International Civil Aviation Organization

ICAO New Flight Plan Format Study Group (INFPL STG)

Fifth Meeting (Cairo, Egypt, 03 - 05 September 2012)

Agenda Item 4: Strategy and Action Plan for the Implementation of INFPL in the MID Region

GUIDANCE FOR INDICATING CNS CAPABILITIES IN THE INFPL

(Presented by the Secretariat)

SUMMARY

This paper provides information on the guidance for indicating CNS capabilities in the INFPL developed by EUR Region.

Action by the meeting is at paragraph 3.

REFERENCES

- EUR FPL 2012 TF Report

1. INTRODUCTION

1.1 The sixth meeting of the EUR FPL2012 flight plan Task Force was held at EUROCONTROL on 24 April 2012. The meeting concentrated on the testing activities detailed deployment planning and awareness/notification activities.

2. DISCUSSION

2.1 The meeting may recall the issue related to indicating Performance Based Navigation (PBN) capabilities in the ICAO Flight Plan form (FPL). The Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444) flight planning provisions, which will become effective 15 November 2012, require descriptors for PBN capability to be inserted into the PBN/ indicator in Item 18. A maximum of 8 entries (not more than 16 characters) may be inserted into PBN/.

2.2 Noting the above limitations, ICAO-Eurocontrol FPL2012 flight plan Task Force has developed guidance material to assist those who provide flight plans or flight data to States in the ICAO European (EUR) Region. This guidance relates to indicating Communications, Navigation and Surveillance (CNS) capabilities in the flight plan.

2.3 The guidance developed by the FPL2012 flight plan Task Force is at **Appendix A** to this working paper, will assist operators to provide the necessary information without exceeding this limitation.

2.4 The meeting may wish to note that the guidance document might be useful to stakeholders in our Region, as well, taking into account that changes would be required to adapt to our regional needs to support harmonization of Item 10 and 18 handling.

2.5 Based on the above, the meeting may wish to agree to the following Draft Conclusion:

CONCLUSION 5/X: GUIDANCE TO SUPPORT HARMONIZATION OF ITEM 10 AND 18 HANDLING

That, guidance as at Appendix A to this working paper, be adopted to support the harmonization of item 10 and 18 in handling INFPL.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) review and update **Appendix A** to this working paper; and

b) agree to draft conclusion in para. 2.5

EUROCONTROL

Guidance

for the provision of NAV/COM/SUR information in the New ICAO 2012 Flight Plan

Introduction

Amendment 1 to PANS-ATM i.e. the 'FPL2012 changes', has provided a large number of new indications for the provision of Communication, Navigation and Surveillance (CNS) related capabilities and approvals within the flight plan. This paper offers guidance in the filing of CNS related information and in doing so addresses the two issues described in the following paragraphs.

Issues

The 2012 changes permit only 8 indications within the PBN element of Item 18. However, it is not uncommon for a flight to qualify for more than 8, leaving the pilot/company with a problem to solve and many unanswered questions.

In some cases, particularly within the surveillance domain, indications for a particular function have a comparable hierarchical relationship where it can be stated that inclusion of 'lower' indications is unnecessary when 'higher' ones are applicable to the flight. Indeed both systems and ATC staff may find that the inclusion of a 'lower' capability can be confusing when a 'higher' indication is also included for the flight. This guidance identifies these cases and, where appropriate, recommends only the inclusion of the 'higher' level capability.

Scope

This guidance material has been developed jointly by the European 2012 Task Force and the Navigation Sub-Group (NSG). The guidance it provides is therefore applicable within the European region. It has also been informally coordinated with some other regional task forces in an effort to achieve a common approach, and has received only positive responses. It is therefore hoped that other regions may well adopt the same guidance.

Guidance

Firstly, it is worth remembering :

- that the current P-RNAV Item 10a code will no longer exist;
- that the meaning of the Item 10a code 'R' will change from indicating B-RNAV to indicating PBN certification and operational approval;
- that specific PBN capabilities are to be amplified in Item 18;
- that flight plans will be rejected if R is filed in Item 10a and no PBN information is filed in Item 18.

