies conducting flight activity within the boundary corridor implements notification procedures to adjoining agencies and cooperators. Examples of aviation operations include fire reconnaissance, fire suppression missions, special aviation projects, resource management flights, helicopter logging, etc.

The following exerpt is from the Idaho and Pacific Northwest Boundary Plans:

> "Aerial operations on, or adjacent to, agency/cooperator boundaries and areas where a neighboring agency/cooperator provides fire suppression on lands administered by the adjoining agency/cooperator ("mutual aid", "shared", or "exchanged" initial attack areas or zones) require increased management and coordination. The requirement for increased management and coordination is due to the possibility of two or more agency/cooperators conducting simultaneous, uncoordinated aviation operations within those areas that would unknowingly put the responding aerial resources within close proximity to one another, placing aircraft and crews at risk. The purpose of this plan is to identify such boundaries and initial attack zones and provide a means of communication, coordination and airspace deconfliction within those areas."

B.   DoD Airspace Deconfliction Direction

NIMA publishes DoD Flight Information Publications (FLIP) which consists of various books and charts (Reference Chapter 5 Tools/Skills). The AP/1 contains direction to DoD flight crews regarding "forest fire season". The following quote is from the AP/1, Chapter 3, Flight Hazards.

FLIGHT HAZARDS

FOREST FIRE SEASON - Many Military Training Routes (MTRs) traverse areas of mountainous forest and range lands. Flight crews must be alert for fire suppression activities using aircraft during the fire season. In many cases a NOTAM designating a temporary flight restriction area will be in effect for such areas when a fire exists. All aircrews should be extremely alert for such areas whether designated or not and avoid such areas by at least 5 NM.

Typical fire seasons for various regions are as follows:
    NE US - March, April, May
    SE US - March, April, May, September, October, November
    ARIZONA/NEW MEXICO - April, May, June, July, September, October, November
    CALIFORNIA - May, June, July, August, September, October, November, December
    COLORADO/WYOMING - May, June, July, August
    N. DAKOTA - May, June, July, August
    UTAH/NEVADA/IDAHO - June, July, August, September
    MONTANA - June, July, August, September
    OREGON/WASHINGTON - June, July, August, September, October

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C. Airspace deconfliction tools

1. Airspace Briefings

Standard morning briefings at all airbases, both on and off incident, and dispatch offices should include airspace information. Newly arrived aircraft from other geographic areas should be briefed by whatever means available (radio, phone or on the ground) prior to its first operational period regarding airspace issues. Feedback on the days operation should be obtained from aerial firefighters, pilots and dispatchers. Corrective actions for problems identified during debriefings should be taken prior to the next operational period.

The following briefing components are recommended at a minimum. Briefings on airspace and associated issues are not intended to replace standard briefing formats such as those found in agency or interagency guides (i.e. Interagency Helicopter Operations Guide's Daily Briefing/Debriefing Checklist), but to provide more comprehensive information to pilots and aircrews.

- General airspace situation locally, statewide, and nationally
- Review of problems or conflicts encountered to date, and their resolution
- Safety issues and alerts
- Maps of statewide TFRs along with incident or area specific maps as needed
- Table listing TFR impacts on military or other flight activities
- Incident or area-specific airspace procedures
- FTAs in effect
- Frequency lists
- Incident Management Team Air Operations organization contact list
- Known hazards (i.e. logging cables, transmission or other suspended lines, other aircraft operations, etc.)

2. Distribution

Awareness of airspace coordination and communications information is critical to the DoD, FAA, agency personnel and both participating and non-participating pilots. This information should be distributed statewide to all that have a "need to know".

Information destinations include but are not limited to:

- Air Attack and Air Tanker Bases
- Helibases with contract or agency-owned helicopters
- Dispatch centers and GACCs
- Expanded Dispatch-Aircraft desks
- Incident Air Operations Branch Directors
- Neighboring agencies
- Agency Aviation Safety Officers
- FSS and ARTCCs
- DoD SUA Scheduling Agencies
- DoD MTR Scheduling Activities

Field Airspace Coordinators assigned to complex incidents should refer to Chapter 2 - Roles and Responsibilities for an outline of reporting responsibilities.

