

TFR

Airspace Obstacles and TFR Trivia

A Pilot's Guide to Understanding Restrictions in Today's National Airspace System

by Michael W. Brown

Introduction

Temporary Flight Restrictions (TFR) are tools used by the Federal Aviation Administration (FAA) to restrict aircraft operations within designated areas. Historically, TFRs have been used by air traffic management as a means of separating "non-participating" aircraft from those engaged in certain activities, such as firefighting, rescue, and law enforcement operations. They have also been used to keep aircraft away from surface-based hazards that could impact safety of flight, such as toxic gas spills or volcanic eruptions. However, over the past two years, TFRs, along with Air Defense Identification Zones (ADIZ) and Flight Restriction Zones (FRZ), have been widely used to restrict overflights through certain airspace for rea-

sons of national security.

While TFRs may be triggered by different events, it is important that pilots familiarize themselves with each type of restriction, and how it may impact their proposed flight. Of equal importance, pilots must know how best to gain information concerning TFRs before each flight. Inadvertent flight into a TFR not only places a pilot's certificate at risk; it also increases the chances of being intercepted by military or law enforcement aircraft. Even worse, straying into TFR airspace may increase the risk of a mid-air collision.

Changes in the National Airspace System

TFRs have become a topic of great interest to general aviation pilots

following the events of September 11, 2001. While TFRs are nothing new, their use has grown significantly since that time. However, it is important to note that other factors have contributed to the increased number of TFRs throughout the national airspace system (NAS). One of these factors was a regulatory change that also occurred, coincidentally, in September of 2001. Title 14 of the Code of Federal Regulations (14 CFR) part 91 was amended to include Section 91.145, Management of Aircraft Operations in the Vicinity of Aerial Demonstrations and Major Sporting Events. With this change, events such as air shows involving high performance aircraft or military demonstration teams, as well as major sporting events such as the Indianapolis 500™ auto race or the World Series™, may now trigger the



establishment of flight restrictions.

Another factor contributing to TFR usage has been the increasingly active forest fire seasons of recent years. While Federal agencies take great pains to limit the size and frequency of flight restrictions, the nature of their work is such that it is necessary to keep nonparticipating air traffic segregated from aircraft engaged in fire-fighting activities.

These factors, coupled with ongoing threats to national security, have created an operational environment that calls for greater vigilance and planning on the part of general aviation pilots.

TFRs in the NAS

The term “TFR” is used generically to describe various types of restrictions within the national airspace system. However, it should be noted there are actually eight types of TFRs used throughout the NAS. Understanding the reasons for each is helpful in alerting pilots to the possibility of restrictions along their intended route of flight. What follows is a brief outline of each restriction:

A flight restriction issued under the authority of 14 CFR Section 91.137, TFR in the Vicinity of Disaster/Hazard Areas, is intended to protect persons or property, on the ground or in the air, from a specific hazard. The restriction is issued to prevent low-flying aircraft from increasing that hazard, regardless of its nature. There are three situations for which a TFR may be issued under section 91.137, and they are:

1. Section 91.137a(1): TFRs are issued under this paragraph when necessary to protect persons and property on the ground or in the air from a hazard associated with an incident on the surface. Examples include: toxic gas leaks or spills, volcanic eruptions, nuclear accidents, etc.

A Section 91.137a(1) TFR is the most restrictive of any issued under section 91.137. It prohibits all aircraft from operating in the designated area, unless it is participating in



The charted restriction around prohibited area P-40. During Presidential visits, this restriction is expanded beyond the charted limits.

disaster/hazard relief activities and is being operated under the direction of the official in charge of on-scene emergency response activities.

Pilots may have noted that a number of existing TFRs were issued under 91.137a(1) for reasons of national security. These TFRs were put in place following the terrorist attacks of September 11, 2001, to protect various Department of Defense (DoD) installations (such as military sites), chemical storage facilities, or other high-profile areas that could be targeted in future terrorist attacks. Some of the original DoD restrictions have since been cancelled, and the remaining TFRs are under review by the DoD and the FAA. The dimensions of these restrictions vary, but most are between three and five nautical miles (NM) in radius and extend upward to 3,000 or 5,000 feet above ground level (AGL).

2. Section 91.137a(2): TFRs issued under this paragraph are intended to provide a safe environment for the operation of disaster relief aircraft. Quite simply, these restrictions are meant to keep non-participating traffic away from aircraft engaged in firefighting activities, avalanche control, search and rescue activities, etc. Due to the nature of these restrictions, they may be in place for only a few hours or as long as several days. Pi-

lots should also be aware that unlike most other TFRs, 91.137a(2) restrictions might not be circular in shape. Instead, their boundaries conform to the requirements of the agency coordinating relief activities.

Although most pilots may not fly in an area designated in a section 91.137a(2) TFR, certain exceptions are outlined. Details concerning this and other regulations may be found online at <http://www.faa.gov>.

3. Section 91.137a(3): TFRs issued under this paragraph are intended to prevent the unsafe congestion of sightseeing aircraft above disaster/hazard incidents of limited duration, such as aircraft accident sites, that may generate a high degree of public interest.

The restrictions in a section 91.137a(3) TFR are similar to those for 91.137a(2), except that aircraft carrying incident or event personnel may also operate in the area. For more details on use of these TFRs, including the additional information that must be included when filing a flight plan through such areas, pilots should familiarize themselves with 14 CFR Section 91.137.

4. 14 CFR Section 91.138 Temporary Flight Restrictions in National Disaster Areas in the State of Hawaii. Obviously restrictions issued under



this part do not have far reaching implications for most general aviation pilots. However, if you find yourself on the Hawaiian Islands with plans to do some flying, be on the look out for *Notices to Airmen* (NOTAMs) carrying these restrictions, particularly when a national disaster area declaration has been issued.

5. 14 CFR Section 91.141 Flight Restrictions in the Proximity of the Presidential and Other Parties. TFRs issued under this part are used to protect the President, Vice President, or other public figures while traveling throughout the United States. Prior to September 11, 2001, such restrictions were very localized and rarely impacted general aviation pilots. However, ongoing security concerns have led to restrictions much greater in size, forcing pilots to increase their awareness of Presidential movements. In many cases, Presidential TFRs with a 30 NM radius or greater have been established.

