



International Civil Aviation Organization

MIDANPIRG Air Traffic Management Sub-Group

Third Meeting (ATM SG/3)
(Cairo, Egypt, 22 – 25 May 2017)

Agenda Item 6: ATM Safety Matters

CALL SIGN CONFUSION INITIATIVE

(Presented by IATA)

SUMMARY

The aim of this paper is to provide an update on the MAEP project addressing regional Call Sign Confusion/Similarity as it relates to commercial flights.

Action by the meeting is at paragraph 3.

REFERENCES

- ICAO State Letter Ref.: AN 6/34-14/332
- ICAO State Letter Ref.: AN 6/34-16/173
- MAEP SC/1 Report
- MAEP Board/2 Report
- MIDANPIRG/15 Report
- MIDANPIRG/16 Report
- RASG-MID/5 Report
- RASG-MID SAFETY ADVISORY – 04

1. INTRODUCTION

1.1 The use of similar call signs by aircraft operating in the same area and on the same radio frequency has potential to flight safety incidents, also known as “call-sign conflicts” or “call-sign confusion”. The danger of an aircraft taking and acting on a clearance intended for another aircraft due to call sign confusion is a common occurrence.

2. DISCUSSION

2.1 The meeting may wish to recall that a progress report on the implementation of the MAEP Call Sign Confusion (CSC) Initiative was presented to the MIDANPIRG/16 meeting, highlighting the developments and achievements since the establishment of the Initiative in 2014, as well as the recommendations for the next steps.

2.2 The MIDANPIRG/16 meeting noted with appreciation the progress achieved, and that the MID Region experience has been considered by the adjacent ICAO Regions. The meeting commended the work and efforts of the CSC Initiative Team and the support provided by EUROCONTROL.

2.3 The MIDANPIRG/16 meeting recalled that the Initiative is implemented in two phases:

- Phase one: assessing the acceptance of the alphanumeric call signs for commercial flights i.e. (UAE20AA) by the ATM systems, aerodromes, authorities providing overflight and landing/departure permissions, etc.
- Phase two: identifying and de-conflicting current and future call sign similarities within the Region.

2.4 The MIDANPIRG/16 meeting urged States to follow-up with their operators to implement the procedures for the de-conflicting of call sign similarities in coordination with the CSC Initiative Team.

2.5 The MIDANPIRG/16 meeting noted that additional airlines joined Etihad Airways in the testing of the flight plans starting from 2017 winter schedule. Accordingly, States were invited to cooperate and report feedback in order to ensure successful implementation.

2.6 The MIDANPIRG/16 meeting urged States to report call sign similarity/confusion cases using the template at **Appendix A** to the following email addresses: MIDCSC@icao.int and MENACSSU@iata.org, which will allow the CSC Initiative Team to follow-up with the concerned airline(s) to resolve the issue in a timely manner.

2.7 The MIDANPIRG/16 meeting reviewed the progress report including the recommended actions presented by the CSC Initiative Team. Accordingly, the meeting agreed that the report be presented to the ATM SG/3 meeting, for appropriate action.

2.8 The meeting was apprised of UAE's experience related to the establishment of the National UAE GCAA Call Sign Similarity Working Group to manage and mitigate the safety risks associated with call sign similarities. It was highlighted that the Working Group provided an effective platform to discuss and propose solutions for Call Sign Similarity/Confusion involving all stakeholders. It assists to determine and recommend the best course of action in order to minimize the risk of call sign confusion and to propose procedures for reporting and managing occurrences when call sign similarity leads to actual call sign confusion.

2.9 The MIDANPIRG/16 meeting thanked UAE for the Leaflets on Call Sign Similarity, which were distributed during the meeting, and encouraged States to consider UAE's experience related to the establishment of a National Working Group to address call sign similarity issues.

