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(f) *Are any service bulletins incorporated into this AD by reference?* Actions required by this AD must be done in accordance with Piper Mandatory Service Bulletin No. 1051B, dated November 5, 2002. The Director of the Federal Register approved this incorporation by reference under 5 U.S.C. 552(a) and 1 CFR part 51. You may get copies from The New Piper Aircraft, Inc., Customer Services, 2926 Piper Drive, Vero Beach, Florida 32960; telephone: (561) 567-4361; facsimile: (772) 978-6573. You may view copies at the FAA, Central Region, Office of the Regional Counsel, 901 Locust, Room 506, Kansas City, Missouri, or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

(g) *When does this amendment become effective?* This amendment becomes effective on June 23, 2003.

Issued in Kansas City, Missouri, on April 30, 2003.

Michael Gallagher,

Manager, Small Airplane Directorate, Aircraft Certification Service.

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 71

RIN 2120-AA66

[Docket No. FAA-2003-14611; Airspace Docket No. 03-AWA-4]

Establishment of Area Navigation Routes (RNAV)

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This action establishes Area Navigation Routes (RNAV) as part of the National Airspace System (NAS). The FAA is implementing these routes to enhance safety and to improve the efficient use of the navigable airspace.

EFFECTIVE DATE: 0901 UTC, July 10, 2003.

FOR FURTHER INFORMATION CONTACT: Ken McElroy, Airspace and Rules Division, ATA-400, Office of Air Traffic Airspace Management, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591; telephone: (202) 267-8783.

SUPPLEMENTARY INFORMATION:

Background

Historically, the principal means of air navigation for instrument flight rules (IFR) operations in the United States National Airspace System (NAS) has been a system of ground-based

navigation aids (NAVAIDs) (e.g., nondirectional beacon (NDB), very high frequency omnidirectional range (VOR), and distance measuring equipment (DME)). Airways were subsequently developed according to these NAVAIDs, and pilots were required to fly directly toward or away from them. This limitation in the NAS has resulted in less-than-optimal routes, and contributed to the inefficient use of the airspace.

The advent of area navigation (RNAV) in the 1960's, provided enhanced navigation capabilities to the pilot. Early RNAV allowed properly equipped aircraft to navigate via a user-defined track, rather than depending primarily on ground-based NAVAIDs. Early RNAV systems, however, still relied on signals from a ground-based NAVAID for source information to calculate navigational position. In the 1970's, to take advantage of this improved navigation capability, the FAA began to publish a series of routes for use by RNAV-equipped aircraft. A nationwide system of high-altitude RNAV routes was established consisting of approximately 156 route segments.

These fixed routes, however, still depended on information from ground-based NAVAIDs. The FAA later determined that most aircraft using RNAV in the en route system, were doing so on a random basis using inertial navigation systems (INS) (with little use being made of the fixed high altitude RNAV route structure). Operators were using RNAV from point to point, not with the high-altitude RNAV route structure designed and published by the FAA. This minimal use of the charted RNAV routes proved insufficient to justify their retention on a cost-benefit basis. As a result, in January 1983, the FAA revoked all high altitude RNAV routes in the conterminous United States (46 FR 848). The RNAV routes in Alaska were retained and remain in use today because of the scarcity of ground-based navigational aids in that region.

The technology that evolved over the past 40 years gave avionics systems increased positional accuracy, which provided users with a greater ability to fly direct routes between any two points. In recent years, satellite navigation using the Global Positioning System (GPS) has provided even greater flexibility in defining routes, establishing instrument procedures, and designing airspace. When GPS is combined with existing RNAV system capabilities, continuous course guidance is available over longer routes than is possible with ground-based NAVAIDs. As a result of these

technological advances, the FAA has implemented a number of RNAV routes on a test basis for use by air carriers operating suitably equipped aircraft in the northeast, southeast, and southwest regions of the United States. The results so far have demonstrated the potential of these RNAV routes, when used with newer navigation reference sources such as GPS.

As part of the on going National Airspace Redesign, the FAA has implemented the High Altitude Redesign (HAR) Program. This specific effort looks at how best to obtain maximum system efficiency by introducing advanced RNAV routes for use by suitably equipped aircraft. Under the first phase of HAR, 11 RNAV routes are being established in the high altitude structure. These new routes will allow users to begin achieving the economic benefits of flying their preferred routes and altitudes with fewer routing restrictions.

Related Rulemaking

On April 8, 2003, the FAA published the Designation of Class A, B, C, D, and E Airspace Areas; Air Traffic Service Routes; and Reporting Points in the **Federal Register** [68 FR 16943]. This rule adopted certain amendments proposed in Notice No. 02-20, Area Navigation (RNAV) and Miscellaneous Amendments. This action revised and adopted several definitions in FAA regulations, including Air Traffic Service routes, to be in concert with International Civil Aviation Organization (ICAO) definitions; and reorganized the structure of FAA regulations concerning the designation of class A, B, C, D, and E airspace areas; airways; routes, and reporting points.

The U.S. and Canada have been assigned the alphanumeric "Q" as a designator for RNAV routes (U.S. 1-499/Canada 500-999). RNAV routes between, and within, Canada and the U.S. will use the "Q" designator.

The Rule

This action amends Title 14 Code of Federal Regulations (14 CFR) part 71 (part 71) by establishing RNAV routes as part of the NAS. These routes are designed to provide safe and efficient use of the navigable airspace, and to promote safe flight operations under instrument flight rules (IFR) within the NAS.

The complete regulatory criteria on each RNAV route is contained in the appropriate FAA Form 8260. The RNAV routes described in this rule will also be published in a new paragraph (paragraph 2006) of FAA Order 7400.9K dated August 30, 2002, effective