It is also important to note that pilots flying in certain parts of the country face unique restrictions associated with Section 91.141 TFRs. If you fly near Crawford, Texas, or Kennebunkport, Maine, you may expect large flight restrictions during Presidential visits. Although smaller prohibited areas (P-49 and P-67) are always in place at those locations, visits by the President may lead to the issuance of section 91.141 TFRs that impose additional restrictions. In Maryland, pilots must be aware of the airspace restrictions near Thurmont, Maryland. The Camp David Presidential retreat, surrounded by Prohibited Area P-40, is also subject to a larger (usually 10 NM in radius) section 91.141 restriction during Presidential visits. Section 91.141 TFRs typically extend from the surface up to, but not including, flight level (FL) 180.

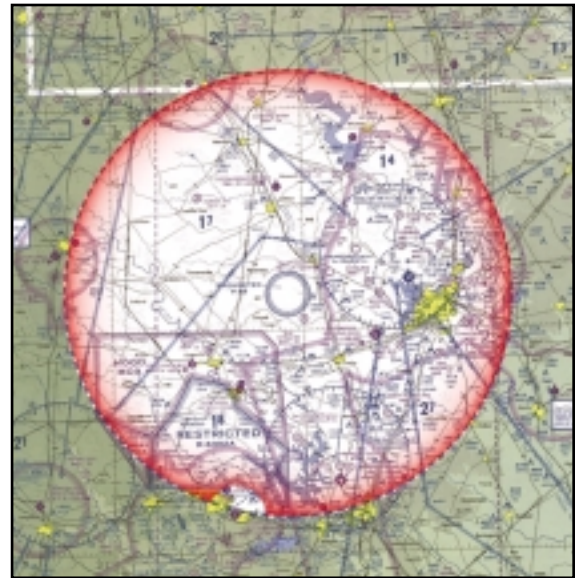
6. 14 CFR Section 91.143 Flight Limitations in the Proximity of Space Flight Operations. These TFRs are used to provide a safe environment for space launch operations. As a result, section 91.143 restrictions are typically found in Florida, New Mexico, and California (where most such activ-

ities take place). The NOTAMs which create these TFRs usually activate existing special use airspace (restricted and/or warning areas), or airspace adjacent to these areas. Since September 11, 2001, space shuttle launches have been accompanied by additional restrictions issued under 14 CFR Section 99.7

7. 14 CFR Section 91.145 Management of Aircraft Operations in the Vicinity of Aerial Demonstrations and Major Sporting Events. When deemed necessary by the FAA, section 91.145 provides for the issuance of a TFR during certain events, including aerial demonstrations (such as those involving the Blue Angels, Thunderbirds, Golden Knights, etc.), the Olympics™, World Cup Soccer™, the Super Bowl™, etc. While section 91.145 restrictions are used in many of these instances, pilots should know that certain high profile sporting events (particularly those like the Super Bowl™ that create inviting terrorist targets), may receive larger restrictions issued under section 99.7, Special Security Instructions, if determined necessary by appropriate Federal security and law enforcement officials. Also, if the President is in attendance, the event may be covered by additional restrictions issued under section 91.141.

Generally, restrictions issued under section 91.145 encompass the minimum airspace needed for the management of aircraft operations near the event. For aerial demonstrations, the TFR will normally be limited to a five NM radius up to an altitude of 17,000 feet mean sea level (or 13,000 feet AGL for parachute demonstrations). For sporting events, the TFR will normally be limited to a three NM radius and 2,500 feet AGL.

8. 14 CFR Section 99.7 Special Security Instructions. This section allows the FAA to issue specific restrictions in the interest of national security. Prior to September 11, 2001, this section was rarely used. Since then, nu-



(Graphic courtesy of AOPA)

The TFR surrounding Crawford, Texas. In effect during Presidential visits, this restriction can have a 30 NM radius.

merous TFRs have been established under the authority of this section. For example, TFRs have been used around cities (such as Chicago) over military facilities (such as the Navy's base in St. Marys, Georgia), and to protect space shuttle launch facilities in Florida. In other cases, section 99.7 TFRs have been issued in response to threat assessments affecting certain major sporting events, such as the World Series™; and over significant national landmarks, such as the St. Louis Arch, the Statue of Liberty, and Mount Rushmore.

Pilots must also be aware of a standing notice, issued under section 99.7, advising them to avoid the airspace above, or in proximity to, sites such as nuclear power plants, power plants, dams, refineries, industrial complexes, military installations, and other similar facilities.

In addition, section 99.7 is the basis for restrictions around certain sporting facilities (often referred to as the "Sports NOTAM"). Except for limited cases specified in the NOTAM, all aircraft and parachute operations are prohibited at and below 3,000 feet AGL within a three NM radius of any stadium having a seating capacity of 30,000 or more people in which a Major League Baseball™, National



Football League™, NCAA™ division-one football, or major motor speedway event is taking place. These restrictions are in effect one hour before the scheduled time of the event until one hour after the end of the event. All pilots should be aware that careful advance planning might be required to comply with these restrictions.

Restrictions issued under section 99.7 may vary dramatically in size, and there is no standard configuration. For space shuttle launch operations, pilots may expect restrictions with at least a 30 NM radius. Shuttle NOTAMs will also outline different operational restrictions and requirements, depending on the distance from the launch facility. Once shuttle flights resume, pilots are urged to review such notices carefully when flying near central Florida.

Flight Restrictions in the Washington, DC Area

As a result of the September 11 terrorist attacks, pilots in the greater Washington, DC area have faced a host of new operating restrictions. Due to the number of important assets in the National Capital region, flight restrictions in the DC area have changed over time in response to potential threats. There are currently three restrictions in place, the Washington, DC Metropolitan Area Flight Restricted Zone (FRZ), Special Federal Aviation Regulation 94 (SFAR 94), and the Washington, DC Metropolitan Air Defense Identification Zone (DC ADIZ).