III. Airspace Operating Guidelines

Incident aviation operations are often conducted under extremely adverse flight conditions. Congested areas, reduced visibility, adverse weather and mountainous terrain all add to the complexity of operations.

Situations and complexities dictate the level of supervision required to safely and effectively conduct aerial operations. Aerial supervision may be provided by Air Tactical Group Supervisor (ATGS), Lead Plane, ASM1 (Aerial Supervision Modules), ATCO (Air Tanker Coordinator, or HELCO (Helicopter Coordinator). Dispatchers and Air Tanker Base Managers, in consultation with aerial supervisors, provide for ensuring that policies are applied and limitations are not exceeded.

There are several guides (Interagency Air Tactical Supervisor's Guide and Interagency Lead Plane Operations Guide) that specifically outline procedures for ingress to and egress from a TFR by assigned aircraft. The following addresses aircraft NOT assigned to the incident:

A. Unassigned Aircraft are Flying Near, Transiting or Entering Incident Airspace

This situation is a source of many airspace conflicts. Pilots and aircrew members of non-incident aircraft need to be aware of potential conflicts. Dispatch offices can provide information regarding TFRs and Initial Attack activity in the area of the non-participating aircraft.

1. **Incidents with a TFR**

It is important that pilots and aerial supervisors of aircraft not assigned to the incident realize that they are non-participating aircraft under FAR 91.137 (a)(2) and fall under the same requirements as general aviation and commercial aircraft. All pilots are responsible for being aware of TFRs. Pilots are responsible for remaining clear of the TFRs unless granted permission to enter or transit the airspace by the aerial supervisor in charge.

An attempt to cross the TFR area without proper authorization will be documented on a SAFECOM and will lead to enforcement action.

Even if flying outside the TFR, a courtesy contact will not only enhance safety but also avoid needless follow-up of a perceived intrusion.

2. **Incidents without a TFR**

For aircraft not assigned to an incident, a basic aviation safety procedure is for the pilot to avoid the incident airspace until some form of contact with the aerial supervisor on-scene can be made. This is commonly achieved via communication with the unit dispatching the aircraft or the unit with jurisdiction on the incident. Another option is to make initial contact on Air Guard or VHF-AM 122.925.

B. **Ingress and Egress of Incident Aircraft Flying Near, Transiting or Entering Incident Airspace**

Standard tactical procedures should be followed as specified in interagency guides such as the Air Tactical Supervisor's and Lead Plane Operations Guides. Operational modifications and enhancements should be implemented as necessary for each situation or phase of the incident. The key is to maintain safety by adherence to standard procedures yet allow the aerial supervisor the flexibility that may be needed to effectively utilize incident aircraft.

1. **Fire Traffic Area (FTA)**

The FTA was developed by aerial firefighting personnel to provide a standardized initial attack airspace structure to enhance air traffic separation over wildfire (or all risk) incidents. The structure and communications requirements are patterned after Class D airspace

with some specific differences. The structure emphasizes established communications, received and understood clearances, and compliance with the clearances. The intent is that an aircraft will NOT enter the FTA until it receives a clearance.

> Agency personnel involved with a FTA should read Chapter 5 (Mission Sequence and Procedures) of the Interagency Air Tactical Supervisors Guide. Detailed information is provided about ingress, egress and operating procedures.

The FTA utilizes a five NM radius from the incident latitude and longitude. Five NM is the minimum radius, although a radius greater may be used to adapt to unique incident demands. The upper most limit of the FTA can flex vertically depending on operational requirements of participating incident aircraft.

