

Flight Operations Department, Aviation House, Gatwick Airport South, Gatwick West Sussex, RH6 0YR

17/2000

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1 P-RNAV PROCEDURES

- 1.1 JAA Admin and Guidance Material, Section One, General Part 3, Temporary Guidance Leaflet (TGL) No.10: Airworthiness and Operational Approval for Precision RNAV Operations in Designated European Airspace, was published on 1 November 2000. The leaflet gives guidance on the conditions that need to be met, both in respect of airworthiness and operational procedures in order to gain approval for use of P-RNAV operations. The purpose of this communication is to give further guidance and to outline the method of obtaining approval for UK operators.

1.2 Aircraft Flight Manual

The TGL gives guidance on the functional requirements for airworthiness approval but a statement in the Aircraft Flight Manual (AFM) authorising the use of P-RNAV is a prerequisite for operational approval.

1.3 Approval Procedure

- 1.3.1 There is a need to distinguish between conventional SIDs and STARs which have been overlaid with RNAV coding and those which have been specifically designed for RNAV. Annex C of the TGL (copy attached) distinguishes between the various types of procedures.

- 1.3.2 Approval of RNAV procedures that have been designed using conventional aids but have been overlaid with RNAV coding (cases (b) or (c) of Annex C).

There is no special approval needed for these types of arrival or departure procedures. The procedures are designed using conventional aids. Raw data from these aids must be used as a back up and as a gross error check. The procedure for achieving this must be clearly stated in the Operations Manual and the crew must have received appropriate training in the use of these procedures including contingency procedures in the event of RNAV system failure and reversion to conventional navigation. Provided that these procedures are included in the Operations/Training Manual and have been accepted by the assigned Flight Operations Inspector (FOI), then no further approval is necessary.

- 1.3.3 Approval of procedures designed to be flown using RNAV (cases (d) and (e) of Annex C).

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In order to gain approval for the above procedures it will be necessary to demonstrate full compliance with the TGL. Checks will be made to this effect to include entries in the Operations/Training Manual, training as described in Table 3 of the TGL and method of ensuring the integrity of the data base used.

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- 1.3.4 There are no RNAV arrival and departure procedures in the UK at the moment but these will be introduced in the future and will be available to suitably equipped and approved aircraft. Some areas of Europe already employ these procedures and UK operators will need to be approved in order to use them. Requests for approvals should be made through the assigned FOI in the first instance. This P-RNAV approval does not cover the use of RNAV approaches which are the subject of a separate approval.

2 LICENCE SKILL TESTS (LST)/LICENCE PROFICIENCY CHECKS (LPC): INSTRUCTIONS TO AUTHORISED EXAMINERS

- 2.1 CAA Document 24 gives guidance to Authorised Examiners on the conduct of Type Rating Skill Tests and Proficiency Checks for Multi-Pilot Aeroplanes. This document is being reissued and it was hoped that a number of anomalies between it and JAR-FCL 1 would be removed. However, this has not been possible in all cases and a number of differences remain. Therefore, when conducting Skills Tests and Proficiency Checks for UK licences and JAR licences for UK pilots, examiners should continue to follow the guidance given in Document 24. Of particular note is the requirement to achieve a partial pass which remains at five or less items failed rather than two or less sections failed as in JAR-FCL 1. Note that this is a different criteria for a partial pass to that required for Single-Pilot Aeroplanes.

- 2.1.1 The Civil Aviation Authority has proposed NPA action to the JAR-FCL committee which will, hopefully, remove these anomalies.

2.2 Repeats

Examiners are reminded that they may repeat an item **once** only. The option to repeat any item is at the discretion of the examiner and is not a right of the candidate. As a general guidance the examiner should only repeat an item when he considers that the applicant has made a minor error that can be corrected by debriefing. If the item is not completed satisfactorily at the second attempt then it must be recorded as a fail. In this case the retest requirements cannot be ascertained until the end of the test when the total number of items failed is known.

3 INCAPACITATION PROCEDURES

- 3.1 There have been a number of recent incidents where, due to smoke or fumes entering the aircraft, both pilots of a Multi-Pilot aircraft have been affected to the extent that their ability to operate the aircraft may have been impaired. This highlighted two important training points; incapacitation drills and the use of oxygen masks.

3.2 Incapacitation Drills

Incapacitation drills have been designed to ensure the continued safe flight of a Multi-Pilot aircraft in the event that one of the pilots becomes incapacitated. The situation where both pilots become incapacitated at the same time has been considered so remote that no procedures have been evolved to cope with the occurrence. However, it may be possible in the event of a malfunction in the engine or air conditioning systems which causes toxic fumes to enter the flight deck as has happened in a recent incident. Operators should, therefore, consider this possibility and provide some guidance to their crews, including cabin staff, to be aware of the chance of such an event.

- 3.2.1 The first action in the event of smoke or fumes in the flight deck should be for the flight crew to don oxygen masks and establish communications.

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- 3.2.2 Training Inspectors have noted a reluctance by crews to use oxygen masks when carrying out recurrent training in simulators. Operators should ensure that these masks are worn when the drills require this and that pilots regularly practise donning the masks so that they are able to put them on quickly in difficult situations. Routine training/checking should include approaches flown with oxygen masks on.
- 3.2.3 If during line flying it appears that both pilots are suffering from some form of incapacitation or that one pilot appears to be in any way incapacitated for no obvious reason, then the flight crew should don oxygen masks without delay.