Washington, DC Metropolitan Area Flight Restricted Zone (FRZ)

Established for the purpose of national security, the most limiting of these restrictions has been the FRZ. The Flight Restricted Zone evolved from previous restrictions in place since December 2001. The FRZ consists of that airspace from the surface up to, but not including, FL 180, within approximately 15 NM of the Washington VOR/DME. All part 91, 101, 103, 105, 125, 135, 133, and 137 flight op-

erations are prohibited within the FRZ, unless specifically authorized by the FAA in consultation with the Transportation Security Administration. These restrictions are also in place for pilots who wish to transit FRZ airspace. In addition to the impacts cited above, the FRZ also eliminated the popular north-south VFR flyway between Reagan National and Washington Dulles International Airports. It also narrowed the width of the southeast-northwest VFR flyway between Baltimore/Washington and Reagan National Airports. For ease of identification, this airspace is depicted on both sectional and terminal area charts. One word of caution...unlike the charted Class B airspace, FRZ restrictions extend up to, but not including, FL180. The exact description of the FRZ may be found in FDC NOTAM 3/2126

Special Federal Aviation Regulation 94 (SFAR 94)

Due to their close proximity to Washington, DC, part 91 operations were prohibited at College Park Airport (CGS), Potomac Airfield (VKX), and Washington Executive/Hyde Field (W32), for a lengthy period following the September 11, 2001 attacks. In order to restore operations at the three Maryland airports, the FAA issued SFAR 94, Enhanced Security Procedures for Operations at Certain Airports in the Washington, DC Metropolitan Area Special Flight Rules Area. Established on February 13, 2002, SFAR 94 permitted limited operations to resume for pilots based at those airports, subject to certain airport security measures, pilot background checks, and specified ATC arrival and departure procedures.

The Air Defense Identification Zone

Traditionally, the Air Defense Identification Zone, or ADIZ, has existed to facilitate the early identification of all aircraft in the vicinity of U.S. and international airspace boundaries. As such, these ADIZs existed along the

coastal borders of the contiguous United States, Alaska, Guam, and Hawaii. More recently, Air Defense Identification Zones were used “inland” to protect New York City and Washington, DC. Although the New York ADIZ has since been cancelled, the Washington, DC ADIZ remains in effect.

While both types of identification zones carry with them unique restrictions and operational requirements, our focus will be the Washington, DC ADIZ. The differences between this airspace and the “traditional” ADIZ will be highlighted as appropriate. For detailed information on the latter, pilots may review the *Aeronautical Information Manual (AIM)*, Chapter 5, Section 6.

The Washington, DC ADIZ

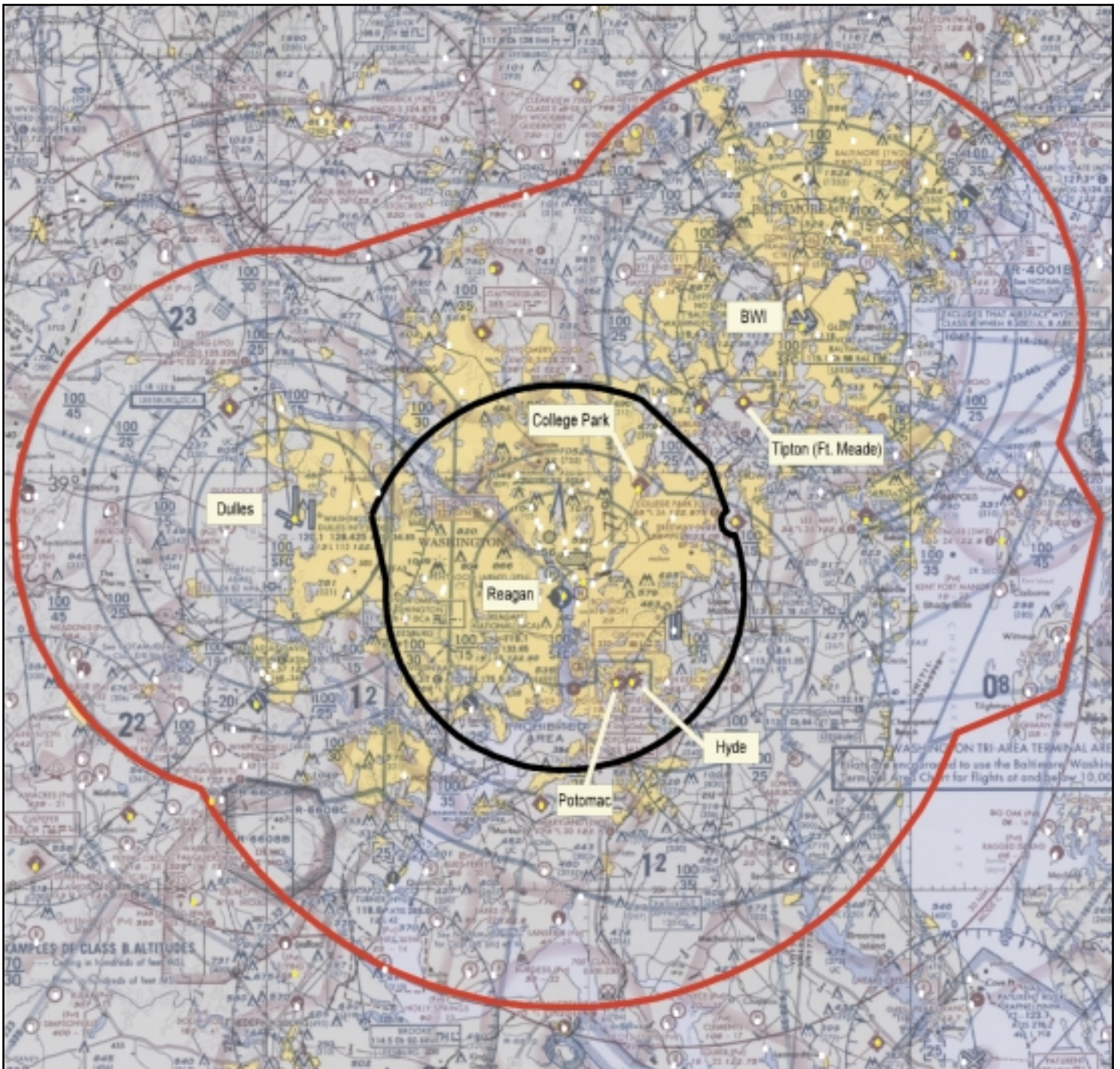
Established by NOTAM in February 2003, the Washington, DC ADIZ extends from the surface up to, but not including, FL180. The outer boundary on the northern, eastern, and western sides of the ADIZ conforms to the outer boundary of the Washington, DC tri-area Class B airspace. An arc 30 NM in radius, centered at the DCA VOR/DME, defines most of the southern boundary.

