

Section 2. Performance-Based Navigation (PBN) and Area Navigation (RNAV)

1-2-1. General

a. Introduction to PBN. As air travel has evolved, methods of navigation have improved to give operators more flexibility. PBN exists under the umbrella of area navigation (RNAV). The term RNAV in this context, as in procedure titles, just means “area navigation,” regardless of the equipment capability of the aircraft. (See FIG 1-2-1.) Many operators have upgraded their systems to obtain the benefits of PBN. Within PBN there are two main categories of navigation methods or specifications: area navigation (RNAV) and required navigation performance (RNP). In this context, the term RNAV *x* means a specific navigation specification with a specified lateral accuracy value. For an aircraft to meet the requirements of PBN, a specified RNAV or RNP accuracy must be met 95 percent of the flight time. RNP is a PBN system that includes onboard

performance monitoring and alerting capability (for example, Receiver Autonomous Integrity Monitoring (RAIM)). PBN also introduces the concept of navigation specifications (NavSpecs) which are a set of aircraft and aircrew requirements needed to support a navigation application within a defined airspace concept. For both RNP and RNAV NavSpecs, the numerical designation refers to the lateral navigation accuracy in nautical miles which is expected to be achieved at least 95 percent of the flight time by the population of aircraft operating within the airspace, route, or procedure. This information is detailed in International Civil Aviation Organization’s (ICAO) Doc 9613, Performance-based Navigation (PBN) Manual and the latest FAA AC 90-105, Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System and in Remote and Oceanic Airspace.

**FIG 1-2-1
Navigation Specifications**

