



ICAO

*International Civil Aviation Organization***Sixth Meeting of the Surveillance Implementation
Coordination Group (SURICG/6)**

Video Teleconference, 24 – 27 August 2021

Agenda Item 5: Review of regional requirements for Surveillance in the e-ANP, Seamless ANS Plan and the reported implementation status

- b) Regional planning criteria for addition of new System Area Codes (SAC) for surveillance systems in APAC and update on Regional Supplement to ASTERIX Interface Control Document (ICD) for ASIA/PAC Region

**UPDATE ON REGIONAL SUPPLEMENT TO ASTERIX INTERFACE CONTROL
DOCUMENT (ICD) FOR APAC REGION**

(Presented by the Secretariat)

SUMMARY

This working paper presents the update on Regional Supplement to ASTERIX Interface Control Document (ICD) for ASIA/PAC Region.

1. INTRODUCTION

1.1. The Regional Supplement to ASTERIX Interface Control Document (ICD) for ASIA/PAC Region (“the Supplement”) was in place to serve the purpose for denoting the unique identification within the Asia and Pacific regions to represent either a surveillance source or a sink (i.e. end user data processing systems), participating in the surveillance data exchange. With the development, and updates of surveillance facilities, the Supplement will have to be updated to cater the introduction.

2. DISCUSSIONUpdate of SAC for Afghanistan

2.1. Afghanistan has checked with ICAO APAC Regional Office of their SAC for their new surveillance facilities. ICAO APAC Regional office has assigned the A2^{hex} to be their SAC.

2.2. For background sharing, Afghanistan was accredited to ICAO MID Region years ago with DA^{hex} assigned for their SAC previously. As Afghanistan is under ICAO APAC Region now, the usage of SAC code aligns to that in APAC Region. With no potential conflict, ICAO APAC Regional Office will coordinate with relevant parties to update the assigned A2^{hex} SAC code.

Update of SAC for China

2.3. China has been doing some forward planning for surveillance facilities and has identifies that with planned facilities, they informed ICAO APAC Regional Office that they are about to exhaust the available System Identification Codes (SIC). In this connection, China has checked with ICAO

Agenda Item 5b

24-27/08/21

APAC Regional Office for their suggested assignment of vacant SACs for their future expansion of surveillance facilities and automation systems. ICAO APAC Regional office has assigned the new SACs as follows.

Surveillance / Automation Systems	SAC code Allocation	Reasons
ATC automation system	16 (Existing)	210+ shared use of civil and non-civil users and 40+ in planning
Radar	A6 (Suggested)	140 in use and 110+ in planning
ADS-B	1A, 1C (Suggested)	380+ in use and 120+ in planning
A-SMGCS	AA (Suggested)	100 in use and 150+ in planning

Regional Planning Criteria for Addition of SAC

2.4. SAC is a unique code to each State/Administration/Territories to identify their surveillance sensor and related automation systems. With the actual or planned increase in number of sensors/systems going over 256 distinct SICs allocable to assigned SAC for a State/Administration/Territories, it might need to apply for additional SAC(s) to cater the need to identify distinctly of its sensors/systems.

2.5. In addition, there is a recommendation in EUROCONTROL doc recommending that *when needed, more than one SAC could be assigned to a single country or territory, for example, to differentiate between civil and military applications.* i.e. different use of purpose should be also the factor of consideration for addition of new SAC for a State/Administration/Territories.

2.6. In reviewing the SAC assignment suggested in this paper, there is 52 SAC allotments out of 256 in total, which assigned to 47 contracting States/Administrations/Territories. It is foreseeable that SACs in APAC Region would be enough to cater the actual and planned increase of surveillance sensors and automation systems in the Region.

Removal of SIC Information

2.7. ICAO APAC currently manages the SAC allocation for the Asia Pacific States. ICAO APAC also keeps track of the SIC allocation for the individual surveillance sources within the States. SIC may be changed frequently and it will be onerous to both the States and ICAO to ensure that the list maintained by ICAO is kept up to date. The Mode S DAPs WG/4 formulated the following Draft Decision to be considered by the SURICG/6 meeting:

Draft Decision SURICG/6/XX (DAPs WG/4/8) - Removal of the need for ICAO APAC to keep track of SIC allocation	
What: ICAO APAC Regional Office to coordinate the allocation of SAC within Asia Pacific and not the SIC.	Expected impact: <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical
Why: SIC is managed by State and there is little value for ICAO APAC to manage the SIC. Considering the workload to manage the SIC and the negligible benefits, it is proposed that ICAO APAC not to manage SIC.	Follow-up: <input type="checkbox"/> Required from States

When: 27-Aug-21	Status: Draft to be adopted by PIRG
Who: <input type="checkbox"/> Sub groups <input type="checkbox"/> APAC States <input type="checkbox"/> ICAO APAC RO <input type="checkbox"/> ICAO HQ <input checked="" type="checkbox"/> Other: SURICG	

Other Editorial Updates

2.8. It was observed that the binary SAC representation of Malaysia has been incorrectly put in the last edition of the Supplement only. The representation was corrected in this update.