While the exact boundary description for the Washington, DC ADIZ may be found in FDC NOTAM 3/2126, this airspace is not charted. For this reason, pilots are advised to mark this airspace on their sectional, terminal, and en route charts as needed.

ADIZ Requirements

The purpose of the Washington, DC ADIZ is to establish airspace in which the ready identification, location, and control of aircraft is required for national security. Located over land, the Washington, DC ADIZ differs from the traditional coastal ADIZ surrounding the contiguous United States, Alaska, Guam, and Hawaii (whose geographical boundaries are described in detail under 14 CFR Part 99). In addition, the requirements and procedures that apply to the DC ADIZ are unique to that airspace and differ from





The outer limits of the Washington, DC ADIZ are shown above in red. Pilot are advised this airspace is not charted. The Flight Restriction Zone, shown in black is closed to most air traffic. Unlike the ADIZ, the FRZ is charted for ease of identification.

traditional ADIZ procedures. These requirements compare as follows on Table 1, on page 7.

Pilots who intend to operate in the Washington, DC ADIZ must be aware of the following additional items:

- First, clearance into the ADIZ does not constitute clearance into the Class B airspace. If your route of flight penetrates Class B airspace, be sure to get a clearance first, just as you

would under any other circumstance.

- Also, the additional burden placed on air traffic controllers as a result of the ADIZ means that many VFR services are more difficult to obtain, and getting a “pop-up” clearance is often difficult (if not impossible). To avoid difficulties, file your flight plan well in advance of your departure.

- Finally, when filing your flight plan, make certain to do so using the

Flight Service System. DUATS may not be used for filing flight plans within the Washington, DC ADIZ.

Decoding Temporary Flight Restrictions

TFRs are issued as Flight Data Center (FDC) NOTAMs, and may be retrieved via DUATS (<http://www.duats.com>) or by contacting



(Graphic courtesy of AOPA)



Because it is considered a potential terrorist target, Disneyland is protected by a security TFR issued under section 99.7.

your local Flight Service Station. Typically, the only TFRs that appear in the NOTAM publication (also known as the Class II NOTAMS) are those issued for sporting, entertainment, or other events when the time and location are known well in advance. While TFR content may vary greatly, they follow a consistent format. A better understanding of this format helps in interpreting flight restrictions. The following is an example of a typical TFR NOTAM:

!FDC 3/8925 ZOA CA. FLIGHT RESTRICTIONS WILLOWS, CA. EFFECTIVE IMMEDIATELY UNTIL FURTHER NOTICE.

PURSUANT TO 14 CFR SECTION 91.137A(2) TEMPORARY FLIGHT RESTRICTIONS ARE IN EFFECT WITHIN A 10 NAUTICAL MILE RADIUS OF 393400N/1224330W, THE MAXWELL/MXW/VORTAC 288 DEGREE RADIAL AT 28 NAUTICAL MILES, AT AND BELOW 8000 FT MSL TO PROVIDE A SAFE ENVIRONMENT FOR FIRE FIGHTING ACFT OPERATIONS (THE GRINDSTONE AIR ATTACK FIRE). THE U.S.F.S, PHONE 580-226-2801/FREQ 122.425, IS IN CHARGE OF ON SCENE EMERGENCY RESPONSE ACTIVITIES. OAKLAND/OAK/AFSS, 510-273-6111, IS THE FAA COORDINATION FACILITY

1. The first portion of the notice (!FDC 3/8925) indicates this is a FDC NOTAM. The number “3” indicates this notice was issued in 2003. The number “8925” is a sequential number assigned to the notice.

2. The next portion of the NOTAM (ZOA CA) informs pilots this TFR lies within airspace assigned to the Oakland Air Route Traffic Control Center (ZOA) and the restriction is found in the State of California (CA).

3. The third portion of the notice (FLIGHT RESTRICTIONS WILLOWS, CA) gives the purpose of this NOTAM. In this case, a TFR is being created in the proximity of Willows, California.

4. Next, the effective period of the notice is given. This particular TFR went into effect immediately upon issuance, and will remain in effect until it is cancelled. Most TFRs will have specific expiration dates and times.

5. The fifth section gives the authority citation for the notice. In this case, the TFR is issued under section 91.137a(2).

6. The sixth portion of the notice (TEMPORARY FLIGHT RESTRICTIONS ARE IN EFFECT WITHIN A 10 NAUTICAL MILE RADIUS OF 393400N/1224300W, THE MAXWELL/MXW/VORTAC 288 DEGREE RADIAL AT 28 NAUTICAL MILES, AT

AND BELOW 8000 FT MSL) provides the location and dimensions of the TFR. This restriction has a radius of 10 NM, and extends from the surface up to, and including, 8,000 feet mean sea level.

The TFR’s center point is also defined in this portion of the notice. The first set of numbers denotes the degrees of latitude (39 degrees, 34 minutes, 0 seconds north latitude). The second set provides the degrees of longitude (122 degrees, 43 minutes, 0 seconds west longitude). To help simplify things, the center point is also given relative to a navigational facility. This TFR is centered on a point 28 NM west-northwest (on the 288-degree radial) of the Maxwell (MXW) VORTAC. Pilots should be aware that latitude/longitude center points and the center points defined relative to a navigational facility do not always precisely agree.

7. The next section provides the rationale for the restriction. In this case, the TFR was issued to protect firefighting operations.

8. The eighth part of the notice provides contact information for the entity in charge of the on-scene emergency response activities. In this case, the U.S. Forestry Service is the coordinating agency.

9. Finally, the notice provides contact information (OAKLAND /OAK/ AFSS, 510-273-6111) that may be helpful to pilots. In some cases, it may be possible to operate in TFR airspace with prior permission/coordination from the controlling agency. While this NOTAM includes a telephone number, one is not always given.

Pitfalls and Helpful Strategies

Even with the many restrictions now in place throughout the NAS, it is unlikely that most pilots will find themselves in the midst of a TFR. This has led to a level of complacency, contributing to a rise in the number of violations now being investigated. In addition, certain systemic difficulties and training issues have made it challenging for even the most conscientious of



pilots to stay out of trouble. With that in mind, here are some strategies that can help you avoid TFR airspace.

