U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: RANDOM AREA NAVIGATION ROUTES **Date:** 10/28/83 **AC No:** 90-82
Initiated by: AAT-330 **Change:**

1. PURPOSE. This advisory circular is issued to provide notification to all users equipped with area navigation/RNAV avionics with latitude/longitude coordinate navigation capability of a new random route service within the conterminous United States.

2. EFFECTIVE DATE. January 1, 1984.

3. DISCUSSION.

a. During 1980 and 1981, the Air Traffic Service conducted an operational evaluation of random RNAV routing using coordinate navigation within the NAS (Operation Free Flight). It was concluded that the concept was feasible; pilot attitude was positive; potential for fuel savings was significant; and, although some incompatibility with arrival traffic flows was discovered, in general, there was no apparent adverse impact on the ATC system.

b. The program addressed in this advisory circular outlines the initial steps to authorize the use of random RNAV routes defined by latitude/longitude coordinates within the conterminous United States, in a limited manner, with a progressive, time-phased expansion toward broader applications.

4. CONCEPT OF OPERATION

a. Authorization of routes defined by latitude/longitude coordinates makes use of the capability of the NAS 9020 computer to accurately process and track flight plans utilizing latitude/longitude coordinates; and the controller's route display feature that will depict a route of flight which has been defined by adapted fixes and latitude/longitude coordinates.

b. Aircraft equipped with coordinate navigation capability will be authorized to file and fly random RNAV routes between approved departure and arrival fixes, provided the en route altitude is FL 390 or above. Radar separation shall be applied to all RNAV aircraft, but navigation on the requested routes shall be the responsibility of the pilot.

c. The following factors may affect the usage and approval of random RNAV routes planned in accordance with this AC.

(1) Capability of providing service.

(2) Traffic volume.

(3) Confliction with airways and special use airspace.

d. These procedures will not be authorized for use in the following centers' airspace until further notice: New York, Cleveland, Indianapolis, and Chicago.

5. PROCEDURES. The procedures contained in this advisory circular are applicable only to aircraft certified for IFR RNAV operations using coordinate navigation.

a. Pilots requesting ATC clearance for random RNAV routes are expected to comply with the following.

(1) File standard flight plans.

(2) Plan the random route portion of the flight to begin and end over published departure/arrival transition fixes or appropriate navigation aids for airports without published transition procedures.

(3) Plan the route of flight so as to avoid prohibited and restricted airspace by 3 NM unless permission has been obtained to operate in that airspace and the appropriate ATC facility is advised.

(4) Define the route of flight after the departure fix, including each intermediate fix (turnpoint) and the arrival fix for the destination airport in terms of latitude/longitude coordinates plotted to the nearest minute. The arrival fix must be identified by both the latitude/longitude coordinates and a fix identifier.

Example:

1	2	3	4	5
MIA	SRQ	3407/10615	2407/11546 TNP	LAX

1. Departure airport
2. Departure fix
3. Intermediate fix (turning point)
4. Arrival fix
5. Destination airport.

(5) Record latitude/longitude coordinates by four figures describing latitude in degrees and minutes followed by a solidus and five figures describing longitude in degrees and minutes.

(6) All routes/route segments must be flown on Great Circle tracks to coincide with the NAS 9020 computer processing.

(7) File at FL 390 or above for the random RNAV portion of the flight.

(8) Inflight requests for random RNAV clearances or RNAV route amendments shall not be given to terminal ATC facilities.

b. The following IFR clearance procedures are applicable:

(1) Random RNAV routes will be approved only when ATC radar service can be provided.

(2) Approval of requested routes will be based upon controllers workload and system capacity.

(3) Aircraft vectored off the planned random route will be recleared direct to the next flight plan waypoint or issued a revised clearance.

c. Aircraft operators participating in the Stored Flight Plan Program are responsible for advising the appropriate ARTCC at any time the random RNAV route request is a modification to the permanent stored flight plans. Such notification should be in accordance with established procedures for route of flight modification.

7. PROGRAM EXPANSION. Additional airspace will be included as the Inter-ARTCC Restoration Program is completed, and the base altitude will be gradually reduced as system capacity permits.

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