2.10 The meeting may wish to recall that ICAO MID Office issued the RASG-MID Safety Advisory-04 (RSA-4) related to CSC as at **Appendix B1**. The purpose of the RSA-04 is to provide a clear set of guidelines and call sign similarity rules for Aircraft Operators (AOs) and Air Traffic Controllers (ATC) that could reduce the probability of call sign similarity/confusion occurrence. Based on the coordination with EUROCONTROL and the latest developments, a revised set of the CSC rules is presented at **Appendix B2**.

2.11 The meeting may wish to note the Recommendations at **Appendix C**, which would support the Initiative in meeting its objectives.

2.12 It is to be highlighted that coordination between CSC stakeholders is ongoing in order to ensure harmonized implementation of the CSC rules at the regional and inter-regional levels. One example was addressing and assessing the impact of the AIC issued by India at **Appendix D**.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) review the revised set of rules at **Appendix B** and agree on the amendment of the RSA-04 to include the revised CSC rules;
- b) review and take action related to the proposed recommendations/actions at **Appendix C**; and
- c) encourage States to:
 - i. support the CSC initiatives ensuring effective cooperation during implantation phase;
 - ii. follow-up with their operators to implement the procedures for the de-conflicting of call sign similarities in coordination with the CSC Initiative Team; and
 - iii. report call similarity to the following email addresses: MIDCSC@icao.int and MENACSSU@iata.org, using the format at **Appendix A**.

APPENDIX A

Call Sign Similarity/Confusion Reporting Template

Case	Reporting ANSP or AO	Place of occurrence (Airport, sector, etc)	Date of occurrence (26/04/2013)	Time (UTC)	Call signs (one line for each)	Departure airport (ICAO 4-letter code)	Arrival airport (ICAO 4-letter code)	Type of aircraft (ICAO type desig)	Aircraft Operator (ICAO 3-letter code)	Type of Occurrence (CSS or CSC)	AO using CSST (YES or NO)
1											
2											
3											
4											
1											
2											



RASG-MID SAFETY ADVISORY – 04

(RSA-04)

May 2015

GUIDANCE MATERIAL RELATED TO CALL SIGN SIMILARITY

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Disclaimer

This document has been compiled by the MID Region civil aviation stakeholders to mitigate the risk associated with call sign confusion. It is not intended to supersede or replace existing materials produced by the National Regulator or in ICAO SARPs. The distribution or publication of this document does not prejudice the National Regulator's ability to enforce existing National regulations. To the extent of any inconsistency between this document and the National/International regulations, standards, recommendations or advisory publications, the content of the National/International regulations, standards, recommendations and advisory publications shall prevail.

TABLE OF CONTENTS

INTRODUCTION	4
DESCRIPTION	4
ICAO Doc4444 CHANGE OF RADIOTELEPHONY CALL SIGN FOR AIRCRAFT:.....	5
RECOMMENDED SOLUTIONS.....	5
CALL SIGN SIMILARITY 'RULES'	6
REFERENCES.....	9

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 call sign similarity rules for Aircraft Operators (AOs) and Air Traffic Controllers (ATC) that could reduce the probability of call sign similarity/confusion occurrence.

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 strip or radar display)	ABC12OB, ABC456I

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 <u>landing</u> 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:	

		<ul style="list-style-type: none"> • 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. <p>e) When CS length 2 vs. 3 , 2 vs. 4, 2 vs. 5:</p> <ul style="list-style-type: none"> • Conflict when the longest CS contains the CS length 2 e.g. AFR10D and AFR101B <p>f). When CS length 2 vs. 2, 1 vs. 2, 1 vs. 3,</p> <ul style="list-style-type: none"> • Conflict when both CS start with the same character or end with the same character <p>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).</p>	
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.	
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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
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Buffer Times: Aerodrome 10 minutes – 40 minutes, Airspace arrival time 10 minutes- 40 minutes.

