

DVOR / DME /NDB Rationalisation: Example Safety Approach

CAP 1781b

Published by the Civil Aviation Authority, 2021

Civil Aviation Authority
Aviation House
Beehive Ring Road
Crawley
West Sussex
RH6 0YR

You can copy and use this text but please ensure you always use the most up to date version and use it in context so as not to be misleading, and credit the CAA.

First published 2021
First edition

Enquiries regarding the content of this publication should be addressed to: Airspace.Policy@caa.co.uk

The latest version of this document is available in electronic format at: www.caa.co.uk

DVOR/DME/NDB Rationalisation – Guidance for the use of RNAV Substitution (CAP 1781)

Example Safety Approach

NATS

Prepared by:
NATS (En-route)

AVA Documents
Document Sharing Hub

Table of contents

1. Introduction	5
1.1. Background	5
1.2. Purpose of this document	6
1.3. Notices	6
2. Safety Roadmap	7
3. Safety Requirements	9
4. Safety Argument to support the use of CAP 1781	12
4.1. Principle underpinning the Safety Argument	12
4.2. Safety Argument	12
5. Example Process for Applicants wanting to apply to use CAP 1781	16
5.1. Process flow overview	16
5.2. Conduct Impact Assessment	20
5.3. Conduct Safety Review – Approval Stage	20
5.4. CAA Approval	21
5.5. Conduct Safety Review – Implementation Stage	21
5.6. Conduct Safety Review – Post Implementation Stage	22
6. Documentation to submit in support of an approval request	23
6.1. Overview	23
6.2. Compliance Report Against CAP 1781 - Safety Argument Application Overview	24
6.3. Impact Assessment	24
6.4. Safety Review Document – Approval Stage	25
6.5. Safety Review Document – References	25
6.6. Baseline track over the ground performance	25
7. Implementation Safety Documentation	26
Appendix A Safety Workshop	28
Procedure Types Dependent on the LON and SAM VORs.	28
Key Areas discussed	29
Track Over the Ground	29

Chart and Textual AIP Updates	29
DME/DME Coverage	29
Alternative Mitigation Strategies	30
Radio Fail Procedures and Holds	30
Holds	30
General Aviation	30
Safety Requirements.	30

Left Intentionally Blank

1. Introduction

1.1. Background

In August 2009 and October 2009, the CAA undertook a National Air Traffic Management Advisory Committee (NATMAC) consultation on rationalising the UK VOR infrastructure down from the current 46 VORs to 19 and removing the 10 enroute NDBs operated by NATS. As each of the navigation aids that are to be withdrawn are taken out of service and decommissioned the conventional procedures that reference the navigation aid will no longer be valid and replacement procedures that are independent of the navigation aid will need to be in place. Where the VOR is co-located with a DME the DME may also be removed or relocated depending upon the results of a further consultation on the future of the DME network.

The NATS Enroute procedures such as STARs and Holds that are predicated on, or make reference to, a navigation aid that is to be removed will either be deleted or replaced with suitable RNAV procedures ahead of removal but there are also procedures that are owned by Airports that will be impacted by the rationalisation programme and these will also need to change.

RNAV Substitution provides an additional option for certain procedures affected by removal of a particular navigation aid. It is not an alternative to either deleting procedures or replacing conventional procedures with RNAV procedures when a dependent navigation aid is removed but, subject to certain conditions, can provide an interim step which gives procedure owners additional time to plan and implement their RNAV strategy, including any consultation required by the Airspace Change Process, without preventing the navigation aid rationalisation programme from continuing.

The DVOR/DME/NDB Rationalisation – Guidance for the use of RNAV Substitution (CAP 1781) builds on the approach currently being applied for VOR, DME and NDB non-availability for an extended period such as may occur during replacement activities. In these cases, precedence has been set by approving the continued use of certain conventional procedures, for up to 6 months, even though the dependent navigation aid is not available. This allows those aircraft able to fly the procedure using solely their Flight Management System (FMS) overlay of the procedure, and to continue to file and fly the procedure during the outage. For those aircraft unable to fly the overlay alternative mitigation has to be identified. CAP 1781 extends this approach and allows conventional procedures to continue to be flown by suitably equipped aircraft using their FMS overlays for a much longer period until suitable alternatives to the conventional procedures are available. This may not be until 2026 (or later) where the alternative procedures are expected to be developed as part of major airspace modernisation.

In order to gain approval to apply CAP 1781 owners of procedures that are dependent on a navigation aid which is to be withdrawn must undertake a number of activities to demonstrate to the CAA that the use of the guidance in a particular application is acceptably safe.

1.2. Purpose of this document

The purpose of this document is to provide an example of the activities and evidence that the CAA would expect to accompany any request for approval to use the DVOR/DME/NDB Rationalisation – Guidance for the use of RNAV Substitution (CAP 1781). In order to achieve this, the document contains a generic safety argument and identifies typical evidence items that should be considered in order to demonstrate that the proposed use of CAP 1781 is acceptably safe within the context of the operation and the applicant's safety management system. The document also outlines the process that applicants wishing to apply CAP 1781 should follow in order to develop the required evidence.

The implementation assurance can be provided in accordance with local processes if required. Normal CAA requirements for notifying operational change will also need to be complied with irrespective of how the implementation assurance is documented

This guidance has been produced prior to the Air Traffic Management Implementing Regulation, ATM-IR (EU) 2017/373 coming into force. The guidance should be tailored with the local Safety Management System as it stands at the time of use.

1.3. Notices¹

© NATS (En-Route) PLC (NATS) 2019

All rights reserved.

This document is made available to Airports who may be impacted by removal of NATS Navigational Aids for the purpose set out in Section 1.

This document in no way guarantees or warrants the sufficiency of the safety justifications. Each Airport is required to make their own safety assessments with regard to their operations and be responsible for meeting the CAA's approvals. NATS assumes no liability or responsibility for any errors or omissions in this document and/or for how the content of this document is used or applied.

NATS is not a public body and therefore has no duty under the UK Freedom of Information Act (FOIA) and UK Environment Information Regulations (EIR) to release information. NATS does however appreciate that other organisations that receive NATS information could be subject to FOIA and EIR. With this in mind please do not release any NATS protectively marked information without prior consent from the author of the information as exemptions could apply.

¹ These notices should be reviewed by the CAA prior to the regulator publishing any of this document as a CAA Publication or Annex

2. Safety Roadmap

In December 2017 a workshop was held at Heathrow Compass Centre to examine the potential safety impacts of using RNAV Substitution for a prolonged period. The issues were explored in depth and a set of requirements considered necessary for safe use of RNAV Substitution were derived. A more detailed explanation of the issues addressed at the workshop and why each requirement is necessary can be found in the notes of the workshop contained in Appendix A.

Section 3 contains the generic safety requirements derived from the safety workshop which underpin the DVOR/DME/NDB Rationalisation – Guidance for the use of RNAV Substitution (CAP 1781) and deliver a set of evidence items.

However, the evidence items on their own do not demonstrate that the use of the guidance to mitigate navigation aid removal on a particular procedure is acceptably safe. To do that requires a safety argument to be developed from a top level claim that the use of the procedure is acceptably safe and supported by appropriate sub claims. Section 4 of this document focuses on that generic safety argument and identifies the typical evidence items that might be used to show achievement of each sub-claim. If achievement of all sub claims can be demonstrated, then the top level claim will be validated.

Section 5 then goes through the assessment process.

Section 6 shows documentation that may be required to support an approval request.

LEFT INTENTIONALLY BLANK