

Federal Aviation Agency

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AIR CARRIER AND
COMMERCIAL OPERATIONS

EFFECTIVE :

July 9, 1963

SUBJECT : SELF-CONTAINED NAVIGATIONAL AIDS

1. **PURPOSE.** This advisory circular outlines FAA policy relative to installation and use of self-contained navigational aids in air carrier operations.
2. **BACKGROUND.** Self-contained aids are airborne navigational devices which are not continuously dependent on information derived from ground-based systems. Examples are Doppler RADAR, inertial platforms, and star trackers. Since Doppler RADAR is being installed by air carriers in increasing numbers and other devices are being seriously evaluated for future use, it is timely that FAA state its policy with respect to this equipment.
3. **GENERAL.** The air carrier desiring approval for use of self-contained navigational aids shall contact the local Air Carrier District Office or International Field Office for assistance in the preparation of an initial written request for FAA evaluation of its proposal. Minimum information required is described in Item 4 of this circular. Thirty days shall be allowed for review and evaluation of the initial request.

Upon satisfactory showing of compliance with FAA requirements the air carrier may submit an application for approval of operations specifications, en route flight procedures, following the guidelines established in Item 5 of this circular.

The following policy statements apply to all applications for use of self-contained navigational aids in air carrier operations:

Cockpit navigation over international routes previously requiring a navigator may be approved using self-contained navigation in conjunction with ground-based aids.

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Use of self-contained navigational aids within the National Airspace Utilization System shall not be approved by Regional Offices prior to review by Washington FAA Headquarters.

4. INITIAL REQUEST FOR EVALUATION. The initial request for evaluation of an air carrier proposal for use of self-contained navigational aids shall contain the following minimum information:
- a. Experience. Prior to presenting its initial request an air carrier must have accumulated sufficient experience to establish a history of the accuracy and reliability of the self-contained navigational system it proposes to use. A comprehensive summary of this experience should be provided to show competency in the operation and maintenance of equipment and feasibility of the proposed operation.
 - b. Equipment Installation. Self-contained navigational aids must comply with the appropriate Technical Standard Order or be approved as a part of the airplane if there is no applicable TSO. The installation, including navigational computers and heading reference, must consist of dual systems. Other systems used to update self-contained aids, such as ADF and VOR, will also be dual installations. LORAN, if proposed for use, may be a single system provided it is accessible to both pilots. All equipment, systems, and installations necessary for a specific type of operation shall be designed, installed, and demonstrated to function properly in the airplane to insure reliable functioning under all reasonably foreseeable operating conditions within specified limitations.
 - c. Maintenance Program. The applicant will specify the training received by maintenance personnel in the new equipment, proposed intervals for inspection and overhaul, test and inspection procedures, and the stationing of spare parts and test equipment.
 - d. Training Program. An amendment to the approved airman training program will be provided which indicates the proposed schedule for qualifying pilots and flight dispatchers in the new navigational system. Classroom, actual flight training, qualification and recurrent training will be specified.
 - e. Operations Manual. Revisions to the Operations Manual will outline all procedures relative to use of the proposed system and detailed methods for continuing the navigational function with partial or complete equipment failures.

- f. Minimum Equipment List. A proposal for amendment of the existing list will be presented. Items which are not required to be operative for dispatch must be fully justified on the basis of equivalent safety of operations.
- g. Routes. Each route being proposed for self-contained navigation will be analyzed with respect to availability of en route aids and gateway facilities. Charts, forms, and other information which will be used by pilots in navigating the aircraft will be provided.

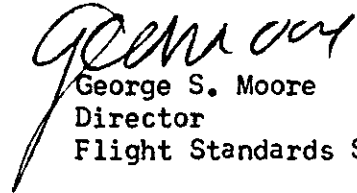
Routes based on heading information from slaved magnetic compasses will not be authorized in areas having a weak or unreliable earth magnetic field. If free-gyro operation is proposed, detailed procedures for transition to, and use of this form of navigation, will be supplied.

- h. Demonstration and Crew Qualification. The air carrier will provide a schedule of flights which will prove his ability to utilize cockpit navigation over routes previously requiring a navigator. During these flights the pilots shall navigate the aircraft by means of the system under evaluation, and demonstrate that navigational duties do not encroach significantly on other required pilot functions. If these tests are conducted during passenger operations, a certificated navigator will be assigned to each trip. The navigator will monitor the flight and advise the check pilot who will be responsible for determining that the aircraft does not exceed allowable navigational limits.
5. REQUEST FOR APPROVAL. The air carrier may forward a request for approval of its proposal following FAA observation of a representative number of satisfactory pilot qualification checks and resolution of all items arising during the initial evaluation program. Formal FAA concurrence will be indicated by approval of amended operations specifications, en route flight procedures, defining the new operations. Approval will be limited to those routes over which the adequacy of cockpit navigation has been demonstrated.

Operations specifications authorizing cockpit navigation over routes previously requiring a navigator will contain the following minimum information:

- a. Specific points fixed by an acceptable ground-based navigational aid where use of self-contained aids will commence and terminate.
- b. Route widths.

- c. Latitude limits and type heading reference authorized; i.e., Slaved Magnetic Compass or Free Gyro.
- d. Requirement that pilots be qualified in the navigational system.
- e. Minimum navigational equipment required for dispatch.


George S. Moore
Director
Flight Standards Service