There is an "initial Contact ring" established on a 12 NM radius from the incident latitude and longitude. There is a "NOCOM ring" or holding ring established on a 7 NM radius from the incident latitude and longitude. If no communications (hence the coined term "NOCOM" are established, the aircraft will hold at 7 NM and not penetrate the FTA any further. The NOCOM holding options include a 7 NM option or a quadrant option.
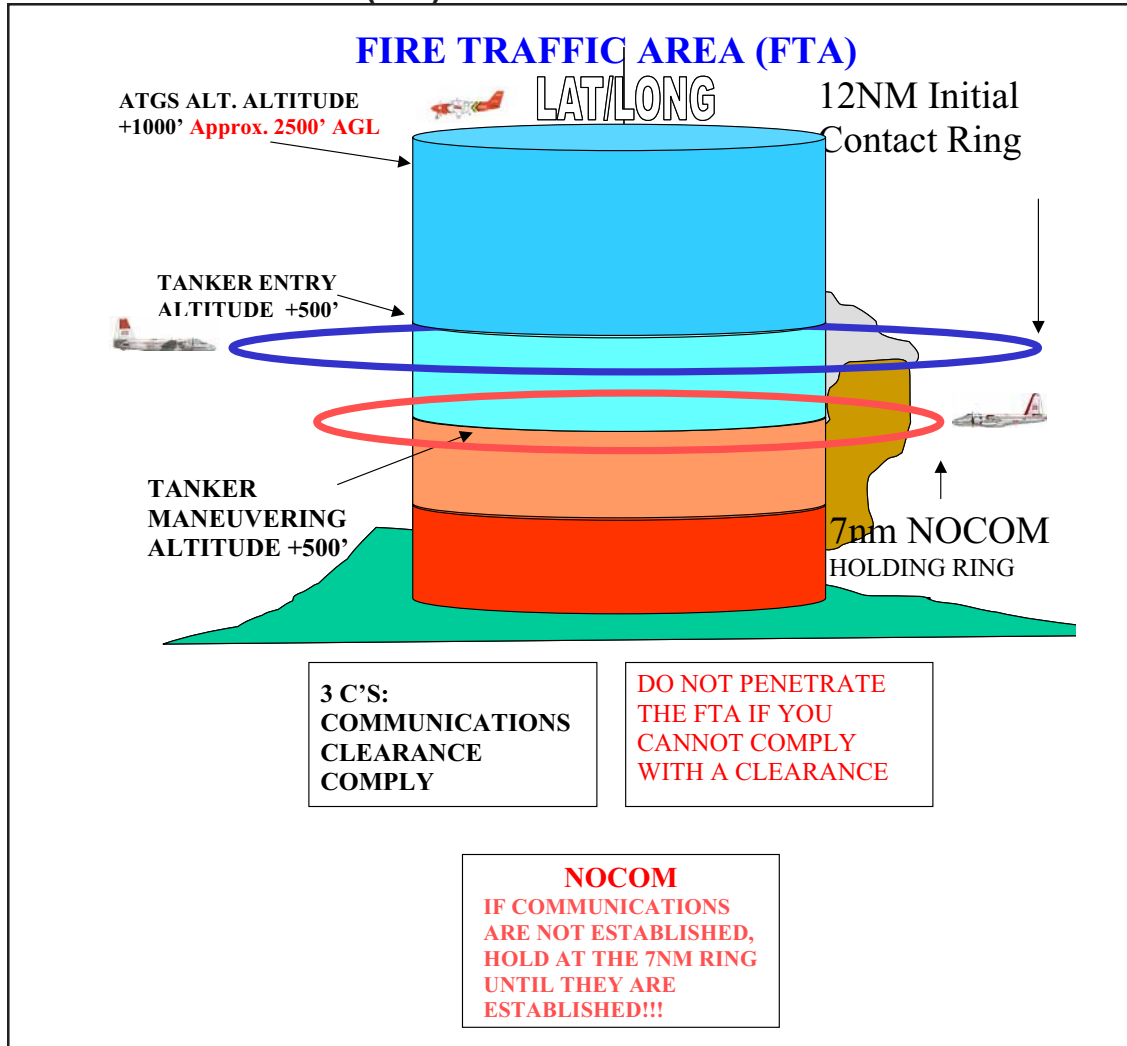
The FTA concept provides for arriving aircraft to be at the assigned altitude given by the Air Tactical Group Supervisor or Lead Plane prior to penetrating the FTA. For a standard shape FTA, the penetration point would be 5 NM from the incident.

