



International Civil Aviation Organization

**The Tenth Meeting of the Asia/Pacific Aeronautical Information Services –  
Aeronautical Information Management Implementation Task Force  
(AAITF/10)**

Bangkok, Thailand, 27-30 April 2015

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**Agenda Item 5: Any Other Business**

**ICARD UPDATE**

(Presented by Secretariat)

**SUMMARY**

This paper presents an update on the ICAO International Codes and Route Designators application (ICARD) and participation by Asia/Pacific States, discusses procedural issues related to the allocation of waypoint names in flight procedures, and identifies duplicated waypoint names in dangerous proximity.

**1. INTRODUCTION**

1.1 The International Codes and Routes Designators is the result of collaborative efforts by EUROCONTROL and the ICAO EUR/NAT Regional Office to develop and maintain a common database of facilities and services required for international air navigation within the EUR/NAT region. The first ICARD internet application on the EUROCONTROL website was developed to support the allocation of five-letter name-codes (5LNC) used for the identification of significant points for ATS routes and designators for ATS routes.

1.2 The application is now available for all ICAO States, and is the global repository and source of 5LNC. The ATS route designator function is only available within EUR Region.

**2. DISCUSSION**

ICARD Purpose and Registration

2.1 ICARD is the sole global source of unique, pronounceable 5LNC marking significant points (i.e. ATS route waypoints) not associated with a radio-navigation aid. The purpose of ICARD is to ensure that the global allocation of 5LNC complies with the Annex 11 requirements:

*3.1 Where a significant point is required at a position not marked by the site of a radio navigation aid, and is used for ATC purposes, it shall be designated by a unique five-letter pronounceable “name-code” This name-code designator then serves as the name as well as the coded designator of the significant point.*

*3.2 The name-code designator shall be selected so as to avoid any difficulties in pronunciation by pilots or ATS personnel when speaking in the language used in ATS communications. Examples: ADOLA, KODAP*

3.3 *The name-code designator shall be easily recognizable in voice communications and shall be free of ambiguity with those used for other significant points in the same general area.*

3.4 *The unique five-letter pronounceable name-code designator assigned to a significant point shall not be assigned to any other significant point. When there is a need to relocate a significant point, a new name-code designator shall be chosen. In cases when a State wishes to keep the allocation of specific name-codes for reuse at a different location, such name-codes shall not be used until after a period of at least six months.*

3.5 *States' requirements for unique five-letter pronounceable name-code designators shall be notified to the Regional Offices of ICAO for coordination.*

2.2 The ICARD application is the method by which States notify the ICAO Regional Office of their requirements for 5LNC. All requests for new 5LNC, or changes or deletions of existing 5LNC, are assessed for approval by a Regional Office ICARD\_5LNC\_MANAGER.

2.3 ICARD\_5LNC\_PLANNERS are State nominated individuals responsible for sourcing waypoints for each state from the blocks of codes allocated in ICARD to the State by the ICARD\_5LNC\_MANAGER, normally the ICAO Regional Officer ATM or Program Analysis Associate. Each State should nominate two persons to register as ICARD 5LNC Planners.

2.4 The ICARD\_5LNC\_PLANNER registration involves two steps:

- i. Registration for ICARD through the ICAO Secure Portal; and
- ii. Registration for ICARD\_5LNC\_PLANNER.

2.5 **Attachment A** provides instructions for the registration process. Guidelines for the use of the ICARD application are available on the 5LNC web-page, which is fully accessible after the registration process is completed. A copy of the ICARD Guidelines is also available from the ICAO APAC Regional Office on request.

#### Asia/Pacific Region ICARD Participation

2.6 All States and administrations with any responsibility for or involvement in the design, implementation and/or regulation of ATS routes and instrument flight procedures should be registered in ICARD. In all cases where any personnel of a State Regulator or Air Navigation Service Provider are responsible for the allocation of 5LNC for ATS routes, Standard Instrument Departures (SIDs), Standard Terminal Arrival Routes (STARS) or Instrument Approach and Landing (IAL, including RNAV/RNP approaches), they must be registered as an ICARD\_5LNC\_PLANNER.

