International Civil Aviation Organization

Regional Aviation Safety Group - Middle East

Fourth Meeting (RASG-MID/4)
(Jeddah, Saudi Arabia, 30 March - 1 April 2015)

Agenda Item 3: Regional Performance Framework for Safety

MID SAFETY ADVISORY-GUIDANCE MATERIAL RELATED TO CALL SIGN SIMILARITY

(Presented by IATA)

SUMMARY

The Call Sign Confusion Ad-hoc Working Group (CSC WG/1) meeting developed Draft Safety Enhancement Initiative (SEI) and Detailed Implementation Plans (DIPs) related to call sign similarity/confusion of which DIP 4 calls for the development of guidance material related to call sign similarity, including call sign rules. This paper presents a draft Safety Advisory on Guidance material related to call sign similarity and covering the action referred to in DIP 4.

Action by the meeting is at paragraph 3.

REFERENCES

- ICAO Annex 10
- ICAO Doc4444
- CSC WG/1 Report
- Eurocontrol and Industry best practices

1. INTRODUCTION

1.1 Call sign similarity and confusion has been identified as a safety issue by the Second Meeting of the Middle East Regional Aviation Safety Group (RASG-MID/2) (Abu Dhabi, UAE, 12 – 14 November 2012).

1.2 The MIDANPIRG Steering Committee (MSG/4) recognized the urgency of implementing mitigation measures for the call sign confusion and similarity and agreed to establish a Call Sign Confusion Ad-hoc Working Group (CSC WG) to develop solutions to mitigate the risk associated with call sign confusion and similarity.

2. DISCUSSION

2.1 The First Meeting of the CSC WG/1 was successfully held at the Crowne Plaza Hotel, Abu Dhabi, from 16 to 18 February 2015.

2.2 The meeting recognized the need for guidance material and provisions related to call sign similarity and confusion and that a global solution is required to mitigate the risk associated with call sign confusion.

2.3 The meeting developed Draft Safety Enhancement Initiative (SEI) and Detailed Implementation Plans (DIPs) related to call sign similarity/confusion to be presented to the RASG-MID/4 meeting (Jeddah, Saudi Arabia, 30 March – 1 April 2015) for endorsement.

2.4 MAEP interim PMO was tasked per DIP 4 to develop guidance material related to call sign similarity, including call sign rules, taking into consideration the Europe experience.

2.5 Accordingly the interim PMO developed a draft RASG-MID Safety Advisory at **Appendix A** to this Working paper which provides a set of guidelines and similarity rules for use by airline operators and air traffic controllers in order to resolve to the extent possible the call sign confusion reported cases.

3. ACTION BY THE MEETING

3.1 The meeting is invited to review, amend, as deemed necessary and endorse the Draft Safety Advisory at **Appendix A**.

APPENDIX A

Regional Aviation Safety Group-Middle East (RASG-MID)

RASG-MID SAFETY ADVISORY – XXX (RSA-xxx)

Guidance material related to call sign similarity

Introduction:

Call sign similarity and confusion has been identified as a safety issue by the Second Meeting of the Middle East Regional Aviation Safety Group (RASG-MID/2) (Abu Dhabi, UAE, 12 – 14 November 2012).

The MIDANPIRG Steering Committee (MSG/4) recognized the urgency of implementing mitigation measures for the call sign similarity and confusion and agreed to establish a Call Sign Confusion ad-hoc Working Group (CSC WG) to develop solutions to mitigate the risk associated with call sign confusion. The CSC WG developed Draft Safety Enhancement Initiative (SEI) and Detailed Implementation Plans (DIPs) related to call sign similarity/confusion of which DIP 4 item 2 calls for the development of call sign similarity rules and guidance material.

The purpose of this Safety Advisory is to develop a clear set of guidelines and similarity rules for airline operators and air traffic controllers that will prevent to the extent possible the call sign confusion.

Description

An aircraft call sign is a group of alphanumeric characters used to identify an aircraft in air-ground communications. The rules governing the use of aircraft call signs are laid down in ICAO Annex 10: Aeronautical Communications, Volume II - Communication Procedures, Chapter 5. Relevant paragraphs are summarized below.

Three different types of aircraft call sign may be encountered (see table below), as follows:

Type (a) The characters corresponding to the registration marking of the aircraft (e.g. ABCDE). The name of the aircraft manufacturer or model may be used as a prefix (e.g. Airbus ABCDE);

Type (b) The telephony designator of the aircraft operating agency, followed by the last four characters of the registration marking of the aircraft (e.g. Rushair BCDE);

Type (c) The telephony designator of the aircraft operating agency, followed by the flight identification (e.g. Rushair 1234).