Large incidents often will have airspace requirements and TFR's that exceed the dimensions of a standard FTA. In this case, Initial Points (IP's) are used in conjunction with transition routes to and from the incident. An IP is a physical location based on geographic or coordinate reference such as a latitude/longitude. Unless otherwise directed, arriving aircraft will reference the IP for initial communications and NOCOM procedures.

2.   **Egress From The Incident**

The aerial supervisor may establish flight routes and/or reporting points for egress from the incident. These points and routes may

FIGURE 7-1 Fire Traffic Area (FTA)

FIRE TRAFFIC AREA (FTA)

LAT/LONG

12NM Initial Contact Ring

ATGS ALT. ALTITUDE +1000' Approx. 2500' AGL

TANKER ENTRY ALTITUDE +500'

TANKER MANEUVERING ALTITUDE +500'

7nm NOCOM HOLDING RING

3 C'S:
COMMUNICATIONS
CLEARANCE
COMPLY

DO NOT PENETRATE THE FTA IF YOU CANNOT COMPLY WITH A CLEARANCE

NOCOM
IF COMMUNICATIONS ARE NOT ESTABLISHED, HOLD AT THE 7NM RING UNTIL THEY ARE ESTABLISHED!!!

become necessary due to poor visibility, proximity to adjacent incidents, heavy air traffic or for other reasons.

3.   Flight Routes to/from an Incident (Outside an FTA)

Routes should be implemented when conditions warrant. Short-term conditions may include poor visibility or numerous aircraft flying to and from multiple incidents in close proximity. Longer-term flight routes should be a joint decision by aerial supervisors, pilots, base managers and incident Air Operations personnel. Pilot feedback is critical on this issue. These routes should be communicated to dispatch and/or the Expanded Dispatch - Aircraft desk. Local FAA or temporary tower personnel should be consulted and advised as well.

4.   Before an FTA is Established

If coordinates (such as latitude/longitude) are given to aircraft to use to navigate to an incident location, especially at the initial attack and aerial mobilization phases when aerial supervision may not yet be in place, the possibility exists that aircraft may arrive at an incident at the same time, place or altitude. Though it is ultimately the responsibility of the pilots to "See and Avoid", it is critical that dispatchers and others establish and clearly communicate the details concerning flight routes, arrival/departure times and altitudes to pilots, other dispatchers and aircrews.

5.   Aviation Operations in Congested Areas

This can be a confusing term. It is often referred to as "Congested Airspace" which has no formal airspace definition by the FAA. A congested "area" is an operational area of airspace which requires additional precautions and procedures in which to conduct low-level flight operations. Under 14 CFR 91.119, the FAA establishes that "no person may operate an aircraft below the following altitudes over a congested area of a city, town, or settlement, or over any open air assembly of persons.

US Forest Service – Operations on national forest lands and other agency lands protected by the USFS under cooperative fire protection agreements require that all aircraft conduct air operations under the FAA Grant of Exemption No. 392 from 14 CFR 91.119 (Minimum Safe Altitudes).

Other Agency Operations – Aircraft flying on incidents under other agency jurisdictions should consult their agency policies and 14 CFR 137.

IV.   Frequency Management

Tactical aircraft frequencies are referred to as air-to-air and air-to-ground frequencies. They are assigned for use by participating aircraft for tactical operations over an incident.

The use of tactical aircraft frequencies combined with the appropriate level of aerial supervision can provide the necessary separation and positive control of participating aircraft operating within the airspace over an incident.

Utilization and management of tactical aircraft frequencies by participating aircraft is an important component of the MACA program. Communication and frequency issues are often cited in Airspace SAFECOMs.

A.   Basic Frequency Information

1.   UHF Frequency (Ultra High Frequency)

These frequencies span 406.000 to 470.000 MHz and have good short and intermediate range carrying characteristics. These frequencies are most frequently utilized for Command-Tactical operations (initial and extended attack incidents). Unit work channels, some air-to-air and air-to-ground operations, and transmit aqnd receive channels for many repeaters.