2.7 Traffic growth in the Asia/Pacific Region has resulted in traffic demand exceeding airspace capacity in many cases. The most effective response to this situation is to increase capacity, which will necessarily involve ATS route re-design and implementation of new routes, requiring the efficient and Annex 11-compliant allocation of waypoint names. This is also required to meet the increasing demand for waypoint names for implementation of new and revised RNAV and RNP flight procedures.

2.8 Several Asia/Pacific Region States/Administrations do not currently have any registered ICARD\_5LNC\_PLANNER. If these States or administrations allocate 5LNC outside the ICARD system they are not compliant with the requirements of Annex 11.

2.9

**Table 1** provides a list of registered 5LNC\_PLANNERS at May 2013 and June 2014.

State/Administration	5LNC_PLANNER	
	June 2014	April 2015
Afghanistan	1	1
Australia	5	5
Bangladesh	1	1
Bhutan		
Brunei Darussalam	1	1
Cambodia	1	1
China	1	1
Hong Kong, China	2	2
Macao, China	N/A	N/A
Cook Islands		
DPR Korea		1
Fiji	1	1
India	2	3
Indonesia	1	1
Japan	2	2
Kiribati	1	1
Lao PDR	1	2
Malaysia	1	1
Maldives		
Marshall Islands		
Micronesia		
Mongolia		1
Myanmar		
Nauru		
Nepal		
New Caledonia	1	1
New Zealand	1	1
Pakistan	1	1
Palau		
Papua New Guinea	1	2
Philippines	1	1
Polynesie Francaise	2	3
Republic of Korea	1	3
Samoa		
Singapore	2	2
Solomon Islands		
Sri Lanka	2	2
Thailand	1	1
Tonga		
Timor-Leste	1	2
Vanuatu		
Viet Nam	2	2

**Table 1:** Asia/Pacific Region Registered ICARD\_5LNC\_PLANNERS

2.10 **Attachment B** lists the currently registered ICARD\_5LNC\_PLANNERS for the Asia/Pacific Region. States are requested to check the list to ensure the details are correct, and to notify Bangkok Office of any change.

### Common Errors

2.11 The following are common user errors in ICARD interactions and the subsequent publication of ATS routes and waypoints:

- Publication of 5LNC in AIP before they have been approved in ICARD;
- States allocating 5LNC from their ICARD Reserve List, but failing to first complete the process of registering the 5LNC in ICARD.

*States must ensure that 5LNC selected for use are fully registered through the ICARD **Request for Code Allocation** process.*

- Publication of ATS routes and/or new or amended 5LNC on dates other than AIRAC dates, and with less than the advance notification specified in Annex 15 (**Figure X**);

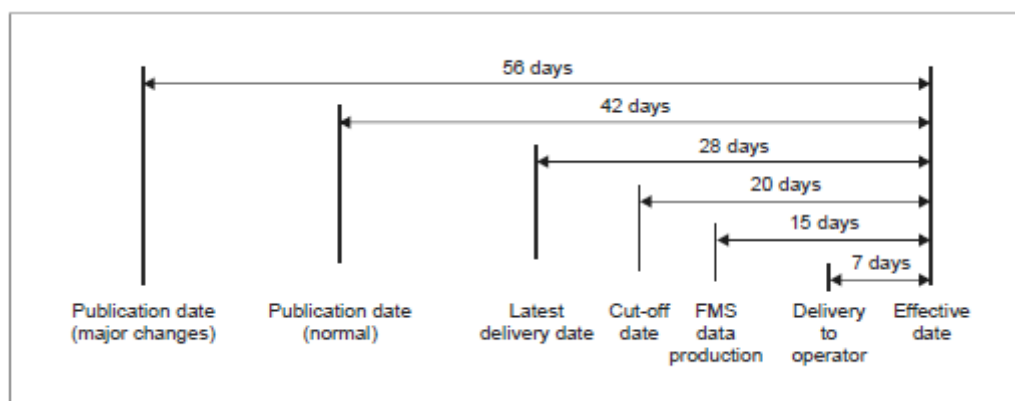
*States must ensure compliance with the Standards and Recommended Practices (SARPS) relating to advance notification of new or amended aeronautical information, defined in Annex 15 Section 6.2.*

- Completing the Proximity Check checkbox in ICARD to indicate the proximity has been done, when it has clearly either not been done or has not been correctly done;

*Refer paragraphs 2.12 – 2.18, below.*

- Registering 5LNC in ICARD before the coordinates of the waypoint have been validated.