First, know your area. Many security TFRs have been in place since September 11, 2001, and have changed little (if at all). If you self brief via DUATS, remember that some NOTAMs are cancelled and reissued (such as the restriction around Thurmont, MD). When a notice is reissued, it is given a new number, so don't rely strictly on a NOTAM number if you have an ongoing restriction in your flight area. In addition, when a NOTAM is reissued, the restrictions may or may not differ from those previously in place. Also, if you fly close to a national landmark,

power plant, sporting facility, or military base, be particularly vigilant for restrictions that may surround those areas.

Second, contact your nearest Flight Service Station and/or receive a DUATS briefing prior to EVERY flight. It is very easy to become complacent, particularly when flying in familiar airspace or over short distances. Although the FAA tries to provide advance notice when possible, actual disaster, hazard, or security situations may result in TFRs being issued, or changed, on very short notice. Also, because some restrictions are so large, even rural areas far from popu-

lation centers may be enveloped by a TFR.

Next, even if you self brief using DUATS, consider giving your local Flight Service Station a call. A DUATS briefing may include many pages filled with NOTAMs, most of which are likely not applicable to your flight. As a result, an important notice may be easily overlooked. A call to Flight Service can help keep you out of trouble. Just be certain to ask for flight restrictions along your route of flight.

If there are restrictions along (or adjacent to) your route of flight, have a sectional chart handy and plot it for reference before you depart. Given

the importance of avoiding these TFRs, every pilot should include a drafting compass among the items in their flight bag. This will help to accurately depict restrictions, and will hopefully keep you out of trouble. Also, when plotting a TFR, remember that even a restriction not directly along your intended route of flight may become an issue. A weather diversion, improper wind correction, or en route change of destination could easily place you in an area you intended to avoid.

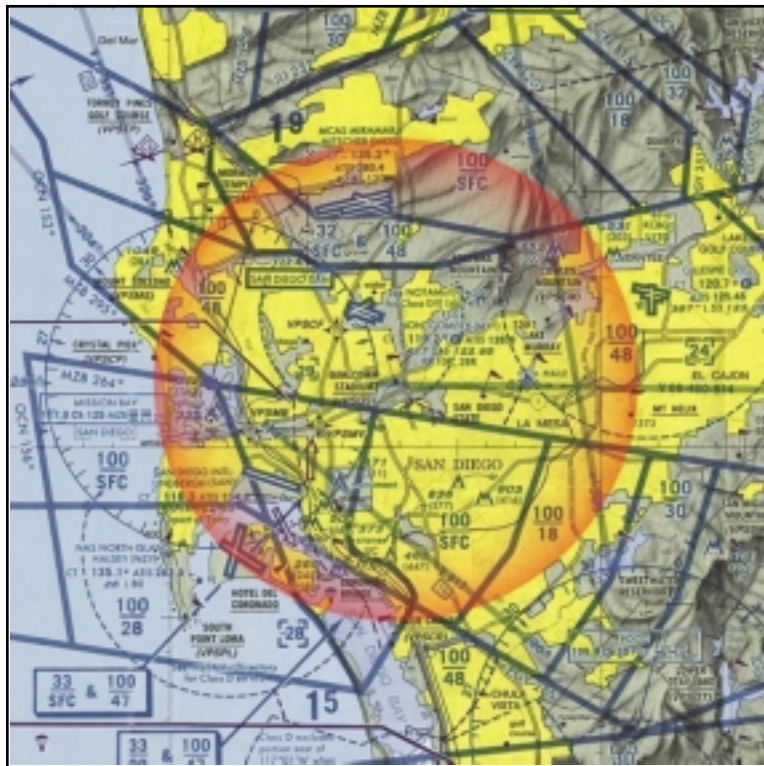
When plotting TFRs on a chart, there are certain procedures that must be considered. Each time the com-

Operational Requirements	Washington, DC ADIZ	Traditional ADIZ
Flight Plan	Required. IFR or VFR	Required. IFR or DVFR. The flight plan must also be filed before departure, except for operations associated with the Alaskan ADIZ when the airport of departure has no facility for filing a flight plan.
Mode C Transponder	On and squawking assigned code	Required unless otherwise authorized
Two-Way Radio Communications	Required prior to, and while operating within the ADIZ. The only exception is for VFR aircraft operating within the airport traffic area. In these cases, the pilot is to monitor CTAF (no ATC communications are required). ATC communications and approval is required prior to leaving the airport vicinity	Required for most operations
Position Reporting	Not necessary. The pilot will be in radar and communications contact with ATC at all times within the ADIZ	Required. For DVFR flights, the estimated time of ADIZ penetration must be filed with the aeronautical facility at least 15 minutes prior to entry. In Alaska, pilots need only report prior to entry.
Airspeed Considerations	No additional considerations	When penetrating the Alaska, Guam, or Hawaii ADIZ, pilots who maintain a true airspeed of less than 180 knots are exempt from ADIZ requirements
Aircraft Markings	The size of aircraft registry marks need not be changed	12-inch registry marks are required

Table 1: Comparison of Washington, DC and Traditional ADIZ Requirements



(Graphic courtesy of AOPA)



This security TFR was issued for the 2003 Super Bowl™.

pass is set to the appropriate radius, it is important to remember the scales used on each sectional chart are not precise. Also, the sectional is a graphical depiction of the surface environment, and because cartographers must take certain liberties in order to produce legible charts, objects may not be precisely where they appear on the chart. Considering these factors, if your route of flight brings you very close to a plotted TFR, it is possible that you may actually find yourself in restricted airspace, even with highly accurate global positioning system (GPS) equipment. In short, give restricted airspace a generous berth.

If it has been a while since you plotted a point on a chart using latitude/longitude coordinates, it would be wise to practice using an old chart. Even if you're off by only a few minutes or seconds, this could lead to a plot that is several miles off the mark.