1. Filing Navigation Capability (Item 10a and Item 18 PBN/)

The process to identify, consolidate and file the appropriate capability and equipment indications in the FPL have been broken down into the following 5 steps:

Step 1	**Identify the PBN NAV spec "approvals" held for each phase of flight (from Oceanic to Approach)**
Step 2	**File "R" for PBN in Item 10**
Step 3	**Enter "PBN/" in Item 18 and apply the guidance to reduce the number of indicators in Item 18 PBN (max 8)**
Step 4	**If more than 8 indicators remain, identify those considered least relevant to the flight and insert them within Item 18 under NAV/**
Step 5	**Identify the specific NAV equipment supporting each capability and file in Item 10 thereby ensuring conformity with the content of Item 18 PBN**

Step 1 Identify all the relevant PBN codes (if any) per flight phase

		All permited sensors	GNSS	DME/DME	VOR/DME	DME/DME/IRU (or INS/IRS for B5)	LORAN
Oceanic	RNAV 10	A1					
	RNP 4	L1					
En-Route	RNAV 5	B1	B2	B3	B4	B5	B6
	RNAV 2	C1	C2	C3		C4	
	RNAV 1	D1	D2	D3		D4	
Terminal	RNAV 1 (*)	D1	D2	D3		D4	
	RNP 1	O1	O2	O3		O4	
Final	RNP APCH	S1					
	RNP APCH with Baro VNAV	S2					
	RNP AR APCH with RF	T1					
	RNP AR APCH without RF	T2					

Note: P-RNAV is to be filed as RNAV 1. However, as P-RNAV is not exactly the same as RNAV 1 operators have a duty of care to ensure they meet RNAV 1 in other ICAO regions. See ICAO Doc. 9613 for clarification.

Step 2 If the flight qualifies for one or more of the codes/capabilities identified under Step 1, insert the indicator 'R' in Item 10a.

Step 3 Apply the following guidance to reduce the number of PBN codes.

RNAV 5 (B-RNAV):

- Insert only B1 if the flight qualifies for all of the following: B2, B3, B4, B5.
- Insert B6 if the flight qualifies by using LORAN C.

RNAV 2, RNAV 1 and **RNP 1**:

- Insert C4, D4 or O4, as appropriate, if the flight qualifies via DME/DME and DME/DME/IRU
  e.g. file C4 if both C3 and C4 apply, file D4 if both D3 and D4 apply, etc.
- Insert only C1, D1, O1, as appropriate, if "all sensors and IRU" capable
  e.g. file C1 if both C2 and C4 apply, file D1 if both D2 and D4 apply, etc.

RNP APCH:

- Insert either S1 or S2, subject to capability

RNP AR APCH:

- Insert either T1 or T2, subject to capability

Step 4 If having applied the guidance provided in Step 3 there are still more than 8 PBN codes remaining:

- Identify the capabilities considered to be the least relevant to the flight;
- Insert them under Item 18 within the NAV/ element;
- Insert the letter 'Z' in Item 10a.

For example, the codes relating to long range Oceanic capabilities (A1, L1) will not be a priority if the flight will take place entirely within European continental airspace. Inclusion of an RNP APCH capability will not be a priority if none of the destination or alternate aerodromes provide such a procedure.

Step 5 Identify the navigation equipment used in achieving the capabilities indicated under PBN and ensure they are included in Item 10a.

For any PBN capability:

- If 'all sensors' or GNSS is filed then 'G' must be present in Item 10a;
- If 'all sensors' or DME/DME is filed then 'D' must be present in Item 10a;
- If 'all sensors' or INS/IRU is filed then 'I' must be present in Item 10a;
- If DME/DME/IRU is filed then 'D' and 'I' must be present in Item 10a.