*Annex 11 and the ICARD rules do not permit the relocation of a 5LNC.*



**Figure 1:** Processing Cycle for Airborne Navigation Databases (Source: Doc 8126 – AIS Manual)

### Proximity Checks

2.12 When submitting a selected 5LNC, Planners are required to conduct a proximity check. This involves using either the map or list function buttons to check for like-sounding 5LNC within 250NM for TMA waypoints or 500NM for En-route waypoints. The proximity check function requires the cartographical coordinates of the waypoint to be entered correctly.

2.13 The proximity check function may provide a list or map representation of several potentially like-sounding waypoint names. The Planner should then apply appropriate judgment to determine if any radiotelephony confusion between the existing waypoints and the proposed waypoint could occur. If such confusion could occur, a different waypoint name must be selected from the block of available codes. Once this process is complete, clicking the proximity check check-mark box will indicate that the proximity check has been completed.

2.14 The ICARD 5LNC\_MANAGER may independently conduct another proximity check during the approval process. Any proposed waypoint found to have potential radiotelephony confusion with another waypoint will be rejected.

2.15 There have been a number of cases where requests for 5LNC have included indication that the proximity check has been completed, but a check by the 5LNC\_MANAGER reveals like-sounding waypoints in proximity to the requested location.

2.16 It has been reported in Asia/Pacific and other ICAO Regions that States are experiencing difficulties in finding **available**, **pronounceable**, and **non-sound like** 5LNCs within 500NM radius. For example:

- Codes hard to pronounce (UPGEP, UVPUB, AGPEB, ADPEB);
- Sound-like confusions (example: BAPVA vs PABSA, distance 117NM); and
- Visual confusions (example: ARPIB looks like ABRIB).

2.17 Recognizing that assessment of “like-sounding” should include consideration of the complex aviation communications environment, and the widely varied language background of pilots and air traffic controllers, it is recommended that personnel with appropriate levels of experience in operational air-ground-air communications are utilized to ensure that selected 5LNC cannot be confused with other like-sounding waypoints.

2.18 States may also consider the use of an informal draft 5LNC algorithm (**Attachment C**) developed by the ICAO EUR Regional Office to assist ICARD\_5LNC\_PLANNERS in selection of appropriate codes. Improvements in correct detection of like-sounding or easily confused codes will result in less time consuming rejections of code requests by the ICARD\_5LNC\_MANAGER.

#### Process Flow for Requesting 5LNC

2.19 Recent occurrences suggest that States may be allocating 5LNC for use in flight procedure design before the flight procedure has been validated. This has resulted in follow-up requests to input corrected coordinates for the 5LNC that have already been approved in the ICARD system. The ICARD business rules do not permit changes to the coordinates of allocated 5LNC.

2.20 There have also been cases where 5LNC have been requested with no coordinates provided, in some cases indicating that a proximity check has been completed. These requests must be rejected.

2.21 The process for designing and implementing ATS routes and flight procedures should ensure that the final location of the waypoint is fully validated before then requesting the 5LNC in ICARD.

2.22 States should also note that codes may not be repositioned at new coordinates. Any code that is no longer required should be deleted in ICARD. It will be held in the reserve list before then being returned for allocation in a new block. If a code is held by the State for later re-use, the change request should indicate the date the previous location for the code was removed from AIP, and the date it is intended to be re-published.

ATS Route Designator Allocation

2.23 Currently States must notify the ICAO Regional Office of any request for ATS Route designators. A database of available route designators for the Asia/Pacific Region is maintained by the Regional Office, and manually updated with each request. The process is also dependent on the parallel activity of progressing proposals for amendment (PfA) to the ATS Routes table in the Regional Air Navigation Plan.