REFERENCES

- ICAO Annex 10 and Doc 4444.
- Eurocontrol OPS NM18.5
- Industry best practice

APPENDIX B2

Call Sign Similarity Rules

Legend

Acceptable Format

Single AO Similarity Rule

Single Call Sign Similarity Rule

General Similarity Rules (Applicable to flights within a single AO schedule, i.e. AO ICAO designator remains the same)
The following similarity rules are recommended by the CSS User Group. The order within the following table is significant with the most critical rules at the top.

Name	Individual Rule Description	Special considerations for this rule	Examples		Rule ID
			Not acceptable	Acceptable	
C/S Format	Call Signs need to comply with the allowed formats (see ICAO Doc.4444 Field 7 (a), Aircraft Identification). Normal format: 3 letter ICAO AO designator followed by 1 to 4 alphanumeric characters (Flight Id).	The CSSUG have agreed that the following formats for the Flight Id should be adhered to: Pure numeric: n, nn, nnn, nnnn 1-final letter: nA, nnA, nnnA 2-final letters: nAA, nnAA	ABC 4B63, ABC F27	ABC 1, ABC 1234, ABC 23T, ABC 34TD	ZG00
Identical Final Digits	Checks for 2 identical final digits in the Flight Ids		ABC 234 vs ABC 534		AG62
Identical Bigrams	Checks for blocks of contiguous characters which form a bigram.		ABC 224 KF vs ABC 36 KF ABC 36 KF vs ABC 528 KF		AG67

Letters To Avoid	Some single letters may be easily confused with digits and are therefore best avoided.	Single letters, eg. “O” vs “0”, “I” vs “1”	ABC 841I, ABC 4600		ZG08
Anagrams	Checks for anagrams occurring within the Flight Ids		ABC 1368 vs ABC 1386 vs ABC 1638 vs ABC 1683 vs ABC 1836 vs ABD 1863 etc.		AG63
Identical Block Digits	Checks for Calls Signs which form blocks of contiguous identical characters which are: <ul style="list-style-type: none"> • the same length, or • 2 versus. 3 characters, or • 3 versus. 4 characters 		ABC 52 vs ABC 352 vs ABC 524 vs ABC 52L		AG64
Parallel Characters	Checks if characters composing the Call Signs form parallel alignment of identical characters.		ABC 41 vs ABC 401 vs ABC 4351		AG65
Identical Digit Roots	Checks for prefix blocks (roots) of identical digits.		ABC 57 vs ABC 573 vs ABC 5746		AG66
Identical Final Letter	Checks for Call Signs with identical final letter.		ABC 23L vs ABC 257L ABC 54L vs ABC 637L		AG68

B2-3

<p>Triple Repetition</p>	<p>A specific form of similarity where 3 digits are repeated within a Flight Id</p>	<p>With 3 repeated digits there is a risk of dropping one of the digits, which could cause confusion with a different Flight Id.</p>	<p>ABC 111, ABC 444</p>		<p><i>ZG09</i></p>
<p>Flight Level Values</p>	<p>A specific form of similarity where the Flight Id is equal to the digits used in a flight level communication.</p>	<p>ICAO Doc 8585 recommends that, wherever, practicable 0 and 5 should not be used as the final figure in ATC Call signs. Values 040, 050,390, 400, 410 may cause confusion with Flight levels, but this only applies to the format nnn</p>	<p>ABC 330, ABC 095</p>	<p>ABC 1320, ABC 50</p>	<p><i>ZG01</i></p>
<p>Any Runway Values</p>	<p>A specific form of similarity where a Flight Id is equal to the runway identifiers.</p>	<p>Combinations of numbers ranging from 01-36 (two digits only) followed by the letters L and R should be avoided. Only applicable to the format nn or nnA. Avoidance of the actual runway designators at departure and destination aerodromes is recommended.</p>	<p>ABC 36L, ABC 15, ABC 16R</p>		<p><i>ZG03</i></p>

CS= Call Sign n= number A = letter Flight ID= that part of the call sign after the 3 letter ICAO operator code.

Current OPS Software Release NM20.5 2017

There are **23** rules currently implemented in the Eurocontrol CSST (Call Sign Similarity Tool) application as Global recommended rules.

