

# Operating Tips . . .

## FOR BETTER NAVION FLYING

### NAVION RADIOS— OPERATING DO'S AND DON'TS

The following is a reprint of data furnished Ryan by the Radio Corporation of America, which it is believed will assist Navion pilots to get maximum operating efficiency and service life from their radio equipment. While this information was furnished by RCA and is specifically applicable to equipment of their manufacture, a large part of the information is applicable to any aircraft radio regardless of make; therefore, the information should also be of interest and assistance to the owners of earlier model Navions equipped with other types of radio equipment.

**MAINTENANCE & OPERATING NOTES—** Preventive maintenance is least expensive and most satisfactory. One part of preventive maintenance on the Navion radio is best done by the pilot and that is to insure the AVTR-116 is operated only on a storage battery source. The battery may or may not be on charge, and the type of charger is of little importance, even though some create noise which may be heard in the radio. The battery voltage should be within the limits of 11.5 to 14.5 volts. Do not disconnect the battery from the plane's electrical system when the engine is running and the radio is ON. Likewise, do not operate the radio from an external power supply other than a 12 volt battery. Vibrators in auto sets usually provide 2000 to 3000 hours service and that is mostly because the motorist cannot connect the radio to any power source other than the auto battery. High impedance power sources such as small generators and rectifier sets will burn vibrator contacts which may cause the vibrator to stick and damage wiring in the radio or plane wiring. **DO NOT OPERATE THE RADIO IN YOUR NAVION WITH THE BATTERY SWITCH OFF.**

**TRANSMITTER—** Your RCA transmitter has approximately 1-1/4 watt output, which, with proper operation, is normally capable of transmitting an intelligible signal to the horizon. However, the 278 Kc tower transmitter is usually low powered as related to its frequency; hence often can't be heard over ten to twenty miles with your receiver. You may have occasion

to call an airport tower from some distance, so conduct your conversation with the knowledge that the tower very likely will hear your transmitter but you may not hear his reply. Close your distance by one half and transmit again. Speak clearly and at a normal voice level with the microphone close but not touching your lips.

**LOOP OPERATION—** An aural null loop may prove a great aid to radio navigation under many circumstances. However, radio loop navigation may prove dangerous to those unskilled in the art. The following pointers will be of aid in using a radio loop.

1. A loop null is only a line of bearing as the station may be at  $0^{\circ}$  or  $180^{\circ}$ .
2. In establishing a position fix, take three or more bearings and plot them on a map to insure the bearings will converge at one point. It is not well to attempt a position fix by memory.
3. When using stations with which you are not familiar, refer to CAA manuals for all pertinent data. Some broadcast stations use reflector antenna systems which effectively move the signal null away from the line of bearing to the station.
4. Take care in using stations which transmit on a carrier above 1000Kc. Signals in this frequency range are readily reflected back to the earth from the Heavy-side layer resulting in a poor or incorrect signal null. This effect increases with increase of transmitted frequency to the extent that a station 1500 Kc may be used at a distance only out to about twenty miles. This reflection signal characteristic becomes more pronounced after dark.

**RADIO RANGE NAVIGATION—** Many pilots prefer to confirm their flight course by use of four course low frequency range station. In this method of navigation, an error can easily be made which can lead to needless pilot confusion. The following pointers will be helpful in accurately flying a range leg or course.

1. Use Headphones worn fully over the ears to exclude

ambient noise and take advantage of threshold sensitivity of both the ear and radio.

2. Fly a definite twilight zone to eliminate accidentally crossing through the "on course" signal.

3. Upon final approach to the range station, hold the aircraft level, as any sudden or drastic attitude change

when nearly above the station may produce a false cone of silence or apparent course shift.

4. Do not make a final station approved in the "LOOP" function as a null on the loop may be confused with the station's cone of silence.