2.24 The process is laborious and time-consuming for States and the Regional Office, and potentially induces handling errors. Given the expected increase in requests for new ATS route designators to facilitate necessary airspace capacity and efficiency outcomes, a more appropriate and up-to-date method is needed. States should be aware of the limitations of the current system available in the Asia/Pacific Region. The ICARD ATS Route Designators allocation function is not available to this Region.

ICARD 5LNC MANAGER Actions

2.25 The 5LNC Manager will approve or deny requests for new code allocations, code deletions, and amendments to code information (e.g. addition of a coordinating State, addition of information regarding the use of the code, explanatory comments, but NOT changes to position coordinates). Other functions of the 5LNC Manager are the reallocation of unused codes to other States or Regions where requested and appropriate.

2.26 ICARD 5LNC code requests should normally be actioned within 1 week of submission. If there is any significant delay, or if approval is required urgently, ICARD\_5LNC\_PLANNERS should contact the ICAO Regional Office 5LNC Manager.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) ensure that each State/Administration has at least 1, and preferably 2, registered ICARD\_5LNC\_PLANNERS;
- c) ensure each State's representation in the list of current Asia/Pacific ICARD\_5LNC\_PLANNERS is correct;
- d) note the common ICARD user errors and associated Annex 11 and ICARD application requirements;
- e) note the draft proposal for an informal algorithm that may avoid 5LNC confusion; and
- f) discuss any relevant matters as appropriate.

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## ICARD REGISTRATION PROCESS

There are **three** steps to registration as an ICARD 5LNC Planner.

- If you do not yet have user access to the ICAO Secure Portal, complete all three steps.
- If you already have access to the ICAO Secure Portal but not to ICARD, go to Step 2.
- If you already have access to ICARD, but are not registered as an ICARD\_5LNC\_PLANNER, go to Step 3.

1. Register for access to the ICAO Secure Portal (you may already have this access. If so, proceed directly to step 2.)

- i. Go to <http://portal.icao.int/>
- ii. Click on **Request an account**
- iii. Follow the instructions. You will be notified when your registration for access to the ICAO Secure Portal is approved.

2. Log in to the ICAO Secure Portal <http://portal.icao.int> with your secure login credentials, then register for ICARD as follows:

- i. Click on the **PROFILE** link in your Secure Portal home page
- ii. A new window will open. In the menu on the left of the new window, click on the **GROUP SUBSCRIBE/UNSUSCRIBE** link.
- iii. Enter the group name **ICARD** in the **SUBSCRIBE TO** field, and add the justification for your request in the **JUSTIFICATION** field.
- iv. Click the **SUBMIT CHANGES** button.

3. Register for ICARD\_5LNC\_PLANNER in the same manner as described in step 2: Log in to the ICAO Secure Portal <http://portal.icao.int> with your secure login credentials, then register for ICARD\_5LNC\_PLANNER as follows:

- i. Click on the **PROFILE** link in your Secure Portal home page
- ii. A new window will open. In the menu on the left of the new window, click on the **GROUP SUBSCRIBE/UNSUSCRIBE** link.
- iii. Enter the group name **ICARD\_5LNC\_PLANNER** in the **SUBSCRIBE TO** field, and add the justification for your request in the **JUSTIFICATION** field.
- iv. Click the **SUBMIT CHANGES** button.