They 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	Triple Repetition	444, 1444
3	FL Values Avoid Use of 200-410 at end	ABC1 350 , ABC 200
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)	ABC13 S
5	Avoid anywhere O, I (Avoid confusion with 0 (zero) and 1 One on flight strip or radar display)	ABC12 OB , ABC456 I
6	United Kingdom (UKNATS) Local Rule (Avoid PH, PK, PD, PF at end of call sign in airspace EGP*)	ABC34 PH
7	United Kingdom (UKNATS) Local Rule (Avoid AC,BB, CC,FF, GW, HI, JJ, KK, LC, LF,LL at end of call sign <u>landing</u> at aerodrome EG*)	ABC64 LL 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 (Local Rule)	ABC28G request from SENASA Spain
11	Avoid last 2 letters of call sign equalling last 2 letters of ICAO destination code	Destination EBBR and call sign 35BR =capture

SIMILARITY RULES LEVEL TWO

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	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 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	<p>a) parallel characters 3 e.g. 2365 vs 1365 or 1235 vs 1435</p> <p>b) When length of CS1 = length of CS2 : Identical First or Final Two characters (alpha or numeric)</p> <p>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:</p> <ul style="list-style-type: none"> • 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 3 and CS2 4: First character + second character equal + both CS contain at least one letter e.g. AFR10A AFR10CD. 	

		<p>e) When CS length 2 versus 3 , 2 versus 4, 2 versus 5:</p> <ul style="list-style-type: none"> Conflict when the longest CS contains the CS length 2 e.g. AFR10D AFR101B <p>f). When CS length 2 versus 2, 1 versus 2, 1 versus 3,</p> <ul style="list-style-type: none"> Conflict when both CS start with the same character or end with the same character <p>Length 2vs4 should only be a conflict when first 2 digits are identical and same position (example 12 versus 1234 would be conflict .12 versus 2134 is not a conflict).</p>	
6	2 letter anagram	Avoid Call Signs having last two letters as anagram	ABC31BA v ABC56AB
7		Length 2 versus Length 3 with first and last symbol in common	4A v 41A
8		Length 3 versus 3 one digit in common and same last letter	89A v 91A
9		Length 4 v Length 4 one digit and 1 letter in common (does not apply where bigrammes are involved ex. 56EV v 26AV)	123A v 516A
10	<u>Identical Block Digits (parameter 3)</u>	Captures blocks of same 3 digits within both call signs	<u>7244 v 1724</u>

SIMILARITY RULES APPLYING TO ALL FLIGHT PAIRS

(Level 3 rules apply even if flights don't overlap. So flight IDs present in a schedule but not actually overlapping in an airspace or aerodrome).

1	Same Flight ID needs same CFN	<p>Similar to the avoid 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.</p>	
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B2-7

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

APPENDIX C

Summary Recommendations for endorsement

The project has found no deficiencies so far with flight plan processing or active live flights with regional ATC or CAA units. Etihad Airways with the support of selected regional and international airlines will continue the flight plan testing phases for International airports' arrivals and departures within the Mid-Region to identify gaps and/or challenges within the airport process, such as IT or human factors, that would limit the use of Alpha-Numeric call signs for commercial flights in the MID region. Any deficiencies will be reported to ICAO and the MEAP S/C upon the completion of the testing phase.

The project has identified that the Call Sign Similarity process and software which is currently used by Eurocontrol can be utilized in the MID Region. Furthermore, the region will benefit from the lessons learned by Eurocontrol to ensure a better implementation of the tool.

