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ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration
Washington, D.C.

Subject: IFR HELICOPTER OPERATIONS IN THE NORTHEAST CORRIDOR

1. PURPOSE. This circular advises interested users of special Area Navigation (RNAV) helicopter routes between Washington, D.C., and Boston, Massachusetts, (known as the "Northeast Corridor") and provides guidelines to operators for the safe use of these routes. The use of these routes is voluntary.

2. BACKGROUND. The Federal Aviation Administration (FAA), in conjunction with the Helicopter Association of America (HAA), established a pilot project in mid-1974, in the Northeast Corridor, which was designed to demonstrate the feasibility of instrument flight rules (IFR) helicopter operations in high density traffic areas with minimum impact on or from fixed wing traffic, or with the air traffic control system. The route selected was from Washington, D.C. to Boston, Massachusetts, via Philadelphia, Pennsylvania, and New York, New York, with numerous feeders, spurs and RNAV instrument approach procedures, including both onshore and offshore environments. The Northeast Corridor is considered a dynamic route structure with additions or changes to be made as required. Experience gained will serve as the basis for national application.

a. The Northeast Corridor routes have a minimum altitude as low as 1700 feet above ground level (AGL) with a maximum authorized altitude of 5000 feet mean sea level (MSL). This eliminates coordination with Air Route Traffic Control Centers, and uses approach control services throughout the entire route. The corridor is predicated on the use of RNAV which, at the present time, is described with reference to VOR/DME facilities, although other systems such as Loran C, Omega, or VLF may be used as outlined in FAA Advisory Circular 90-45A, "Approval of Area Navigation Systems for Use in the U.S. National Airspace System." Two one-way routes have been established which will assure safety for opposite direction traffic at the same altitudes, when the guidance in this advisory circular is followed.

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b. RNAV instrument approaches to a landing area or to a point-in-space are part of the Northeast Corridor concept. RNAV routes will terminate in a helicopter RNAV or conventional instrument approach procedure. Conventional instrument approaches may also be used at a destination airport. The RNAV point-in-space approach permits a descent to a designated point, and upon reaching visual contact at or above the minimum descent altitude, will permit proceeding under visual flight rules (VFR) or special VFR (SVFR) to the desired landing point. The point-in-space approach will only be utilized under weather conditions that permit air traffic control to accommodate it.

c. In establishing the Northeast Corridor concept, many facets were considered and examined such as: noninterference with airways; navigation coverage along routes and for approaches; radar and communications coverage; minimum en route altitudes (MEA); facility performance at low operational altitudes; video map accuracy for radar surveillance; adequacy of holding pattern airspace areas; route widths; impact on air traffic control services, instrument approaches, missed approaches, and departure approaches.

d. One of the major considerations in this project is the route width of the discrete helicopter RNAV airway structure. In order to effectively construct the Northeast Corridor concept, a ± 2 mile route width was necessary in order to fit this structure into the airspace without affecting established airways. In so doing, an important factor in conventional airway structuring had to be minimized. This factor is known as Flight Technical Error (FTE), and is a measure of the accuracy with which the pilot/autopilot can adhere to the prescribed track. In permitting this factor to be minimized, this advisory circular provides acceptable means of ensuring that users of this structure can safely use the Northeast Corridor system. A pilot operating IFR on this structure with improper equipment or inadequate pilotage technique could disrupt air traffic operations along the conventional airway system and possibly necessitate cancellation of the helicopter route. In addition to the route width reduction, the RNAV holding pattern airspace on this route is smaller than holding pattern airspace required for conventional aircraft.

e. It was considered desirable to develop special routes consistent with conventional traffic flow that could be used by helicopters under IFR conditions. As a result, the FAA has designed a route which would closely parallel conventional routes and has the potential for improving service for IFR helicopter operations. Subsequently, flight checks of sections of the proposed corridor were accomplished by conventional aircraft and finally by helicopter. Procedures for en route and approach capability were proposed and verified by flight check. The entire route was completed for area navigation rho-theta authorization in January 1978, although some segments were approved as early as 1975.

f. A preliminary environmental review (FAA Facility Management Handbook, 7210.3D, paragraph 11) has been completed on the Northeast Corridor

routes and procedures. This review does not indicate a requirement for further consideration of environmental impacts of this program.

3. KEY ITEMS.

a. Sections 91.116; 91.119; and 91.123, Part 91, of the Federal Aviation Regulations contain requirements concerning takeoff and landing, minimum altitudes, and course to be flown that must be complied with under IFR "unless otherwise authorized by the Administrator." In the interest of the safe and efficient expansion of helicopter operations, the Administrator hereby authorizes deviation from the cited regulations to the extent needed to permit helicopter operation on the Northeast Corridor routes, for operators who show that they meet the acceptable safety criteria in paragraph 4 of this advisory circular.

b. To insure that only authorized operators will utilize this corridor, public use en route or approach charts will not be issued until the route has been designated for public use. In the meantime, the FAA will issue written descriptions of the en route and approach procedures, and the operator can arrange for his own charts as desired. Such charts, however, should be made available to the respective FAA region for review. (Note: Several operators have joined forces to print charts. For further information on availability of these charts, contact the Helicopter Association of America.)

c. Routes will be designated with the letter "R" as is done for all other RNAV routes, e.g., V315R.

d. IFR helicopter operations on the Northeast Corridor will not necessarily receive radar vectoring. It is, therefore, assumed that authorized IFR helicopter operations on Northeast Corridor routes will follow the prescribed discrete routing with precision and without radar vectoring. It should be noted, however, that due to the complexities of the New York area, operations in this segment will be monitored by air traffic control.

