



(NATS Limited)
Aeronautical Information Service
Control Tower Building, London Heathrow Airport
Hounslow, Middlesex TW6 1JJ
Editorial: 020-8745 3457
Distribution: 0870-8871410 (Tangent)
Content: 020-7453 6550 (CAS)
Website: www.ais.org.uk

INTRODUCTION OF PRECISION AREA NAVIGATION (P-RNAV) PROCEDURES IN UK TERMINAL AIRSPACE

1 Purpose

1.1 The purpose of this Circular is to provide information concerning the introduction of Precision RNAV (P-RNAV) operations in UK Airspace.

1.2 With the anticipated growth in traffic, it is envisaged that P-RNAV will be employed to a greater extent for the design of terminal procedures including Standard Instrument Departures (SIDs), Standard Arrival Routes (STARs) and Transitions to final Approach.

1.3 It is proposed that the changes to be made to parts of the London Terminal Control Area (LTMA) and its associated airports, in 2009 will include, procedures based on P-RNAV. After this date conventional procedures, supplemented where necessary by the use of radar vectors will continue to be provided for a limited period for those aircraft not authorised to fly P-RNAV procedures (see paragraph 4.2).

1.4 Whilst it is likely that P-RNAV procedures will be introduced at various locations within UK airspace, the purpose of this Circular is to alert airspace users to the proposed introduction of P-RNAV within the LTMA.

2 Background

2.1 By 2009 traffic in the LTMA is predicted to increase significantly over current levels. In preparation for this increase in demand, phased airspace changes are planned to safely accommodate such growth and acceptable levels of air traffic service provision to be maintained.

2.2 As part of these changes and in response to stakeholders' requests, it is planned to make greater use of existing aircraft Area Navigation (RNAV) capability - Specifically P-RNAV performance and functionality, with the potential to provide the following benefits:

- (a) **Environmental:** Conventional departure and arrival procedure design requires aircraft to over-fly ground-based navigation aids. Where changes can be safely accommodated, the removal of this restrictive requirement may permit operational flexibility and create the opportunity for aircraft to be more easily routed around noise sensitive or built up areas, potentially reducing the environmental impact of aircraft noise and emissions. The accuracy and functionality afforded by modern RNAV systems means that aircraft can fly noise preferential routes (NPRs) with a greater degree of repeatability and predictability than was previously possible. Continuous Descent Approaches (CDAs) to the Final Approach Fix (FAF) can also be accounted for within the procedure design enabling benefits in the form of reduced noise and fuel burn, the latter leading to less carbon dioxide emissions and a saving in operating costs.
- (b) **Flexibility:** Conventional procedure design is predominately based on routing aircraft overhead ground-based navigation aids such as VORs or NDBs. By predicting route segments on the use of RNAV, procedure designers are potentially afforded greater flexibility. This has a number of benefits including, maximising the efficiency of the use of controlled airspace and an increased ability to strategically separate arrival and departure routes by design. This is expected to benefit a potential reduction in controller workload through less tactical intervention, a reduction in the use of Radio Telephony (RFT) and thus assist in enabling necessary airspace capacity enhancements.
- (c) **Infrastructure:** The European Civil Aviation Conference (ECAC) Navigation Strategy envisages the decommissioning of NDBs and the rationalisation of the VOR infrastructure as the use of Global Navigation Satellite System (GNSS) together with the application of RNAV, becomes more prevalent. The CAA is considering the adoption of this strategy across UK airspace as a whole and in particular, where the use of P-RNAV procedures is envisaged.
- (d) **Efficient use of controlled airspace:** Future airspace developments based upon the application of RNAV could potentially enable capacity increases whilst minimising additional controlled airspace, than would be the case with operations based on traditional routing via ground-based navigation aids.

2.3 In order to provide early benefit to those operators already capable of meeting P-RNAV standards, the EUROCONTROL RNAV Integrated Initiative encourages States to introduce procedures based on P-RNAV design criteria in Terminal Manoeuvring Areas (TMAs).

2.4 The CAA supports this initiative and is working closely with Air Navigation Service Providers (ANSPs) to create an airspace change programme that will make extensive use of P-RNAV design criteria for the construction of route segments such as SIDs, STARs and Transitions to Final Approach Procedures. The design of holds will also take advantage of the RNAV capability on board the aircraft.