Suggestions overview:

1. Establish a regional call-sign similarity unit (CSS).
2. Establish CSS rules for call-sign conflicts as done by Eurocontrol.
3. Establish CSS Working Group through ICAO.
4. Operators having an internal process to de-conflict the airline's flight schedule will provide the internally de-conflicted schedule to the regional call sign similarity unit (CSS).
5. Operators that do not have an internal de-conflicting process that they can utilize to de-conflict their internal flight schedule, will provide data to the regional call sign similarity unit (CSS) for de-confliction.
6. Call- sign conflicts identified through regional call sign similarity unit (CSS) will be provided to operators with options for adjustments (example: XXX123 to XXX12A/XXX12M).
7. Call signs that have been identified with no conflict will be assigned until such time they are no longer utilized by operator.
8. All new call signs will be applied through the regional call sign similarity unit (CSS) prior to utilizations to assure de-confliction and report and assignment provided to submitter by the (CSS).
9. Call signs that have worked well during a season should be kept were possible. It will help to eventually decrease the changes to zero and support the aim of retaining a specific alpha numeric call sign for a commercial flight number.
10. States to publish the acceptance of alpha numerical call signs.
11. States to publish notification on airports that are unable to accepts alpha numerical call signs for ATC use.
12. States will report to the regional call sign similarity unit (CSS) attaching the ATC/Airport call-sign confusion reports for review tracking and action if deemed appropriate.

RECOMEDATION	Organization/Action	Progress
Establish a regional call-sign similarity unit (CSS)	IATA MENA and ICAO MID and airlines	ICAO and IATA email accounts established
Establish MID Region CSS rules for call-sign conflicts as done by Eurocontrol	Mid states to utilize work and recommendation by Eurocontrol (appendix B)	
Operators having an internal process to de-conflict the airline's flight schedule, will provide the internally de-conflicted schedule to the regional call sign similarity unit (CSS).	Airlines can utilize own internal process or utilize Eurocontrol CSS tool	Some airlines current utilize Eurocontrol tool for internal de-confliction
Operators that do not have an internal de-conflicting process that they can utilize to de-conflict their internal flight schedule, will provide data to the regional call sign similarity unit (CSS) for de-confliction.	IATA MENA through agreement with of Eurocontrol will provide operators same services	IATA MENA awaiting formal training
Call- sign conflicts identified through regional call sign similarity unit (CSS) will be provided to operators with options for adjustments (example: XXX123 to XXX12A/XXX12M).	IATA	
<p>Call signs that have been identified with no conflict will be assigned until such time they are no longer utilized by operator.</p> <p>Flight delays beyond 0000z shall replace the last letter of the alpha numeric call sign with the letter "z" and add the original alpha numeric call sign in the remarks field 18.</p>	IATA/Airlines	

<p>All new call signs will be applied through the regional call sign similarity unit (CSS) prior to utilizations to assure de-confliction and report and assignment provided to submitter by the (CSS)</p>	<p>IATA/Airlines</p>	
<p>States will report to the regional call sign similarity unit (CSS) attaching the ATC/Airport call-sign confusion reports for review tracking and action if deemed appropriate.</p>	<p>IATA/ICAO/States</p>	<p>Regional email accounts established for reporting and trend analysis MIDCSC@icao.int and MENACSSU@iata.org.</p>
<p>States to publish the acceptance of alpha numerical call signs</p>	<p>States</p>	<p>See India AIC example appendix C</p>
<p>States to publish notification on airports that are unable to accept alpha numerical call signs for ATC use</p>	<p>States</p>	

APPENDIX D

Telephone No. : 011-24622495 Aeronautical : VIDDYAYX E-Mail: dri@dgca.delhi.nic.in Fax 011-24616783	GOVERNMENT OF INDIA AERONAUTICAL INFORMATION SERVICES DIRECTOR GENERAL OF CIVIL AVIATION OPPOSITE SAFDARJUNG AIRPORT NEW DELHI-110003	AIC Sl. No. 02/2017 3rd March 2017
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File No.AV.15022/2/2016-AS

The following Aeronautical Information Circular (AIC) is issued for information, guidance and compliance.