2.9. Relevant updates to the Supplement are given in **Attachment A** in tracked change mode.

3. ACTION BY THE MEETING

3.1 The meeting is invited to take note on the updates in this paper and take necessary actions.

APX. A - 1

INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE



REGIONAL SUPPLEMENT

TO

THE ASTERIX INTERFACE CONTROL DOCUMENT (ICD)
FOR THE ASIA/PAC REGION

THIRD EDITION

October 2021

Issued by the ICAO Asia/Pacific Regional Office, Bangkok

TABLE OF CONTENTS

	Page
1. General.....	2
2. Syntax	2
3. Assignment of the Systems Identifiers.....	3
4. System Area Code (SAC) Allotment Scheme	4
Table 1 – System Area Codes	

***Regional Supplement to the
All Purpose Structured Eurocontrol Surveillance
Information Exchange (ASTERIX) ICD
for the ASIA/PAC Region

System Area Code (SAC)***

ADDRESSING SCHEME OF RADAR DATA EXCHANGE

1. General

In order to avoid ambiguity, every radar system (i.e. radar sensor, radar data processing system, server) shall have a unique identification within the Asia and Pacific regions to represent either a radar source or a sink, participating in the radar data exchange.

2. Syntax

The format of System Identifier field of radar data exchange shall be composed of two subfields as illustrated below:



	Field Name	Element Type	Field Size
SAC	System Area Code	Binary	One octet
SIC	System Identification Code	Binary	One octet

2.1 System Area Code (SAC)

2.1.1 The SAC field shall consist of an eight-bit number assigned to a country or a territory.

2.1.2 The SAC field format shall be as illustrated below:

MSB

b8	b7	b6	b5	b4	b3	b2	b1
----	----	----	----	----	----	----	----

Where: b represents a binary digit and the MSB stands for Most Significant Bit

2.1.3 System Identification Code (SIC)

2.1.3.1 The SIC shall consist of an eight-bit number assigned to each radar system (radar sensor, processing system, server, etc.) located in the country or territory as defined by the SAC.

2.1.3.2 The SIC field format shall be as illustrated below:

MSB

b8	b7	b6	b5	b4	b3	b2	b1
----	----	----	----	----	----	----	----

Where: b represents a binary digit and MSB stands for the Most Significant Bit

2.1.4 The individual SICs are assigned by the National Administration concerned within the area identified by the SAC and are published in the this Document. SIC is managed by State and there is little value for ICAO APAC to manage the SIC. Considering the workload to manage the SIC and the negligible benefits, ICAO APAC will not manage SIC.

2.1.5 Within a country or territory identified by a SAC up to 256 individual codes (SICs) can be assigned.

2.1.6 The SICs shall be indicated by decimal and presented by binary in their relevant tables.

2.1.7 **Recommendation** *The assignment of SICs could be divided into groups by different functions and facilities categories.*

3. Assignment of the Systems Identifiers

3.1 System Area Codes

3.1.1 One SAC is assigned to each country or territory.

3.1.2 **Recommendation** *When needed, more than one SAC could be assigned to a single country or territory, for example, to differentiate between civil and military applications.*

3.1.3 The SACs allotment is provided in the Table 1 - System Area Codes (SAC)

3.1.4 Amendments to the System Area Codes (SAC) shall be coordinated by ICAO ASIA/PAC Regional office.

System Area Code (SAC) Allotment Scheme
(by country alphabet order and even hexadecimal numbers)

Table 1 - System Area Codes

SAC (Hexad)	Country/ Geographical Area	Binary Representation	SAC (Hexad)	Country/ Geographical Area	Binary Representation
A2	Afghanistan	1010 0010	44	Maldives	0100 0100
02	American Samoa	0000 0010	46	Marshall Islands	0100 0110
04	Australia	0000 0100	48	Micronesia	0100 1000
A4	Australia	1010 0100	50	Mongolia	0101 0000
06	Bangladesh	0000 0110	52	Myanmar	0101 0010
08	Bhutan	0000 1000	54	Nauru	0101 0100
10	Brunei Darussalam	0001 0000	56	Nepal	0101 0110
12	Cambodia	0001 0010	58	New Caledonia	0101 1000
16	China	0001 0110	60	New Zealand	0110 0000
1A	China	0001 1010	62	Niue Island	0110 0010
1C	China	0001 1100	64	Pakistan	0110 0100
A6	China	1010 0110	66	Palau	0110 0110
AA	China	1010 1010	68	Papua New Guinea	0110 1000
18	Hong Kong, China	0001 1000	72	Philippines	0111 0010
40	Macao, China	0100 0000	74	Republic of Korea	0111 0100
20	Taibei, China	0010 0000	76	Samoa	0111 0110
22	Cook Islands	0010 0010	78	Singapore	0111 1000
24	DPR. of Korea	0010 0100	80	Solomon Islands	1000 0000
26	Fiji	0010 0110	82	Sri Lanka	1000 0010
28	French Polynesia	0010 1000	84	Thailand	1000 0100
30	India	0011 0000	86	Tonga	1000 0110
32	Indonesia	0011 0010	88	Tuvalu	1000 1000
34	Japan	0011 0100	90	United States	1001 0000
36	Kiribati	0011 0110	92	Vanuatu	1001 0010
38	Lao PDR.	0011 1000	94	Vietnam	1001 0100
42	Malaysia	0100 0010	96	Wallis Islands	1001 0110

* 14, 70 is intentionally left blank