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<b>Asia/Pacific Region ICARD_5LNC_PLANNERS</b>				
<b>State/Administration</b>	<b>ICARD User Id</b>	<b>Surname</b>	<b>First name</b>	<b>Email</b>
Afghanistan	AAFCENT	AFCENT	Airspace	affora3aairspace@auab.afcent.centcom.mil
Australia	LALBERTS	Alberts	Louise	louise.alberts@airservicesaustralia.com
Australia	MMANGALIKA	Mangalika	Malani	malani.mangalika@airservicesaustralia.com
Australia	PTEO	Teo	Pinghan	pinghan.teo@airservicesaustralia.com
Australia	SDANVERS	Danvers	Sally	sally.danvers@airservicesaustralia.com
Australia	AMURRAY002	Murray	Andrew	andrew.murray@airservicesaustralia.com
Bangladesh	AHAQUE	Haque	AKM Faizul	faizul_bsl@yahoo.com
Brunei Darussalam	AHJABBAS	Hj Abbas	Azdah	azdah.abbas@civil-aviation.gov.bn
Cambodia	CSIVORN	Sivorn	Chhun	ans.scca@gmail.com
China	YZHANG001	Zhang	Ying	zhangying@atmb.net.cn
Hong Kong, China	GCHENG	Cheng	Gabriel	gpkcheng@cad.gov.hk
Hong Kong, China	LFAN	Fan	Lucius	lwcfan@cad.gov.hk
Fiji	ITABAKAUCORO	Tabakaucoro	Ilaitia	ilaitia@caafi.org.fj
India	GRAGHUVANSH	Raghuvanshi	Gaurav	gauravr@aai.aero
India	SSWAMINATHA	Swaminathan	Subramanian	swamy64aqua2003@yahoo.com
India	AKUMAR001	Kumar	Arun	akjaincra@gmail.com
Indonesia	DYULIANSARI	Yuliansari	Dwi	dwi.yuliansari@yahoo.com
Japan	MSAKAI	Sakai	Miwa	sakai-m2jj@mlit.go.jp
Japan	NWATANABE001	Watanabe	Naoko	watanabe-n10nu@mlit.go.jp



<b>Asia/Pacific Region ICARD_5LNC_PLANNERS</b>				
<b>State/Administration</b>	<b>ICARD User Id</b>	<b>Surname</b>	<b>First name</b>	<b>Email</b>
Kiribati	BTABOKAI	Tabokai	Benitera	kiribatidca@gmail.com
Lao PDR	VDAVONE	Davone	VILAYSENG	davone_vs1@yahoo.com
Lao PDR	TNALISAK	Nalisak	Thanongdeth	Thanongdeth.nalisak@gmail.com
Malaysia	AALI	Ali	Abdul Razak	razakali@dca.gov.my
Mongolia	ZYULEN	Yulen	Zolzaya	zolzaya@mn.caa.gov.mn
New Caledonia	DFABIEN	Fabien	DINCLAUX	fabien.dinclaux@aviation-civile.gouv.fr
New Zealand	MTAYLOR	Taylor	Mark	mark.taylor@airways.co.nz
Pakistan	AMUMTAZ	Mumtaz	Arif	Arif.Mumtaz@caapakistan.com.pk
Papua New Guinea	CSAGATI	Sagati	Caleb	csagati@mail.casapng.gov.pg
Philippines	LLAURE	Laure	Lea	leajlaure@gmail.com
Polynesie Francaise	FMOUCHINLEU	Mou Chin Leung	Freddy	MOU-CHIN-LEUNG_Freddy@seac.pf
Polynesie Francaise	ALAPLANE	Laplane	Aurelie	mihalic_aurelie@seac.pf
Polynesie Francaise	MSCHNEIDER002	Schneider	Manuel	manuel.schneider@aviation-civile.gouv.fr
Republic of Korea	HHA	Ha	Huho	hooho_ha@korea.kr
Republic of Korea	WKIM	Kim	Wanyong	wandonim@korea.kr
Republic of Korea	HKIM	Kim	Hui-yang	miohy@korea.kr
Singapore	HJUMARI	Jumari	Hermizan	hermizan_jumari@caas.gov.sg
Singapore	MSHEECHENGW	Shee Cheng Wah	Michael	michael_shee@caas.gov.sg
Sri Lanka	PDISSANAYAK	Dissanayake	Priyanthi	do@caa.lk
Sri Lanka	AJAYAWICKRA	Jayawickrama	Athula	das@caa.lk