e. In establishing the initial structure, it was deemed necessary to establish a considerable number of waypoints due to the complexity of the corridor and to minimize flight technical error. Frequent bearing changes are necessary to minimize corridor interrelation with established routes and airways. As experience dictates, it is expected that the corridor can be redesigned in some areas, thereby reducing the number of waypoints. During this initial period, however, it is considered undesirable to make changes in the prescribed route due to necessary follow-on requirements such as changing approach control video maps, special notification to users, and resultant changes in their operating charts; and the need for special flight checks to assess obstacle clearance, signal coverage and establishment of precise coordinates.

f. Waypoints are identified by name, reference facility with rho-theta information as well as latitude and longitude. Minimum and maximum en route altitudes between waypoints are provided as well as distances and changeover point information.

g. Area Navigation approaches in addition describe the minimum descent altitude, missed approach instructions, and holding patterns. Point-in-space approaches are not limited by distance from the point-in-space to the point of intended landing; however, they will normally be in close proximity to a landing area. Point-in-space approach procedures will identify the available landing area or areas in the vicinity by course and distance from the missed approach point.

h. Each of the major cities along this route has been assigned a point-in-space for both the northbound and southbound segment. It is expected that operators will utilize this point for operations within the local area. It will be the operator's responsibility for complying with Federal Aviation Regulations for VFR flights beyond the point-in-space, and to obtain a Special Visual Flight Rule from the appropriate air traffic control facility when weather so requires before operating in a control zone. The route of flight from the point-in-space to the intended point of landing should also be provided to air traffic control.

i. Helicopter point-in-space or direct airport approach procedures have been established for the following locations: Boston, Providence, Hartford, New York, Philadelphia, Bedford, Beverly, Baltimore, and Washington.

4. ISSUANCE OF AUTHORIZATION.

a. The sensitivity of the Northeast Corridor structure during the early phases, and recognition that authorization is required to assure that the Northeast Corridor routes are properly used, precludes advertising the Area Navigation waypoints and approach/departure procedures for general use.

b. Upon request to the appropriate FAA authorities identified below in paragraph 5, an operator who meets the necessary criteria may be granted authorization to utilize this corridor. Applicants should show that the following criteria have been met:

(1) The helicopter(s) to be used are certificated for IFR.

(2) The helicopter(s) are equipped with RNAV equipment approved for en route, terminal area, and approaches in accordance with AC 90-45A.

(3) Pilots operating within this corridor are IFR helicopter rated, and pilot technique is adequate to fly RNAV under IFR conditions within the confines of the corridor. This condition can be satisfied by having an operator designate one pilot

who will be checked by the local General Aviation District Office (GADO) (if they consider this to be necessary) as to competency in RNAV IFR flight. This should be a short simulated IFR RNAV flight on a conveniently selected portion of the Northeast Corridor route structure, and an Area Navigation approach procedure. Thereafter, it will be the responsibility of the operator's FAA approved and designated pilot to check-out the operator's other pilots who will fly the Northeast Corridor.

c. When the regional Flight Standards Division is satisfied that the operator meets all criteria, they will issue a letter of authorization which will be given in the name of the company and will list authorized aircraft registration numbers and authorized check pilot's name. All pertinent information on the route, waypoints, approach procedures, holding patterns, etc., as provided by the Air Traffic Division will be included. This will provide the basis for the operator to prepare or have prepared the necessary en route and approach charts (see paragraph 3.a.). These charts will be reviewed by the FAA.

d. Authorized operators are encouraged to file IFR flight plans on all Northeast Corridor operations, regardless of weather, in order to promote crew competency and familiarity by the air traffic controllers with their operations, and provide an effective data bank for route analysis and evaluation.

5. HOW TO INITIATE AUTHORIZATION.

a. Interested operators initially should contact the appropriate regional Air Traffic Division and request consideration for authorization. Such request should contain the area in which they wish to operate and confirmation of data outlined under paragraph 4 of this advisory circular.

b. The regional Air Traffic Division will coordinate the request with the Air Traffic Service and also with the regional Flight Standards Division, in order that Flight Standards may perform any equipment or flight check they deem necessary.

c. The Air Traffic Division will advise all authorized users of any changes or modifications on this route. Contacts are:

(1) Eastern Region - Washington to Hartford, Connecticut, contact

Federal Aviation Administration
JFK International Airport
Jamaica, New York 11430
(Telephone: 212-995-3392)

(2) New England Region - Hartford, Connecticut, to Boston, Mass. contact:

Federal Aviation Administration
12 New England Park
Burlington, Massachusetts 01830
(Telephone: 617-273-7286)

6. FUTURE PLANS.

a. Monitoring of corridor operations will be accomplished by the FAA for a one year period to obtain technical data on aviation system accuracy, under typical IFR helicopter operating conditions. Systems Research and Development Service, National Aviation Facilities Experimental Center, and the regional facilities in support of the Air Traffic and Flight Standards needs will collect data using the Automated Radar Terminal System (ARTS-III) terminal radar tracking and data collection. National Aviation Facilities Experimental Center will conduct data reduction and analysis in order to report the results of system performance by the Northeast Corridor users.

b. FAA is evaluating the Northeast Corridor structure utilizing Loran C, Omega, VLF, and airborne radar equipment for compatibility, performance and accuracy within this system. If these systems are found to be suitable during this evaluation, expanded use of this equipment will be considered for use along the corridor as appropriate for en route, terminal, or approach operations.

c. Results from this project are expected to be of material help in the future development of all weather helicopter operations in the national airspace system.

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