Another point worth noting is that not all TFRs are the same size and shape. For example, firefighting TFRs may have an irregular shape with a large geographical "footprint." If while

planning a flight you see that your course takes you near a firefighting TFR, remember that fires can spread rapidly. Be aware of the wind direction, and know that the TFR can migrate (through the cancellation and issuance of new NOTAMs), enveloping your route of flight. Even if you are far from the smoke, aircraft engaged in firefighting activities may be operating at low levels flying to and from sources of water, refueling bases, etc. If there's a chance such a TFR could impact your flight, be certain to contact Flight Service while en route for frequent updates.

Also, remember that many TFRs are in place for a specified period of time, and that time is provided (unless otherwise specified) within the NOTAM using a Coordinated Universal Time (UTC or "zulu" time) format. If you plan to fly near such a TFR, make certain the time conversion is done properly to avoid a violation.

Finally, there are web resources available to help you in locating TFRs. Many can be found by using the FAA's website at <http://www.faa.gov>. The Bureau of Land Management also

maintains a website useful in tracking firefighting and other restrictions throughout the NAS. It may be accessed at <http://airspace.blm.gov/mapping/blm/index.cfm>. Other non-governmental organizations have web-based resources to aid in flight planning. The Aircraft Owners and Pilots Association (AOPA) website contains links to many notices and graphical TFRs. It may be accessed at <http://www.aopa.org>. The Air Safety Foundation also has an excellent online program titled *Know Before You Go* that may be accessed at http://www.aopa.org/asf/know_before. The Experimental Aircraft Association (EAA) has teamed up with AeroPlanner at <http://www.aeroplanner.com> to provide graphical TFRs and other flight planning tools.

Tips such as these will help you stay clear of TFR airspace. However, to be fully prepared in case of an inadvertent TFR intrusion, pilots are encouraged to become thoroughly familiar with the interception procedures and signals contained in Chapter 5, Section 6, in the *Aeronautical Information Manual* (available on-line at <http://www.faa.gov/ATpubs>).

These resources, combined with sound planning and execution, will help ensure a safe, violation-free flight.

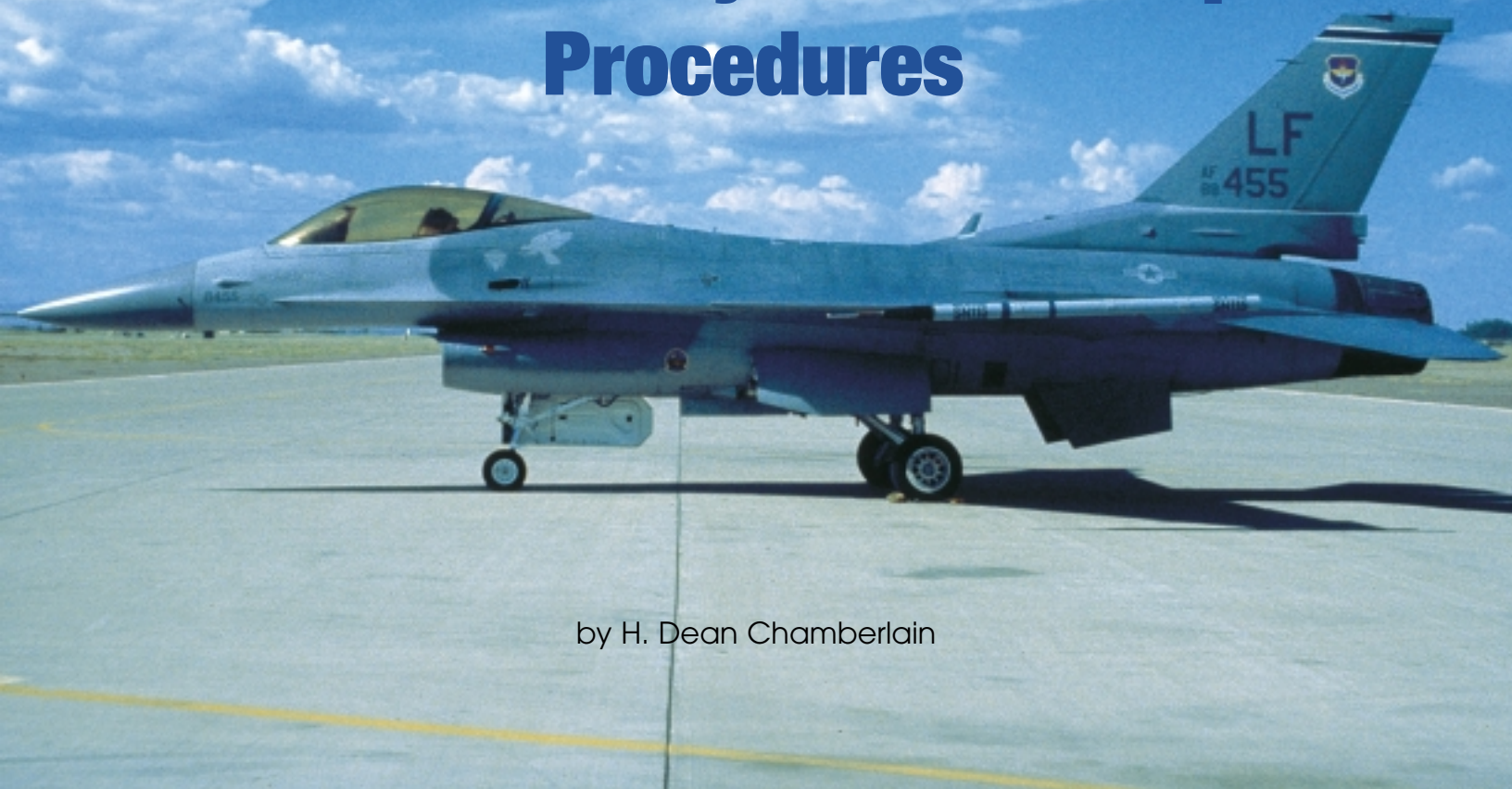


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Although based upon the latest Air Traffic data at the time of publication, the information in this article is subject to change and clarification. Pilots are cautioned to check for the latest material before flying. You can find the most current FAA Internet-based TFR graphics and NOTAM information at www.faa.gov.



National Security And Interception Procedures



by H. Dean Chamberlain

This is an updated reprint from the January/February 2002 issue of FAA Aviation News.