4 CRM INSTRUCTOR ACCREDITATION - INDUSTRY FORUM

- 4.1 Flight Operations Department Communication 13/2000, which was published on 20 November 2000, included a Letter of Consultation on a proposal to introduce a system of instructor accreditation for instructors of Crew Resource Management.
- 4.2 The letter contained a Regulatory Impact Assessment which invited comments from interested parties to be sent to the CAA before 15 January 2001. Further to this consultation process the CAA plans to hold an Industry Forum at Aviation House, Gatwick on 20 February 2001.
- 4.3 The purpose of the forum will be to provide an opportunity for interested parties to discuss their views on the proposal. There will also be an opportunity to ask questions and seek further guidance on the implementation of the proposals from the CRM Advisory Panel and CAA personnel.
- 4.4 Representatives of interested parties wishing to attend the forum should register using the attached form. There is no fee for attendance but places may be limited.

Captain D J Chapman
Head Flight Operations Department
28 December 2000

IT IS STRONGLY RECOMMENDED THAT OPERATIONS DEPARTMENTS BRING THE CONTENTS OF THIS FODCOM TO THE ATTENTION OF THEIR "IN HOUSE" OR CONTRACTED MAINTENANCE ORGANISATION

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EVOLUTION FROM CONVENTIONAL TERMINAL AIRSPACE PROCEDURES TO RNP-RNAV (ANNEX C)

There are a number of steps envisaged in the transition from today's conventional terminal airspace procedures to future RNP-RNAV procedures:

(a) Conventional Procedure

A conventional procedure design (VOR radials, NDB bearings and DME fixes/arcs, ILS, MLS). Flown with conventional means (VOR, DME, ADF, ILS and MLS).

(b) Conventional Procedure flown by an RNAV system coded to ARINC 424

A conventional procedure design but stored in a navigation database using the full set of ARINC 424 Path Terminators (currently 23 different leg types).

(c) Conventional Procedure meeting RNAV criteria

A conventional procedure designed specifically to meet RNAV criteria using sensors such as VOR/DME, DME/DME and GNSS. This procedure is published as a conventional procedure and may reference VOR radials, NDB bearings and DME fixes. However, it will have associated waypoints to define the RNAV path. This removes the ambiguity/approximations found in conventional procedures of paragraph (b), when flown using RNAV systems and ensures repeatability of the intended path over the ground.

Note: This is the first step towards achieving predictable track-keeping resulting from consistent and correct coding in the navigation databases, published waypoints and the application of fly-by turns. This can be used as a learning period for designers, chart and AIS providers, introducing as it does the concepts of path terminators, procedure validation, database issues, charting and publication issues.

(d) RNAV Procedure (Not RNP)

A procedure designed specifically for RNAV using sensors such as DME/DME, GNSS and VOR/DME. Use is made of waypoints located according to minimum distance requirements as laid down in PANS-OPS. This procedure is identified as an RNAV procedure and the sensor used for the design must be published. The procedure is intended for Precision RNAV or RNP-RNAV certified systems.

(e) RNP-RNAV Procedure

A procedure designed according to RNP-RNAV criteria. This procedure is identified as RNP-RNAV and may be used for all applicable sensors, and is protected as such. The procedure is intended for RNP-RNAV certified systems.

The conventional procedure of paragraph (a) was originally designed for hand-flown operations and does not always lend itself to the use of RNAV systems. Navigation database providers have had to interpret the procedure specification using the leg types available in the full ARINC 424 tool kit. This has resulted in the need for additional fixes (Computer Navigation Fixes (CNF)) to be defined in order to construct a best fit to the procedure path. In general, these aspects are transparent to ATC, but can result in path deviations under given conditions of aircraft type, configuration (weight, CG), FMS manufacturer, and wind. The RNAV system, whilst commanding path steering, may be restricted by built-in bank angle or performance limits. The consequence of such limits may be a path deviation which may be recovered automatically or may require pilot intervention.

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At all times, the conventional procedure, be it coded according to ARINC 424 or not, may be monitored by the flight crew against raw radio aid data, and the integrity of the navigation database is not really an issue. From the aircraft perspective, the safety of flight envelope is maintained, although separation from obstacles or other traffic may be lost. Hence, the major concern with these types of procedures is their compatibility with the RNAV system and how well the procedure can be flown under all conditions for all aircraft types. It would be preferable for conventional procedures to be designed to take into account the limitations and constraints of the RNAV system.

When P-RNAV is subsequently mandated, the underlying conventional procedure may be withdrawn leaving a stand-alone RNAV procedure.

The RNP-RNAV procedures of paragraph (e) are expected to be introduced initially to take advantage of the reduced obstacle clearance requirements associated with RNP<1 instrument procedures and RNP MASP compliant systems. They are expected to replace all RNAV procedures.

**CRM INSTRUCTOR ACCREDITATION INDUSTRY FORUM
TO BE HELD ON TUESDAY 20TH FEB. 2001 AT
AVIATION HOUSE, GATWICK**

Please complete and return as soon as possible

Name: _____

Address: _____

Phone: _____ **Fax:** _____ **e-mail:** _____

Car Reg: _____

Registration & Coffee in Atrium @ 1000 hrs

Conference Starts @ 1030 hrs

Lunch 1230 - 1330 hrs

Afternoon Refreshments 1445 hrs

Please return completed form to:

Mrs Pat King
Civil Aviation Authority
Flight Operations Standards
Aviation House
Gatwick Airport South
West Sussex
RH6 OYR

**ALL REGISTRATION FORMS TO BE RECEIVED BY
FRIDAY 9TH FEBRUARY.**