2.   VHF-AM Frequency (Very High Frequency-Amplitude Modulation)

These frequencies span 118.000 to 135.975 MHz and have good short and moderate intermediate range carrying charcteristics. These frequencies are controlled by the FAA because they are used almost exclusively for aircraft air-to-air and air-to-ground operations. Although some private aircraft have FM capabilities, all aircraft are required to have AM capabilities.

3.   VHF-FM Frequency (Very High Frequency-Frequency Modulation)

These frequencies span 150.000 to 173.975 MHz and have good short and intermediate range carrying characteristics. These frequencies are most frequently utilized for Command-Tactical operations (initial and extended attack incidents) unit work channels, some air-to-air and air-to-ground operations, and transmit and receive channels for many repeaters.

4.   Victor Frequency

Victor is the phonetic representation for the letter V. When dealing with frequencies it generally represents VHF-AM frequencies.

B.   Air-to-Air Frequencies

Air-to-air frequencies are typically assigned in the VHF-AM band between 118.000 and 135.975. Aerial supervisors use these frequencies over an incident for initial check-in of all aircraft, for airspace coordination and for providing operational direction and instructions to tactical aircraft.

Some geographic areas conduct air-to-air communications on a limited number of FM frequencies.

C.   Air-to-Air AM Initial Attack Frequencies

These frequencies are issued annually by the FAA for the express purpose of incident air-to-air communications. These frequencies are given to the National Incident Interagency Comjmunications Division (NIICD) and then provided to all of the western Geographic Coordinations Centers (except Alaska). The Coordination Centers are given the authority (see National Interagency Mobilization Guide, Section 23.4.3, paragraph 2) to administer these frequencies for their Area dispatch jurisdictions Initial Attack needs. Each Geographic Area has been split into Initial Attack zones that are generally split along highways, railroads, major divides, drainages, state and/or Geographic Area boundaries. This is for ease of local dispatch offices to issue the appropriate frequency to aircraft for the appropriate zones. Pilots generally understand that this is the frequency to tie into for safe approach to a fire location. The pilot in charge of air operations (air tactical group supervisor, lead plane pilot or "primary pilot) would normally have a map of the adjoining zones and if the incident were near the edge of a zone, they would initially check the adjoining frequency to determine if any other aircraft are operating in proximity to their incident. This should limit the "confliction" safety concerns of the pilot in charge of air operations.

D.   Air-to-Ground Frequencies

Air-to-ground frequencies are typically assigned in the VHF-FM band between 150.000 and 173.975. These frequencies are used for communications with ground forces and the tactical aircraft. The aerial supervisor can discuss tactics and target acquisition with ground forces, and tactical aircraft can also communicate directly with the ground personnel who are requesting the specific missions. Sometimes an FM frequency is used.

E.   Flight Following Frequencies

Flight following frequencies are assigned for the purpose of tracking position and heading of aircraft from a base of operations or departure point to an incident. This is a positive method of communication, usually conducted at 15-minute intervals, which is initiated by the originating dispatch office. Flight following continues until the aircraft makes a transition to the incident's, aerial supervisor's or the next dispatch office's frequency.

Flight following of aircraft by position and heading allows for a more rapid response and narrows the search area should an emergency situation occur that requires search and rescue procedures be activated.

Some dispatch offices conduct flight following on local agency frequencies. Ground resources and others users may be sharing this frequency for logistical and other uses. Aircraft should be given priority when flight following is being conducted on these local frequencies.

F. **National Flight Following - 168.650 (Air Net)**

Many dispatch offices have the National Flight Following frequency available in their radio systems. This frequency is important for tracking aircraft traveling long distances.

National Flight Following should be used by aircraft for position reporting only, and all other tactical and operational communications should be conducted on other frequencies. When all dispatch locations have this frequency, an aircraft will be able to monitor a single channel to complete flight following instead of attempting to dial in many local primary frequencies along the way.

