Performance Based Navigation

What you need to know as a Part 91 IFR operator

The way you navigate is changing
New Zealand is aiming to be operating in a full PBN environment by 2023. This means PBN will be the primary means of navigation for Instrument Flight Rules (IFR) operations, shifting away from conventional ground-based to satellite-based navigation means. PBN will be based upon the Global Positioning System (GPS) and will lead to a change and purpose of the ground-based navigation aid (GBNA) infrastructure.

Ground-based navigation has limitations
The basic principle for conventional ground-based navigation is that aircraft fly from one ground-based station to the next. This creates limitations as the routes and procedures are constrained to the physical location of navigation aids. The navigation service is also limited due to the New Zealand terrain.

PBN provides operational and safety benefits
PBN enables routes and procedures to be deployed without constraint to GBNAs. This provides increased flexibility in route procedure design that can support shorter, more direct routes, as well as more efficient take-offs and landings. The accuracy and lateral guidance can provide safety benefits, for example reduced Controlled Flight into Terrain (CFIT) and runway excursions.

PBN is based on the performance of your aircraft navigation systems
PBN isn't just about the type of navigation equipment, but rather the performance of the whole system. The performance requirements are identified as navigation specifications. A PBN navigation specification can be an RNP specification or an RNAV specification. RNP includes on board performance monitoring and alerting.

You will need to be properly trained and equipped to conduct PBN operations
Your aircraft will need to meet certain airworthiness and continued airworthiness requirements to be eligible to conduct particular PBN operations. This will be issued by the regulator when the operator can demonstrate compliance with these requirements. As a pilot, you will need to be trained in PBN procedures which will be done through instrument rating theory and practical tests.

If you have a Part 19D GPS IFR approval your GPS receiver may be suitable for PBN operations
Check with your local avionics shop to see whether your GPS receiver under your Part 19D GPS IFR approval is suitable to conduct RNAV operations (i.e. Acceptable Technical Data (ATD)).

If you don't have a Part 19D GPS IFR equipment approval you will need to apply for a PBN approval
If you don't have a legacy GPS IFR approval or you require an RNP approval then a new application for approval to the CAA is required (form CAA091-10). Contact your local avionics shop if you have any questions.

There are likely to be changes to Civil Aviation Rules (CARs)
With the transition to a full PBN environment, there are likely to be changes to the IFR operational requirements. This will have an impact on training, operations, equipment, and infrastructure. You can subscribe to the PBN notification service to stay up-to-date on PBN regulatory changes.

You will need to plan to extract and recover your aircraft in the event of a GPS failure
Although you should already be doing this as part of your operations today, you will need to consider how you extract and recover your aircraft in the event of a GPS outage. For further information on extractions and recovery, see the *PBN Operational End-State 2023: A Regulatory View d*ocument here.

You can continue to fly IFR using conventional navigation, but it will be limited
A limited conventional GBNA navigation system and infrastructure will be in place alongside PBN for the safe recovery of aircraft when loss of PBN capability occurs. Aircraft equipped only with conventional IFR equipment will be able to use the GBNA infrastructure for normal navigation operations as described in the CARs.This will be based on a rationalised GBNA infrastructure and PBN equipped aircraft may be prioritised.