For RNAV 5 capability:

- If filing B1or B4 then 'O' or 'S' and 'D' must be present in Item 10a.

The table in **Attachment A** provides an indication of the navigation equipment by which a PBN capability is achieved.

2. Filing Surveillance (SUR) Capability (Item 10b)

Transponder Modes A, C & S

- Insert only one of the published indicators, as appropriate.

  For example, if the aircraft is capable of Mode S including aircraft identification, pressure-altitude and enhanced surveillance capability only the letter 'H' is required, there is no need to include 'S', 'C' or 'A'.

ADS-B

- Insert either B1 or B2
  and/or
- Insert either U1 or U2
  and/or
- Insert either V1 or V2

ADS-C

- Insert D1 and/or G1

EXAMPLE

An example FPL as filed today, in PRESENT Format:

```
(FPL-SIA317-IS
-A388/J-SDHIJPRWXYZ/SD
-EGLL1030
-N0454F230 DVR L9 KONAN/N0483F310 UL607 FERDI/N0486F330 UL607 AMASI
 UM149 BOMBI UL984 PADKA L984 SKAVI/N0489F350 L984 DIBED/K0899F350
 UL984 NM UM991 OLGIN/K0900F350 B494 INSER/K0913F370 B494 MKL B491
 BISNA/N0487F370 M23 MARAL/K0905F370 B450 BIBIM N644 ABDAN B371
 LEMOD/N0496F370 N644 PAVLO/N0497F370 N644 DI M875 BUTOP/N0493F390
 M875 KAKID M770 BUBKO/M084F390 M770 RAN/N0485F390 M770
 GOLUD/M082F370 M751 VPK/N0481F370 B469 PADLI/N0479F350 B469 BIKTA
 PASPU1A
-WSSS1202 WSAP
-EET/EBUR0016 EDVV0035 EDUU0036 LKAA0100 EPWW0124 UKLV0145 UKBV0207
 UKDV0232 URRV0257 UBBA0406 UTAK0419 UTAA0444 UTAV0516 OAKX0534
 OPLR0610 VIDF0640 VABF0741 VECF0744 VYYF0921 VTBB1027 WMFC1109
 WSJC1200 REG/9VSKJ SEL/BPKS OPR/SIA NAV/RNP1 RNP4 RNAV1 RNAV2
 RNAV5 RNAV10 DAT/SVM RMK/ADSB ACASII  EQUIPPED DOF/120601
 ORGN/WSSSSIAX)
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The following table shows the NEW capability indications applicable to the flight (PRESENT indications are not repeated) and the consolidated result after application of the guidance material:

	Capability	Designator	After Consolidation
Item 10a	CPDLC ATN VDL Mode 2	J1	J1
	CPDLC FANS 1/A SATCOM (INMARSAT)	J5	J5
Item 10b	Transponder Mode S including aircraft ident, pressure altitude and enhanced surveillance	H	L
	Transponder Mode S including aircraft ident, pressure altitude, extended squitter (ADS-B) and enhanced surveillance	L	
	ADS-B with dedicated 1090MHz ADS-B 'out' and 'in' capability	B2	B2
Item 18	**PBN/**		
Phase of Flight			
Oceanic/Remote Continental	RNAV10	A1	A1
	RNP4	L1	L1
Continental En-Route	RNAV5 GNSS	B2	B1
	RNAV5 DME/DME	B3	
	RNAV5 VOR/DME	B4	
	RNAV5 INS	B5	
Continental En-Route & Terminal	RNAV2 GNSS	C2	C1
	RNAV2 DME/DME/IRU	C4	
	RNAV1 GNSS	D2	D1
	RNAV 1 DME/DME/IRU	D4	
Terminal only	RNP1 GNSS	O2	O1
	RNP1 DME/DME/IRU	O4	
Approach	RNP APCH with BARO-VNAV	S2	S2

The resultant NEW format FPL having applied the guidance material:

(FPL-SIA317-IS
-A388/J-GSDHIJ1J5RWXY/B2L