Examples of Full Call Signs and Abbreviated Call Signs				
	Type (a)		Type (b)	Type (c)
Full Call Sign	ABCDE	Airbus ABCDE	Rushair BCDE	Rushair 1234
Abbreviated Call Sign	ADE or ACDE	Airbus DE or Airbus ABDE	Rushair DE or Rushair BDE	No abbreviated form

The full call sign must be used when establishing communications. After satisfactory communication has been established, abbreviated call signs may be used provided that no confusion is likely to arise; however, **an aircraft must use its full call sign until the abbreviated call sign has been used by the ground station**.

Most airline call signs belong to type (c) for which there is no abbreviation. An aircraft is not permitted to change its call sign during flight, **except** temporarily on the instruction of an air traffic control unit in the interests of safety.

In order to avoid any possible confusion, when issuing ATC clearances and reading back such clearances, controllers and pilots must always add the call sign of the aircraft to which the clearance applies.

The use of similar call signs by aircraft operating in the same area and especially on the same RTF frequency often gives rise to potential and actual flight safety incidents. This hazard is usually referred to as "call sign confusion".

ICAO Doc4444 Change of radiotelephony call sign for aircraft:

An ATC unit may instruct an aircraft to change its type of RTF call sign, in the interests of safety, when similarity between two or more aircraft RTF call signs are such that confusion is likely to occur.

Any such change to the type of call sign shall be temporary and shall be applicable only within the airspace(s) where the confusion is likely to occur.

To avoid confusion, the ATC unit should, if appropriate, identify the aircraft which will be instructed to change its call sign by referring to its position and/or level.

When an ATC unit changes the type of call sign of an aircraft, that unit shall ensure that the aircraft reverts to the call sign indicated by the flight plan when the aircraft is transferred to another ATC unit, except when the call sign change has been coordinated between the two ATC units concerned.

The appropriate ATC unit shall advise the aircraft concerned when it is to revert to the call sign indicated by the flight plan.

The following are some examples of the more common causes for call sign confusion:

- Airlines allocate commercial flight numbers as call-signs; these are normally consecutive and therefore similar (e.g. RUSHAIR 1431, RUSHAIR 1432, etc.)
- Airlines schedule flights with similar call signs to be in the same airspace at the same time.
- Call signs coincidentally contain the same alphanumeric characters in a different order (e.g. AB1234 and BA 2314).
- Call signs contain repeated digits (e.g. RUSHAIR 555).

Recommended Solutions

- Many larger airlines operate call sign de-confliction programmes. These involve reviewing company call signs to ensure that aircraft with similar call signs are not likely to be routinely in the same airspace at the same time, and a process to systematically resolve ongoing issues arising from reports of similar call signs from their flight crew, ANSPs or other operators
- Airline Operators with high flight densities in particular airspace should consider routinely using a combination of numeric and alphanumeric call sign formats.
- Airline Operators should observe the following guidance in selecting call signs:
    - Avoid the use of similar call signs within the company;

- Where practicable, proactively co-ordinate with other operators to minimize similar numeric and alphanumeric elements of call signs;
- Avoid call signs with a four-number sequence; all-numeric call signs should be limited to a maximum of three digits;
- Do not use the same digit repeated more than once (e.g. RUSHAIR 555);
- If letter suffixes are to be used with a preceding number sequence, limit the full string to a maximum of four alphanumeric components and, to the extent possible, coordinate letter combinations with other airspace and airport users;
- Do not use alphanumeric call signs which have their last two letters as the destination's ICAO location indicator (e.g. RUSHAIR 25LL for a flight inbound to London Heathrow);
- If similarly-numbered call signs are unavoidable within a company, allow a significant time (at least 3 hours at any shared-use vicinity) and/or geographical split between aircraft using them;
- Do not use similar/reversed digits/letters in alphanumeric call-signs (e.g. RUSHAIR 87MB and RUSHAIR 78BM).
- For short haul flights, avoid using number sequences for particular routes which begin the day with.01 and then continue sequentially through the day.

Call Sign Similarity 'Rules'

Agreement on and publication of 'Similarity' is a relative term and means different things to different people. The CSC WG/1 recommended the use of the call sign similarity rules of EUROCONTROL; this was later endorsed by the RASG-MID/4 meeting. The following table provides details on the similarity rules adopted by the MID Region.

MID Region Call Sign Similarity Rules

Based on the EUROCONTROL - OPS NM18.5 (currently 21 rules implemented in the EUROCONTROL Call Sign Similarity Tool (CSST) OPS as Global recommended rules).

The call sign similarity rules are divided into three categories: Level One, Two and Three.

SIMILARITY RULES LEVEL ONE

Level One rules apply to a single call sign (entity conflict).