G. **National Air Guard - 168.625**

This frequency is dedicated for **emergency** communications for aviation. This channel is for brief use in attempting to provide an open channel monitored by all agency aircraft and many dispatch locations for immediate safety concerns. Guard is not to be used for flight following, initial call-up and other non-safety related communications unless all other viable frequencies have been attempted.

H. **AirTanker Base Frequency 123.975**

Designated as 123.975, this nationwide frequency is used for communications between an airtanker base and tactical aircraft being supported by the airtanker base. The primary information that will be conveyed over this channel are requests for retardant, fuel, parking instructions and flight following information when the airtanker base has been given that responsibility by a dispatch organization.

I.   Frequency Plans

Many geographic areas annually assign tactical aircraft frequencies that are designated for initial attack use only. These are usually depicted graphically on maps as contiguous polygon-shaped "zones" of airspace based on administrative or physical boundaries, and describe the respective air-ti-air and air-to-ground frequencies assigned for each zone.

Dispatch offices utilize these plans to assign the appropriate frequencies for aircraft responding to initial attack incidents.

J.   Frequencies on Large Incidents

When an Incident Management Team (IMT) is assigned to an incident, air-to-air and air-to-ground tactical aircraft frequencies are ordered to replace local frequencies for that specific incident. These frequencies are used for the duration of the incident, and are then released when incident air operations cease.

Large incident frequencies are ordered through dispatch channels and are assigned by the National Interagency Fire Center (NIFC). Latitude and longitude coordinates must be provided so that NIFC can coordinate frequency assignments between adjacent or multiple incidents.

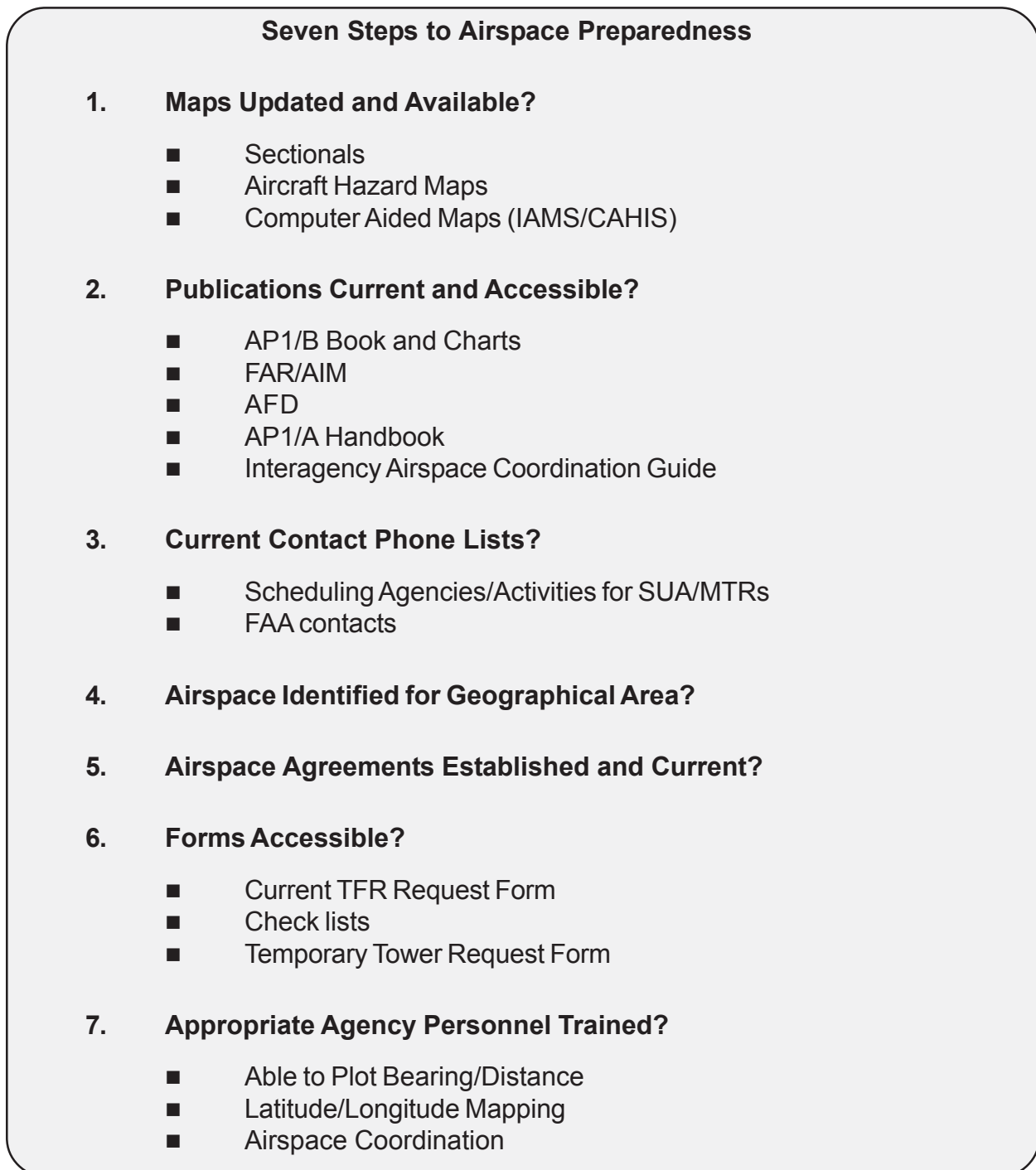**K.   Complex Airspace and Frequency Management**