-EGLL1030
-N0454F230 DVR L9 KONAN/N0483F310 UL607 FERDI/N0486F330 UL607 AMASI
UM149 BOMBI UL984 PADKA L984 SKAVI/N0489F350 L984 DIBED/K0899F350
UL984 NM UM991 OLGIN/K0900F350 B494 INSER/K0913F370 B494 MKL B491
BISNA/N0487F370 M23 MARAL/K0905F370 B450 BIBIM N644 ABDAN B371
LEMOD/N0496F370 N644 PAVLO/N0497F370 N644 DI M875 BUTOP/N0493F390
M875 KAKID M770 BUBKO/M084F390 M770 RAN/N0485F390 M770
GOLUD/M082F370 M751 VPK/N0481F370 B469 PADLI/N0479F350 B469 BIKTA
PASPU1A
-WSSS1202 WSAP
-PBN/A1L1B1C1D1O1S2 DOF/120601 REG/9VSKJ EET/EBUR0016
EDVV0035 EDUU0036 LKAA0100 EPWW0124 UKLV0145 UKBV0207 UKDV0232
URRV0257 UBBA0406 UTAK0419 UTAA0444 UTAV0516 OAKX0534 OPLR0610
VIDF0640 VABF0741 VECF0744 VYYF0921 VTBB1027 WMFC1109 WSJC1200
SEL/BPKS OPR/SIA ORGN/WSSSSIAX RMK/ACASII EQUIPPED)

Note:

- the PBN/ indication contains 7 designators which is within the limit allowed by PANS-ATM.
- Field 10b contains one surveillance indication as oppose to the potential ‘S’, ‘H’, ‘L’
- Field 10a contains the applicable designators and, due to the addition of the ‘G’, is now consistent with the capabilities provided in PBN
- removal of the unnecessary NAV/ and DAT/ indications in Field 18 also required removal of the ‘Z’ from Field 10a.
- removal of the unnecessary ‘ADSB’ text from within RMK/.

Attachment A

The table reflects the sensors by which a PBN qualification is achieved.
This is a tool to determine the minimum requirement for Item 10 as a function of the content of Item 18.

Item 18 (PBN/ ...)				Item 10 (nav related aspects only)													
				GBAS **A**	LPV **B**	LORAN **C**	DME **D**	ADF **F**	GNSS **G**	Inerty **I**	MLS **K**	ILS **L**	VOR **O**	PBN approved **R**	TACAN **T**	Standard (VHF RTF/ VOR / ILS) **S**	
RNAV 10				Precision Approach							Precision Approach	Precision Approach					
	A1								G*	I*				R			* either G and/or I
RNAV 5																	
	B1	ALL					D		G	I			O*	R		S*	* either O or S
	B2	G							G					R			
	B3	D/D					D							R			
	B4	V/D					D						O*	R		S*	* either O or S
	B5	I								I				R			
	B6	LORAN				C								R			
RNAV 2																	
	C1	ALL					D		G	I				R			
	C2	G							G					R			
	C3	D/D					D							R			
	C4	D/D/I					D			I				R			
RNAV 1																	
	D1	ALL					D		G	I				R			
	D2	G							G					R			
	D3	D/D					D							R			
	D4	D/D/I					D			I				R			
RNP 4																	
	L1								G					R			
(B-)RNP 1																	
	O1	ALL					D		G	I				R			
	O2	G							G					R			
	O3	D/D					D							R			
	O4	D/D/I					D			I				R			
RNP APCH																	
RNP APCH (LNAV)	**S1**	GNSS							G					R			
RNP APCH LNAV/VNAV	**S2**	GNSS+Baro							G					R			
RNP AR																	
with RF	**T1**								G					R			
without RF	**T2**								G					R			
RNP APCH (LPV)		GNSS+SBAS			B				G								+ Item 18 NAV/ SBAS