

34622 41,700 Repl. by 58B

AC NO: 90-58A

DATE: 6/11/74



ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

SUBJECT: VOR COURSE ERRORS RESULTING FROM 50 kHz CHANNEL SELECTION

1. **PURPOSE.** This circular provides information concerning a potentially hazardous situation when a VOR receiver is inadvertently tuned 50 kHz from the ground station frequency.
2. **CANCELLATION.** Advisory Circular 90-58 dated February 16, 1974, is cancelled.
3. **BACKGROUND.** The possibility of an erroneous course indication exists, at least for certain types of airborne receivers, when the receiver is inadvertently tuned 50 kHz from the ground station frequency. This condition is due to radiation of harmonics of the 9960 modulation from the ground station. When such harmonics exist they may be received and detected by the aircraft's navigation receiver. The indication produced can appear to be usable course information. The station identification may be heard, the flag alarm hidden and a course indication displayed. The course indication will probably be near the 180 degree radial (from), or its reciprocal 360 degrees (to), and will not vary as the position of the aircraft is changed with respect to the VOR ground station.
4. **DISCUSSION.** The investigation into methods of eliminating effects of undesired signal by modification of the airborne receiving equipment has been completed. Forty-seven different receivers were investigated which included various combinations of VOR/LOC/GS receiver functions; using vacuum tubes and transistor/micro-circuits; employed in general aviation and air carrier systems having 100/20 and 200/40 channel capability. The results identified inadequate selectivity and cross-modulation as factors affecting present receivers performing in the split channel environment. To alleviate such difficulties and provide the additional channels for the split channel systems, additional crystals must be installed along with a compatible selection system.

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5. PRECAUTIONS. All pilots are cautioned to ensure the correct frequency appears on the VOR receiver control panel. This procedure should minimize the difficulties described in paragraph 3 until the 50 kHz channel ability is accomplished at ground stations which is to be done on a selective basis.



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