The above headline is not new. It is the title of Section 6, Chapter 5, Air Traffic Procedures, in the *Aeronautical Information Manual (AIM)*. Paragraph two of Section 6, 5-6-2, Interception Procedures, outlines the standard, peacetime, intercept procedures that pilots can expect if they are intercepted. In light of the post-September 11, 2001, hijackings and the well-publicized interception of aircraft after that date, both air carrier and general aviation types, all pilots should review the basic intercept procedures in the AIM and the latest intercept procedures published in the current *Notices to Airmen (NOTAMS)*.

Although most interceptions in the past were of aircraft penetrating the U.S., that is not necessarily true today. Although the AIM intercept procedures

are those for peacetime identification of unknown aircraft entering the U.S. through an Air Defense Identification Zone (ADIZ), the procedure for intercepting any aircraft is very similar. In the case of several well-publicized air carrier intercepts, especially the airliner flying into Chicago's O'Hare airport after a passenger tried to get into the cockpit, the intercepting fighters escorted the American Airlines jet to the airport.

To put this all into perspective and since flight restrictions are becoming a fact of life, *FAA Aviation News* is reprinting excerpts from the AIM as a reminder of the recommended procedures for you to use in case you are intercepted.

Because of the dynamic nature of NOTAMS and TFRs, pilots need to review the current NOTAMS before every flight to ensure they have

the latest information. In case of any doubt, contact a Flight Service Station office at 1-800-WXBRIEF for the latest information.

Because of the seriousness of the current national security situation, the following information is a verbatim copy of the intercept procedures in the AIM. We hope this information gives each pilot a better understanding of what to expect if intercepted by armed fighters. The time to wonder what two F-16 fighters are going to do next is not while they are joining on your wingtips.

5-6-2 Interception Procedures

a. General.

1. Identification intercepts during peacetime operations are vastly different than those conducted under in-



creased states of readiness. Unless otherwise directed by the control agency, intercepted aircraft will be identified by type only. When specific information is required (i.e. markings, serial numbers, etc.) the interceptor aircrew will respond only if the request can be conducted in a safe manner. During hours of darkness or Instrument Meteorological Conditions (IMC), identification of unknown aircraft will be by type only. The interception pattern described below is the typical peacetime method used by air interceptor aircrews. In all situations, the interceptor aircrew will use caution to avoid startling the intercepted aircrew and/or passengers.

b. Intercept phases (See FIG 5-6-1).

1. Phase One- Approach Phase.

During peacetime, intercepted aircraft will be approached from the stern. Generally two interceptor aircraft will be employed to accomplish the identification. The flight leader and wingman will coordinate their individual positions in conjunction with the ground controlling agency. Their rela-

tionship will resemble a line abreast formation. At night or in IMC, a comfortable radar trail tactic will be used. Safe vertical separation between interceptor aircraft and unknown aircraft will be maintained at all times.

2. Phase Two- Identification Phase.

The intercepted aircraft should expect to visually acquire the lead interceptor and possibly the wingman during this phase in visual meteorological conditions (VMC). The wingman will assume a surveillance position while the flight leader approaches the unknown aircraft. Intercepted aircraft personnel may observe the use of different drag devices to allow for speed and position stabilization during this phase. The flight leader will then initiate a gentle closure toward the intercepted aircraft, stopping at a distance no closer than absolutely necessary to obtain the information needed. The interceptor aircraft will use every possible precaution to avoid startling intercepted aircrew or passengers. Additionally, the interceptor aircrews will constantly keep in mind that maneuvers considered normal to a fighter air-

craft may be considered hazardous to passengers and crews of nonfighter aircraft. When interceptor aircrews know or believe that an unsafe condition exists, the identification phase will be terminated. As previously stated, during darkness or IMC identification of unknown aircraft will be by type only. Positive vertical separation will be maintained by interceptor aircraft throughout this phase.

3. Phase Three- Post Intercept Phase.

Upon identification phase completion, the flight leader will turn away from the intercepted aircraft. The wingman will remain well clear and accomplish a rejoin with the leader.

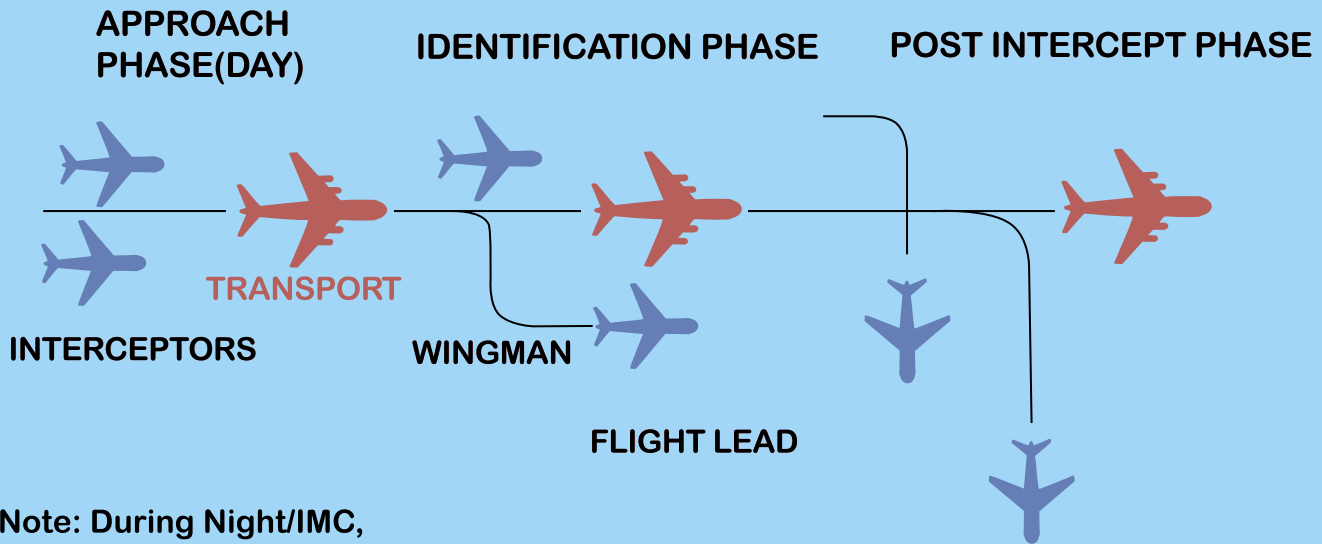
c. Communications

Communication interface between interceptor aircrews and the ground controlling agency is essential to ensure successful intercept completion. Flight safety is paramount. An aircraft which is intercepted by another aircraft shall immediately:

1. Follow the instructions given by



INTERCEPTION PATTERNS FOR IDENTIFICATION OF INTERCEPTED AIRCRAFT (TYPICAL)



Note: During Night/IMC, approach will be from below flight path.