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<b>State/Administration</b>	<b>ICARD User Id</b>	<b>Surname</b>	<b>First name</b>	<b>Email</b>
Thailand	PHARNBUMRUN	Harnbumrungkit	Pawat	pawat@aviation.go.th
Timor-Leste	JLUISDACOST	Luis Da Costa	Jose	paize1@gmail.com
Timor-Leste	SHENRIQUES	Henriques	Sabino	henriques.sabino@gmail.com
Viet Nam	NHUNG	Hung	Nguyen The	hungand@caa.gov.vn
Viet Nam	BVO	VO	BUI	buivanvo@caa.gov.vn

<b>ICAO Asia/Pacific Regional Office ICARD_5LNC MANAGERS</b>				
<b>State/Administration</b>	<b>ICARD User Id</b>	<b>Surname</b>	<b>First name</b>	<b>Email</b>
ATM Program Analysis Associate	CLEEMANAN	Leemanan	Chuleeporn	cleemanan@icao.int
Regional Officer ATM/AIM	SSUMNER	Sumner	Shane	ssumner@icao.int
Regional Officer ATM/SAR	LWICKS	Wicks	Len	lwicks@icao.int
Regional Officer AOM	HHA	Ha	Huho	hha@icao.int

**DRAFT Informal Algorithm for the avoidance of 5LNC pronunciation, sound-like and/or visual confusion.**

1. 4 letters should not match if they are in the same position.

Example: “BAKOV” should not be used if other code is “BUKOV”.

2. The last 3 letters should not match.

Examples (“n” - consonant and “y” - vowel):

- if in order of “nyn” - “NAKOV” should not be used if other code is “BUKOV”;
- if in order of “yny” - “ALAMI” should not be used if other code is “OKAMI”.

3. The 1st letter, 3rd letter and 5th letter should not match.

Examples:

- if in order of “nyn” - “BAKUV” should not be used if other code is “BUKOV”;
- if in order of “yny” - “ALAMI” should not be used if other code is “AGATI”.

4. The 2nd letter, 3rd letter and 4th letter should not match.

Examples:

- if in order of “nyn” - “ABATI” should not be used if other code is “OBATO”;
- if in order of “yny” - “VEBEG” should not be used if other code is “MEBEK”.

5. The 1st letter should not be the letter X.

Examples: XINSU XISAL XOLAL XUXUV

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- iv. Click the **SUBMIT CHANGES** button.

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<b>State/Administration</b>	<b>ICARD User Id</b>	<b>Surname</b>	<b>First name</b>	<b>Email</b>
Afghanistan	AAFCENT	AFCENT	Airspace	affora3aairspace@auab.afcent.centcom.mil
Australia	LALBERTS	Alberts	Louise	louise.alberts@airservicesaustralia.com
Australia	MMANGALIKA	Mangalika	Malani	malani.mangalika@airservicesaustralia.com
Australia	PTEO	Teo	Pinghan	pinghan.teo@airservicesaustralia.com
Australia	SDANVERS	Danvers	Sally	sally.danvers@airservicesaustralia.com
Australia	AMURRAY002	Murray	Andrew	andrew.murray@airservicesaustralia.com
Bangladesh	AHAQUE	Haque	AKM Faizul	faizul_bsl@yahoo.com
Brunei Darussalam	AHJABBAS	Hj Abbas	Azdah	azdah.abbas@civil-aviation.gov.bn
Cambodia	CSIVORN	Sivorn	Chhun	ans.scca@gmail.com
China	YZHANG001	Zhang	Ying	zhangying@atmb.net.cn
Hong Kong, China	GCHENG	Cheng	Gabriel	gpkcheng@cad.gov.hk
Hong Kong, China	LFAN	Fan	Lucius	lwcfan@cad.gov.hk
Fiji	ITABAKAUCORO	Tabakaucoro	Ilaitia	ilaitia@caafi.org.fj
India	GRAGHUVANSH	Raghuvanshi	Gaurav	gauravr@aai.aero
India	SSWAMINATHA	Swaminathan	Subramanian	swamy64aqua2003@yahoo.com
India	AKUMAR001	Kumar	Arun	akjaincra@gmail.com
Indonesia	DYULIANSARI	Yuliansari	Dwi	dwi.yuliansari@yahoo.com
Japan	MSAKAI	Sakai	Miwa	sakai-m2jj@mlit.go.jp
Japan	NWATANABE001	Watanabe	Naoko	watanabe-n10nu@mlit.go.jp