1	Acceptable ATC Flight Formats	n,nA,nAA,nn,nnA,nnAA,nnn,nnnA,nnnn
2	Avoid Triple Repetition	444, 1444
3	FL Values Avoid Use of 200-480 at end	ABC1350, ABC200
4	Avoid Use of the letter S at the end of a Flight ID (To avoid confusion with the number 5 on flight strip or radar display)	ABC13S
5	Include anywhere O, I (Avoid confusion with 0 (zero) and 1 One on flight	ABC12**O**B, ABC456**I**

	strip or radar display)	
6	UKNATS Local Rule (Avoid PH, PK, PD, PF at end of call sign in airspace EGP*)	ABC34PH
7	UKNATS Local Rule (Avoid AC,BB, CC,FF, GW, HI, JJ, KK, LC, LF,LL at end of call sign landing at aerodrome EG*)	ABC64LL destination EG*
8	Avoid QNH_QFE values HIGH 1000-1030	ABC1000, ABC1013
9	Avoid QNH-QFE LOW 985-999	ABC985, ABC986
10	Avoid exact match of 28G	ABC28G request from SENASA Spain

SIMILARITY RULES LEVEL TWO (applying to flights which overlap)

Level Two rules apply to flights which overlap in time and space according to the buffer times and airspace profile.

1	Avoid Identical Bigrammes		IB345BB and AF231BB
2	Identical Final Digits	(used with parameter 0) Conflict when the last 3 digits of CS1 are equal to the last 3 digits of CS2. Note the difference with the normal identical final digits 3: whereas before AFR123A and AFR123B would not have been caught the new behaviour '0' will catch it. Conflict when the last 3 characters of CS1 and CS2 are digits and are equal.	
3	Avoid Identical Flight ID	To avoid same Flight ID being used or proposed twice in the schedule for different CFN's.	e.g. you cannot have CFN1234 = FIN12A CFN3655 = FIN12A. In the same schedule
4	Anagrams	Contains normal anagram behaviour plus: Conflict when the distinct characters of CS1 are present in CS2 and when the distinct characters of CS2 are present in CS1. Example AFR155A vs. AFR511A. Partial anagrams are also considered (4 v 4) 1180 v1008	123 v 321 4 v 444 12 v 612
5	Parallel Characters	a) parallel characters 3 e.g. 2365 vs 1365 or 1235 vs 1435 b) when length of CS1 = length of CS2: Identical Final Two characters (alpha or numeric) d) When: CS1 = 3 characters and CS2 = 4 characters, CS1 = 3 characters and CS2 = 5 characters,	

		CS1 = 4 characters and CS2 = 4 characters, CS1 = 4 characters and CS2 = 5 characters , CS1 = 5 characters and CS2 = 5 characters: • First character + last character equal in both CS + one more additional character in common e.g. (AFR1025 AFR1295), (AFR102A AFR12QA). • First character + second character equal in both CS + one more additional letter in common e.g. AFR102A AFR10AB. • When length CS1 is (3) and CS2 is (4): First character + second character equal + both CS contain at least one letter e.g. AFR10A and AFR10CD. e) When CS length 2 vs. 3 , 2 vs. 4, 2 vs. 5: • Conflict when the longest CS contains the CS length 2 e.g. AFR10D and AFR101B f). When CS length 2 vs. 2, 1 vs. 2, 1 vs. 3, • Conflict when both CS start with the same character or end with the same character Length 2 vs. 4 should only be a conflict when first 2 digits are identical and same position (example 12 vs. 1234 would be conflict but 12 versus 2134 is not a conflict).	
6	2 letter anagram	Avoid Call Signs having last two letters as anagram	ABC31BA vs. ABC56AB
7		Length 2 vs.: Length 3 with first and last symbol in common	4A v 41A
8		Length 3 vs. 3: one digit in common and same last letter	89A v 91A
9		Length 4 vs. Length 4: one digit and 1 letter in common (does not apply where bigrammes are involved ex. 56EV vs. 26AV)	123A v 516A

SIMILARITY RULES APPLYING TO ALL FLIGHT PAIRS

Level 3 rules apply even if flights don't overlap.

1	Same Flight ID needs same CFN	Similar to the avoidance of identical Flight ID rule above but applies to flights even when they don't overlap/conflict. This is to avoid the same Flight ID being used twice in the schedule for two different CFNs. Example, if you change FIN 2345 to Flight ID FIN45G then the tool will raise a warning if you try	

		to again use FIN45G for another CFN e.g. FIN 6555 and FIN45G will raise warning because you already used it for FIN2345.	
2	Unique Numeric Flight ID	A flight with a numeric Flight ID and having a CFN different from its Flight ID cannot have a Flight ID equal to the CFN of another flight in the schedule	CFN 1234 ATC Flight ID **565** CFN **565** ATC Flight ID 45Y

Buffer Times: Aerodrome 10 minutes – 40 minutes, Airspace arrival time 10 minutes- 40 minutes.

References

- ICAO Doc's
- Eurocontrol
- Industry best practice

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