(B.S. BHULLAR)
Director General of Civil Aviation

GUIDELINES ON AVOIDING CONFUSING/SIMILAR CALL-SIGNS BY AIRLINE OPERATORS

1. Introduction

- 1.1 The use of similar call-signs by aircraft operating in the same area, at the same time, and on same ATC frequency often give rise to potential and actual confusion leading to misunderstanding to pilots and/or controllers. As a result, one aircraft may act on the clearance meant for another aircraft. This hazard is usually referred to as Call-Sign Confusion.
- 1.2 The potential safety consequences of an aircraft taking and acting on a clearance intended for another aircraft can cause serious incident. This could result in runway incursions, level bust, loss of separation, airprox or a mid-air collision etc.
- 1.3 Factors which may cause call-sign confusion are as follows:

a) Call-signs coincidentally containing same alphabets or numeric characters but in different order of sequence operating at the same time, in same airspace and on same frequency e.g.:

- i. ABC109 and ABC409
- ii. ABC523 and DEF523
- iii. ABC348 and ABC384

b) Call-signs containing repeated digits, e.g. ABC555, DEF777.

- c) Use of non-standard RT phraseology.
- d) The quality of communication channel.
- e) Interruption or distraction.
- f) Density of traffic in the airspace.
- g) Frequency workload and flight phase complexity.
- h) Human factors viz. pilot's/controller's accent, pilot's expectation bias, pilot/ controller fatigue level, etc.
- i) Visual or phonetic confusion associated with the sequencing of the letter and number groups in a call-sign.

2. Call-Sign Conflicts

2.1 Analysis of the data has identified several conflicts in the call-signs being used by various airlines operating in India. Some of the examples of the call-sign conflicts taking place between aircraft operating at the same airport or in the same airspace are given below:

- a) Flights of same airlines with identical last two alphanumeric numbers operating within 60 minutes period viz. ABC103 & ABC203.
- b) Flights of same airlines with identical first two digits operating within 60 minutes period viz. ABC103 & ABC104.
- c) Flight numbers with identical first and last digit operating within 60 minutes period viz. ABC446 & ABC466
- d) Flights of same airlines with identical flight numbers but in different order operating within 60 minutes period viz. ABC778 & ABC787 & ABC877
- e) Identical flight numbers of different carriers operating within 120 minutes period viz. ABC103 & DEF103
- f) Four digit flight numbers of the same airline having three digits in the same order operating within 120 minutes, viz. ABC1234 & ABC123 or ABC234.
- g) Three of the flight number digits identical of one airline are in the same order as that of a four-digit flight number of other airline operating within 60 minutes, viz. ABC1234 & DEF123 or DEF234.

3. **REQUIREMENTS FOR CALL-SIGN CONFLICT RESOLUTION**

In order to resolve the call-sign conflicts, all the airlines shall follow the requirements as given in the following Table for determining the call-signs for their respective flights. The Airport Operators and Air Navigation Service Provider (ANSP) shall also follow these requirements while performing their respective functions in this regard.