<b>Asia/Pacific Region ICARD_5LNC_PLANNERS</b>				
<b>State/Administration</b>	<b>ICARD User Id</b>	<b>Surname</b>	<b>First name</b>	<b>Email</b>
Kiribati	BTABOKAI	Tabokai	Benitera	kiribatidca@gmail.com
Lao PDR	VDAVONE	Davone	VILAYSENG	davone_vs1@yahoo.com
Lao PDR	TNALISAK	Nalisak	Thanongdeth	Thanongdeth.nalisak@gmail.com
Malaysia	AALI	Ali	Abdul Razak	razakali@dca.gov.my
Mongolia	ZYULEN	Yulen	Zolzaya	zolzaya@mn.caa.gov.mn
New Caledonia	DFABIEN	Fabien	DINCLAUX	fabien.dinclaux@aviation-civile.gouv.fr
New Zealand	MTAYLOR	Taylor	Mark	mark.taylor@airways.co.nz
Pakistan	AMUMTAZ	Mumtaz	Arif	Arif.Mumtaz@caapakistan.com.pk
Papua New Guinea	CSAGATI	Sagati	Caleb	csagati@mail.casapng.gov.pg
Philippines	LLAURE	Laure	Lea	leajlaure@gmail.com
Polynesie Francaise	FMOUCHINLEU	Mou Chin Leung	Freddy	MOU-CHIN-LEUNG_Freddy@seac.pf
Polynesie Francaise	ALAPLANE	Laplane	Aurelie	mihalic_aurelie@seac.pf
Polynesie Francaise	MSCHNEIDER002	Schneider	Manuel	manuel.schneider@aviation-civile.gouv.fr
Republic of Korea	HHA	Ha	Huho	hooho_ha@korea.kr
Republic of Korea	WKIM	Kim	Wanyong	wandonim@korea.kr
Republic of Korea	HKIM	Kim	Hui-yang	miohy@korea.kr
Singapore	HJUMARI	Jumari	Hermizan	hermizan_jumari@caas.gov.sg
Singapore	MSHEECHENGW	Shee Cheng Wah	Michael	michael_shee@caas.gov.sg
Sri Lanka	PDISSANAYAK	Dissanayake	Priyanthi	do@caa.lk
Sri Lanka	AJAYAWICKRA	Jayawickrama	Athula	das@caa.lk

<b>Asia/Pacific Region ICARD_5LNC_PLANNERS</b>				
<b>State/Administration</b>	<b>ICARD User Id</b>	<b>Surname</b>	<b>First name</b>	<b>Email</b>
Thailand	PHARNBUMRUN	Harnbumrungkit	Pawat	pawat@aviation.go.th
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**DRAFT Informal Algorithm for the avoidance of 5LNC pronunciation, sound-like and/or visual confusion.**

1. 4 letters should not match if they are in the same position.

Example: “BAKOV” should not be used if other code is “BUKOV”.

2. The last 3 letters should not match.

Examples (“n” - consonant and “y” - vowel):

- if in order of “nyn” - “NAKOV” should not be used if other code is “BUKOV”;
- if in order of “yny” - “ALAMI” should not be used if other code is “OKAMI”.

3. The 1st letter, 3rd letter and 5th letter should not match.

Examples:

- if in order of “nyn” - “BAKUV” should not be used if other code is “BUKOV”;
- if in order of “yny” - “ALAMI” should not be used if other code is “AGATI”.

4. The 2nd letter, 3rd letter and 4th letter should not match.

Examples:

- if in order of “nyn” - “ABATI” should not be used if other code is “OBATO”;
- if in order of “yny” - “VEBEG” should not be used if other code is “MEBEK”.

5. The 1st letter should not be the letter X.

Examples: XINSU XISAL XOLAL XUXUV