3 Introduction of P-RNAV based procedures in the London TMA (LTMA)

3.1 To provide the capacity necessary for the anticipated increase in demand, one initiative is to redevelop the northern part of the LTMA. This will include the introduction of a large number of procedures predicted on P-RNAV design criteria.

3.2 The airspace change, which is planned for introduction in **March 2009**, will propose the introduction of P-RNAV SIDs and STARs and RNAV holds at London Stansted and London Luton airports. At London City airport, it is proposed to introduce two P-RNAV SIDs for northerly departures plus a single RNAV hold for arrivals from the north and east. Additionally, a number of P-RNAV SIDs will be introduced at Heathrow. In the interim period, NATS Limited may, on an individual basis, seek to introduce P-RNAV SIDs and STARs where benefits can be realised. Detailed procedures will be published prior to implementation.

3.3 These changes are planned to create a more systemised operating environment in the northern part of the LTMA, reducing the need for ATC to intervene once an aircraft is established on its allocated procedure. This in turn will help to maximise the use of available airspace while creating capacity and minimising environmental impact.

4 Method and timescale for the introduction of P-RNAV based procedures

4.1 It is recognised that when the proposed airspace change takes effect, not all aircraft operating into and out of the affected airports will be approved for P-RNAV operations¹. In the interim it is intended to make provision for non-approved aircraft operations by creating a mixed operating environment, where aircraft fly either on conventional or P-RNAV procedures. Operators with aircraft not approved for P-RNAV operations should be aware that they may experience delays during busy operating periods.

4.2 Operators should take note that conventional procedures could start to be withdrawn from the beginning of **January 2010** and the provision of radar vectors as an alternative, may not routinely be made available as part of the air traffic service. After a period of transition (to be determined), operators wishing to operate into the following London airports (Gatwick, Luton, Stansted, Heathrow and London City) will need to ensure that their aircraft are P-RNAV approved or risk not being able to operate a scheduled service in and out of these airports where P-RNAV arrival and departure procedures have been approved.

5 Exemption policy

5.1 It is recognised that in special circumstances some operators who are not P-RNAV approved may require to fly through LTMA airspace. Such operators will require an exemption to be issued by the CAA. The CAA is currently working to develop this exemption policy, which will be published at a later date.

5.2 ANSPs have an obligation to support the operation of a State aircraft which are not P-RNAV compliant, in accordance with the Chicago Convention.

6 Plans for other UK TMAs

6.1 Operators planning to operate in the Manchester and Scottish TMAs should take note that NATS plan to develop the structure of these terminal areas circa 2011 and in doing so, proposes to utilise P-RNAV based procedures in accordance with Government Air Transport White Paper Policy.

7 Future developments

7.1 In the longer term, there is likely to be an increased dependence upon advanced RNAV operations, both in en-route and terminal airspace, including final approach. With the continuing growth in traffic and the need to mitigate environmental impact to the greatest extent possible RNAV, together with a transition to a GNSS based environment, is key to delivering the benefits being sought. It is therefore envisaged that the capability of the aircraft navigation systems will have to evolve to meet new standards and one such enabler in a future European ATM concept is Required Navigation Performance (RNP). Work is already under way to identify functional and operational requirements for both the airborne systems and air traffic control system tools, necessary to support a future ATM concept.

¹ In order for an aircraft to be able to fly on procedures designed to P-RNAV criteria, it will need to be certified to meet the requirements of Joint Authorities (JAA) Temporary Guidance Leaflet (TGL) No 10 or equivalent. Furthermore an operator will need to have received operational approval from its State of Registry or State of Operator as appropriate.

7.2 Subject to an appropriate business case being developed, it is anticipated that a decision whether to mandate an appropriate RNP standard will be made by ECAC Member States before 2010 to meet a proposed implementation date of circa 2015 to 2020.

7.3 Information on developments of a future RNP standard, supporting a decision to an ECAC wide mandate will be made available through either an update to this Circular or additional circular.

8 Additional Information

Further information can be obtained from:

Controlled Airspace Section
Directorate of Airspace Policy
CAA House, K6
45-59 Kingsway
London
WC2B 6TE

Tel: 020-7453 6550

Email: cas.airspace@dap.caa.co.uk

This Circular is issued for information, guidance and necessary action.