D-3

Instructions	Description of the requirement	Example
Visual Aural Similarity	Not to consider same or similar flight numbers when airlines letter designators are visually similar or telephony designators are aurally confusing with respect to other airlines.	<p><u>Example 1</u> JLL103 & JAL107 though different airline carriers (i.e. JetLite & Japan Airlines) but are having visually similar call-signs.</p> <p><u>Example 2</u> JLL103 & SEJ107 though different airline carriers (i.e. JetLite & Spicejet) but have similar sounding ICAO RT call-signs (i.e. Litejet 103 and Spicejet 107)</p>
Call-Sign Format	Aircraft Registration when used as call-sign, shall be as per ICAO standard practices.	EIAKO, 4XBBCD, N2567GA
	Use of same digits to form a callsign is not allowed	ABC555 or DEF888
	Alphanumeric call-signs which correspond to the last two letters of the planned aerodrome are not allowed	Flight inbound to EGLL & VOMM should avoid using call-sign like ABC96LL & ABC96MM respectively.
	Suffixing letter ‘S’, ‘I’, ‘O’ after numeral should not be used as it creates visual confusion to the Controllers on Radar screen/ and the Flight Progress Strip	‘S’ can be confused with ‘5’, ‘I’ can be confused with ‘1’, ‘O’ can be confused with ‘0’)
	Flight numbers ending with <u>ZERO</u> (050 to 410) or <u>FIVE</u> (005 to 355) should not be used as it can easily be confused with assigned level or heading	ABC410 not permitted & ABC420 permitted ABC355 not permitted & ABC365 permitted
	Additional flight: should suffix ‘A’ to indicate additional flight	ABC236A
	Delayed/Late/Diverted flight: to suffix ‘D’ to indicate delayed/ late/diverted flight.	ABC236D
	Re-routed flight: to suffix ‘R’ to indicate rerouted flight	ABC236 (DEL-AMD-BOM) ABC236R (DEL-BOM)
	To avoid delay, same rotation flight in exceptional cases can operate a portion of the scheduled sector by suffixing ‘T’ to the original flight number.	ABC236 (SXR-DEL/DEL-DED) In case of delay in departure from SXR, flight to operate on DEL-DED route with call-sign ABC236T. This should be avoided, as far as

		possible. Operator to exercise this privilege only with prior coordination with Departure/Arrival and enroute ATC's. The above provision to be used only as an exception and should not be a practice
	Four digit call-signs should only be used when no three digit callsigns are available. A four digit call-sign, if used, shall have first three numerals suffixed with an alphabet. The use of alphabet 'A', 'D', 'R', 'T', 'I', 'O', 'S', 'X' is not permitted.	ABC123W is permitted ABC123X is not permitted
Call-sign Similarity	Flights of same airline with identical last two digits not permitted within 60 minutes.	ABC103 & ABC203
	Flights of same airline with identical first two digits not permitted within 60 minutes.	ABC103 & ABC104
	Flights of same airline with identical first and last digit not permitted within 60 minutes.	ABC446 & ABC466
Call-sign Similarity	Flights of same airline with identical flight numbers but in different order not permitted within 60 minutes.	ABC778, ABC787 & ABC877
	Identical flight number with different carriers not permitted within 120 minutes.	ABC103 & DEF103
Call-sign Similarity	Four digit flight numbers of the same airlines having three of the digits in the same order are not permitted within 120 minutes.	ABC1234 & ABC123 or ABC234
Call-sign Similarity	Three of the flight number digits identical to a three digit combination of a four digit flight number of a different airline, not permitted within 60 minutes.	ABC1234 & DEF123 or DEF234

D-5

Same Callsign	Two flights of the same operator cannot operate with same call-sign within 12 hours from the same airport.	ABC123 DEL-MAA; EOBT 08:00/01 MAR 2017 ABC123 DEL-BOM; EOBT 19:55/01 MAR 2017 are not permitted
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4. Additional action by ANSP and airlines, in the interest of safety of aircraft operations, shall be as follows:

4.1 Airlines to strictly adhere to the call-signs as per the approved DGCA schedule. If the approved Flight No. is ABC0431, the filing flight plan as ABC431 by the airlines is not permitted. Similarly, if the approved Flight No. is ABC021, the filing flight plan using call-sign ABC21 is not permitted.

4.2 All flights operating in congested airspace are encouraged to use two digit callsigns.

4.3 Call-signs for flights operating to/from Srinagar, Jammu, Kathmandu, Bagdogra and overflying Dhaka need to be chosen very carefully by the airlines due to interaction with multiple ATS units and to minimize RT congestion.

4.4 Pilots and controllers should be sensitized to report call-sign confusion to their respective organizations.

4.5 Pilots and controllers should be sensitized to maintain RT discipline and use of correct phraseology (e.g. 118.1 is normally pronounced wrongly by some of the Pilots as EIGHTEEN ONE).

5. Any issue on call-sign, which remains unresolved between airlines/ASNP shall be brought up to the notice of DGCA.

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