Sam Buckwalter

From:	CHAIX Philippe <philippe.chaix@fr.thalesgroup.com>
Sent:	Thursday, October 09, 2014 8:27 AM
To:	Sam Buckwalter
Subject:	TR: Thales action about leg types preceding an IF leg

Hi Sam,

I used your previous e-mail address. I understand why my proposal was not in the additional working papers.

Sorry for the inconvenience.

See you in Tucson,

Philippe.

De : CHAIX Philippe
Envoyé : lundi 6 octobre 2014 13:02
À : sbuckwal@arinc.com
Objet : Thales action about leg types preceding an IF leg

Hi Sam,

Here is my proposal following the discussion about leg types before an IF leg.

Extract from last meeting report :

Leg Sequencing Table
> Philippe Chaix, Thales, reported at the previous meeting in Phoenix, Draft 2 of Supplement 21 was modified to allow leg types before an IF leg (Attachment 17). Thales would like to re-open this decision and to clarify the replacement solution if the following cases remain removed: CA, CD, CR, FA, VA, VD, VI, and VR before an IF leg.
> Based on the discussion, the group recommended that a formal proposal be submitted at the next meeting.
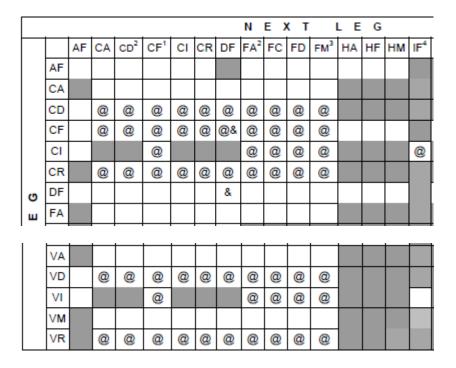
Evolution from 424-20 to 424-21 (draft) :

1) Extract from Arinc 424-20 leg sequencing table:

		AF	CA	CD^2	CF^1	CI	CR	DF	FA^2	FC	FD	FM^3	HA	HF	HM	IF
	AF															
	CA															
	CD		@	@	@	@	@	@	@	@	@	@				@
	CF		@	@	@	@	@	@&	@	@	@	@				
	CI				@				@	@	@	@				@
	CR		@	@	@	@	@	@	@	@	@	@				@
G	DF							&								
E	FA															

	AF	CA	CD[2]	CF[1]	CI	CR	DF	FA[2]	FC	FD	FM[3]	HA	HF	HM	IF[4]
VA															@
VD		@	@	@	@	@	@	@	@	@	@				@
VI				@				@	@	@	@				@
VM															
VR		@	@	@	@	@	@	@	@	@	@				@

2) Extract from Arinc 424-21 draft 3 leg sequencing table:

		N E X T	L E G												
		AF	CA	CD[2]	CF[1]	CI	CR	DF	FA[2]	FC	FD	FM[3]	HA	HF	HM	IF[4]
L E G	AF															
	CA															
	CD		@	@	@	@	@	@	@	@	@	@				
	CF		@	@	@	@	@	@&	@	@	@	@				
	CI				@				@	@	@	@				@
	CR		@	@	@	@	@	@	@	@	@	@				
	DF							&								
	FA															

	AF	CA	CD[2]	CF[1]	CI	CR	DF	FA[2]	FC	FD	FM[3]	HA	HF	HM	IF[4]
VA															
VD		@	@	@	@	@	@	@	@	@	@				
VI				@				@	@	@	@				
VM															
VR		@	@	@	@	@	@	@	@	@	@				

Modifications since 424-20 : Only CI and VI are allowed before an IF leg. The following leg types are no more allowed: CA, CD, CR, FA, VA, VD, VM, VR.

Content of worldwide navigation databases
Worldwide coverage data houses currently deliver databases with one to several hundred cases where CA, CD, CR, FA, VA, VD, VM, or VR are used before an IF leg.

Cases where removed sequences (XX to IF leg) are necessary:
These cases are described in Attachment 5 §3.12 of Arinc 424-20 :

"*3.12 The IF leg type will normally be used in an initial sequence of a procedure. The IF leg type, followed by a TF leg type will be used in other than the first sequence if such is required to correctly code the procedure as published by the source documentation when one or more of the following criteria are met*
* *there is no VHF Navaid available for use as the Recommended Navaid that would permit coding with other leg types.*
* *the leg to be intercepted will have a distance of more than 60 NM between the point of intercept and the terminating fix.*"
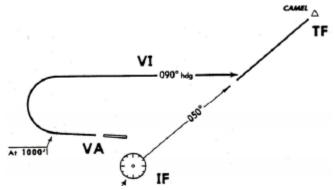
The last sentence of 3.10 refers to an example (and only an example, see figure below) when an intercept leg must be coded :

"*This will allow a segment to be constructed, from one fix to the next fix, using an intercept where coding would otherwise not be possible. See the sample use of this rule below.*"

In Arinc 424-21 draft 3, this last sentence has been modified as follows. "using an intercept" is removed. This wording is better, and reflects current coding where not only CI and VI are allowed.

"*This will allow a segment to be constructed, from one fix to the next fix, where coding would otherwise not be possible. See the sample use of this rule below.*"

The illustration of rule 3.12 includes the following figure :

A coding example is provided when departing from runway 29, with a CA – VI – IF – TF sequence.

A departure from runway 11 (in another SID) could be coded VA – IF – TF, as the end of the VA leg can occur before or after the IF-TF segment.

There are many cases where a CF leg cannot be used because the corresponding fix is too far (more than 60 NM, and CF course generally coded with a resolution of 1°). I do not provide illustrations because of copyrights on the corresponding charts.

Proposal :

Considering that :
1) the rule 3.12 is still part of Arinc 424-21 draft 3;
2) the case where the case "the leg to be intercepted will have a distance of more than 60 NM between the point of intercept and the terminating fix" is not addressed in Arinc 424-21 draft 3 out of following a CI or VI leg
3) There are cases where a CI or VI leg must not or should not be inserted between a CA, CD, CR, FA, VA, VR, VD, or VM and an IF – TF sequence

I propose to :
1) Go back to Arinc 424-20 leg sequencing table for the column "IF" (i.e. add CA, CD, CR, FA, VA, VD, VM, VR as possible previous leg)
2) Keep Arinc 424-21 draft Note 4 for the IF column, still applicable with this proposal : **"If the IF leg is not the beginning leg of the transition, such as an IF embedded leg, the next allowable next leg can only be TF. See Rule 3.12 in this attachment which describes the allowable use."**
3) Keep 3.12 of Arinc 424-21 draft 3 attachment 5 as it is, because the notion of interception has been removed.

Best regards

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