Figure 5-6-1

the intercepting aircraft, interpreting and responding to the visual signals.

2. Notify, if possible, the appropriate air traffic services unit.

3. Attempt to establish radio communication with the intercepting aircraft or with the appropriate intercept control unit, by making a general call on the emergency frequency 243.0 MHz and repeating this call on the emergency frequency 121.5 MHz, if practicable, giving the identity and position of the aircraft and the nature of the flight.

4. If equipped with SSR transponder, select MODE 3/A Code 7700, unless otherwise instructed by the appropriate air traffic services unit. If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by visual or radio signals, the intercepted aircraft shall

request immediate clarification while continuing to comply with the instructions given by the intercepting aircraft.

5-6-3 Law Enforcement Operations by Civil and Military Organizations

a. Special law enforcement operations.

1. Special law enforcement operations include in-flight identification, surveillance, interdiction, and pursuit activities performed in accordance with official civil and/or military mission responsibilities.

2. To facilitate accomplishment of these special missions, exemptions from specified sections of the Code of Federal Regulations have been granted to designated departments and agencies. How-

ever, it is each organization's responsibility to apprise ATC of their intent to operate under an authorized exemption before initiating actual operations.

3. Additionally, some departments and agencies that perform special missions have been assigned coded identifiers to permit them to apprise ATC of ongoing mission activities and solicit special air traffic assistance.

5-6-4. Interception Signals

[Table 5-6-1 and Table 5-6-2, next page]

This information is available in both the printed AIM and the FAA's Internet web site at <www.faa.gov/apubs/AIM/index.htm>. The site contains the latest NOTAMS about flight restrictions and links to other air traffic publications.



INTERCEPTING SIGNALS

Signals initiated by intercepting aircraft and responses by intercepted aircraft (as set forth in ICAO Annex 2-Appendix A, 2.1)

Series	INTERCEPTING Aircraft Signals	Meaning	INTERCEPTED Aircraft Responds	Meaning
1	<p>DAY-Rocking wings from a position slightly above and ahead of, and normally to the left of, the intercepted aircraft and, after acknowledgement, a slow level turn, normally to the left, on to the desired heading.</p> <p>NIGHT-Same and, in addition, flashing navigational lights at irregular intervals.</p> <p>NOTE 1-Meteorological conditions or terrain may require the intercepting aircraft to take up a position slightly above and ahead of, and to the right of, the intercepted aircraft and to make the subsequent turn to the right.</p> <p>NOTE 2-If the intercepted aircraft is not able to keep pace with the intercepting aircraft, the latter is expected to fly a series of race-track patterns and to rock its wings each time it passes the intercepted aircraft.</p>	You have been intercepted. Follow me.	<p>AEROPLANES: DAY-Rocking wings and following.</p> <p>NIGHT-Same and, in addition, flashing navigational lights at irregular intervals.</p> <p>HELICOPTERS: DAY or NIGHT-Rocking aircraft, flashing navigational lights at irregular intervals and following.</p>	Understood, will comply.
2	DAY or NIGHT-An abrupt break-away maneuver from the intercepted aircraft consisting of a climbing turn of 90 degrees or more without crossing the line of flight of the intercepted aircraft.	You may proceed.	<p>AEROPLANES: DAY or NIGHT-Rocking wings.</p> <p>HELICOPTERS: DAY or NIGHT-Rocking aircraft.</p>	Understood, will comply.
3	<p>DAY-Circling aerodrome, lowering landing gear and overflying runway in direction of landing or, if the intercepted aircraft is a helicopter, overflying the helicopter landing area.</p> <p>NIGHT-Same and, in addition, showing steady landing lights.</p>	Land at this aerodrome	<p>AEROPLANES: DAY-Lowering landing gear, following the intercepting aircraft and, if after overflying the runway landing is considered safe, proceeding to land.</p> <p>NIGHT-Same and, in addition, showing steady landing lights (if carried).</p> <p>HELICOPTERS: DAY or NIGHT-Following the intercepting aircraft and proceeding to land, showing a steady landing light (if carried).</p>	Understood, will comply.

Table 5-6-1

INTERCEPTING SIGNALS

Signals initiated by intercepted aircraft and responses by intercepting aircraft (as set forth in ICAO Annex 2-Appendix A, 2.2)

Series	INTERCEPTED Aircraft Signals	Meaning	INTERCEPTING Aircraft Responds	Meaning
4	DAY or NIGHT-Raising landing gear (if fitted) and flashing landing lights while passing over runway in use or helicopter landing area at a height exceeding 300m (1,000 ft) but not exceeding 600m (2,000 ft) (in the case of a helicopter, at a height exceeding 50m (170 ft) but not exceeding 100m (330 ft) above the aerodrome level, and continuing to circle runway in use or helicopter landing area. If unable to flash landing lights, flash any other lights available.	Aerodrome you have designated is inadequate.	<p>DAY or NIGHT-If it is desired that the intercepted aircraft follow the intercepting aircraft to an alternate aerodrome, the intercepting aircraft raises its landing gear (if fitted) and uses the Series 1 signals prescribed for intercepting aircraft.</p> <p>If it is decided to release the intercepted aircraft, the intercepting aircraft uses the Series 2 signals prescribed for intercepting aircraft.</p>	<p>Understood, follow me.</p> <p>Understood, you may proceed.</p>
5	DAY or NIGHT-Regular switching on and off of all available lights but in such a manner as to be distinct from flashing lights.	Cannot comply.	DAY or NIGHT-Use Series 2 signals prescribed for intercepting aircraft.	Understood.
6	DAY or NIGHT-Irregular flashing of all available lights	In distress.	DAY or NIGHT-Use Series 2 signals prescribed for intercepting aircraft.	Understood

Table 5-6-2

