Accident Prevention Program

Using The System

TCA--TRSA

The Transponder --The forerunner to today's Air Traffic Control (ATC) Radar Beacon System was developed during Would War II to enable military radar operators to Identify aircraft as friend or enemy. That system was known as IFF (identification friend or foe). Utilizing both ground and airborne equipment the system's ground transmitter sent a Signal to the aircraft transceiver which in turn replied in a set code depending upon how the pilot had tuned his selector. Only a few codes were used at that time and these were Changed daily or more often.

When radar was first implemented in the Air Traffic Control System the normal radar echo return from the metal surfaces of aircraft seemed to be sufficient to Identify an aircraft on the radar scope. But as traffic Increased particularly in the high density terminal areas the need for positive means of identification was soon recognized. The old World War II IFF 10 code system seemed to be the answer or at least a beginning for the Air Traffic Control Radar Beacon System The first ATC transponders developed for the system had a Capability of 64 different codes There are now 4,096 individual codes and in addition by using a transponder with mode IC attachment the system is capable of reporting the aircraft's altitude.

Who Needs a Transpondor? Pilots normally prefer to fly VFR and will continue to do so in most of the U.S. airspace in the foreseeable future. They may continue to fly VFR and still enjoy the advantages of the FAA radar service network without being under the control of ATC.

When flying within an area of radar coverage and the aircraft can be indentified pilots may request radar assistance or service providing they have a two-way radio for communicating with the radar facility. This does not place them under positive control but they can receive radar assistance and surveillance especially when their aircraft is transponder equipped. The transponder is simply an electronic device that aids the controller in making faster and more positive identification of aircraft. Aircraft without a transponder can normally be detected by radar but not as distinctively and may require the pilot to alter course so the radar operator can establish positive identification. With radio communications and a transponder, a pilot knows that the controller at the radar facility has an immediate, electronic picture of the aircraft's identity, speed, and direction of flight. And with the mode C attachment the controller also knows the altitude of the aircraft which greatly reduces the need for communication between pilot and controller. The transponder is your best ticket for sharing the advantages of the FAA's Air Traffic Control network especially in busy terminal control areas.

TRSA, Terminal Radar service Area. More than 100 moderately busy airports in the United States have been designated as Terminal Radar Service Areas (TRSA) The size

and shape of a terminal radar service area varies from airport to airport but generally speaking it resembles a circular chunk of airspace extending outward and upward from the airport. Radar service within TRSA airspace is automatically provided and although not mandatory, all pilots operating within the TRSA should for their safety and the safety of others notify air traffic control.

There are currently three stages of terminal radar service:

Stage I provides traffic information and limited vectoring to VFR pilots when the controller's workload permits. Stage II offers traffic information and vectoring, plus sequencing of arriving VFR aircraft into the traffic pattern and traffic advisories for departing aircraft Stage III provides all of stage I and II plus separation service for VFR pilots from IFR and other participating VFR traffic within the TRSA.

In conjunction with ongoing efforts to simplify the National Terminal Radar Program the term Stage I will be deleted early in 1981. The service (traffic information and limited vectoring) will continue to be provided to VFR aircraft, by all commissioned ATC terminal radar facilities VFR pilots should keep in mind that participating in the terminal radar service area program does not relieve them of the responsibility of maintaining a continuous scan for other traffic. Remember, other pilots may not be participating or in contact with air traffic control, so it is still the pilot's responsibility to avoid other aircraft, clouds, terrain, and obstacles.

TCA, Terminal Control Area. Unlike the TRSA, where pilots may or may not choose to participate, it is mandatory that pilots obtain clearance from Air Traffic Control before entering a TCA. TCA's are blocks of airspace surrounding the busiest airports throughout the United States; e.g. Atlanta, Chicago, New York, Los Angeles, and San Francisco; and are divided into two groups. Aircraft equipment requirements to operate into a Group II TCA are a two-way radio, VOR or TACAN receiver and a 4096 code transponder. In addition to the Group II requirements, Group I TCAs require transponders to have Mode "C" automatic altitude reporting capability and pilots to hold at least a private pilot certificate to land or take off at the primary airport within the TCA.

Procedures for operation within or through a TCA are:

1. Plan during pre-flight preparation for alternative routes and altitudes in the event that you are unable to obtain your desired clearance. Refer to your Sectional Aeronautical Chart or VFR Terminal Area Chart for TCA boundaries.
2. Do not enter a TCA without specific clearance.
3. Contact the controller far enough from the TCA boundaries to permit altering your course if traffic conditions do not permit your immediate clearance into the TCA.
4. When you contact the controller state the following:
     a. Your full call sign
     b. Make/model of your aircraft
     c. Whether or not your transponder has Mode C capability

d. Your position
e. Your destination
f. Your route
g. The altitude you are requesting
h. Whether or not you are familiar with the particular TCA

You are still responsible for avoiding other aircraft, clouds, and obstacles--so keep scanning.

TCA's and TRSA's are depicted on Sectional, World Aeronautical, and En-Route Low Altitude Charts, as well as on DOD Flight Information Publications, and special TCA maps. Air Traffic Services are clearly explained in the Airman's Information Manual. Further information may be obtained at FAA Air Traffic or Flight Standards offices.

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