When airspace and multiple incident complexity reaches a level where existing aircraft frequency and communication plans are inadequate, an airspace coordinator may be assigned to coordinate airspace issues with a communications unit leader or a frequency coordinator for a specific area.

Examples of this type of complexity may be heavy initial attack activity in close proximity to multiple large incidents, multiple TFR's in place, and aircraft responding from bases located in several different geographic areas. The 1999 Nevada response plan, 1998 Florida Response plan and the 1998 Montana/Idaho response plan are all examples of this situation.

V.   Airspace Readiness and Training

An important component of a MACA program is readiness and training. Airspace coordination is severely hampered by incorrect phone numbers and out-of-date maps.The following is a list of seven items to assist airspace coordination preparedness.

FIGURE 7-2   Seven Steps to Airspace Preparedness

Seven Steps to Airspace Preparedness

1. **Maps Updated and Available?**

   - Sectionals
   - Aircraft Hazard Maps
   - Computer Aided Maps (IAMS/CAHIS)

2. **Publications Current and Accessible?**

   - AP1/B Book and Charts
   - FAR/AIM
   - AFD
   - AP1/A Handbook
   - Interagency Airspace Coordination Guide

3. **Current Contact Phone Lists?**

   - Scheduling Agencies/Activities for SUA/MTRs
   - FAA contacts

4. **Airspace Identified for Geographical Area?**

5. **Airspace Agreements Established and Current?**

6. **Forms Accessible?**

   - Current TFR Request Form
   - Check lists
   - Temporary Tower Request Form

7. **Appropriate Agency Personnel Trained?**

   - Able to Plot Bearing/Distance
   - Latitude/Longitude Mapping
   - Airspace Coordination

VI.   Additional Airspace Deconfliction Opportunities

Many opportunities exist to create an airspace coordination program prior to the need to deconflict airspace. Relationships should be established between dispatch, the FAA and DoD personnel who interact in airspace coordination roles. The following outreach possibilities enhance airspace coordination in a positive and proactive manner.

A.   Site Visits

Site visits between dispatch organizations and DoD Scheduling Activity offices, Scheduling Agencies and ARTCCs are invaluable in understanding FAA and DoD airspace deconfliction procedures. Likewise, inviting DoD and FAA personnel to a dispatch center provides for cross training and increased understanding of agency procedures.

Fly-ins or air shows are opportunities for agency personnel to share information about airspace coordination procedures. This is an outstanding method of reaching out to general aviation pilots to discuss wildland fire-related TFR areas.

B.   Airspace Agreements

As discussed in Chapter 12, Airspace Agreements provide a useful tool for standardization of interagency airspace coordination procedures.