International Civil Aviation Organization

MIDANPIRG Communication, Navigation and Surveillance Sub-Group

Eighth Meeting (CNS SG/8)
(Cairo, Egypt, 26 - 28 February 2018)

Agenda Item 4: CNS Planning and Implementation in the MID Region

SURVEILLANCE PLAN

(Presented by Secretariat)

SUMMARY

The aim of this paper is to present a Draft Surveillance Plan in the MID Region, for review and inputs by the meeting, and presents States' activities on MICA website regarding the Mode S Interrogator Code (IC) allocation.

Action by the meeting is at paragraph 3.

References

- MIDANPIRG/16 Report
- MID DOC 005 (SSR Code Management Plan)

1. INTRODUCTION

1.1 The meeting may recall that MIDANPIRG/16, through Decision 16/23, agreed that a MID Region Surveillance Plan should be developed by the CNS SG in coordination with ATM SG, taking into consideration the Users' and States' operational needs and requirements.

DECISION 16/ 23: MID REGION SURVEILLANCE PLAN

That, the MID Region Surveillance Plan be developed by the CNS SG, based on the operational needs identified by the ATM SG.

2. DISCUSSION

2.1 As a follow-up to the MIDANPIRG Decision 16/23, the Secretariat developed the Draft Surveillance Plan at **Appendix A**.

2.2 The meeting is invited to review the Draft Surveillance Plan and provide inputs to further improve it.

2.3 The meeting may recall that MIDANPIRG/15, through Conclusion 15/32, endorsed the "MID Region Process for Mode S Interrogator Codes Allocation". Moreover, MIDANPIRG/16 agreed to the following Conclusion:

CONCLUSION 16/ 22: MODE S INTERROGATOR CODE (IC) ALLOCATION

That, States, that have not yet done so, be urged to:

a) provide the ICAO MID Office with their Mode S Interrogator Code (IC) Focal Points; and

b) register to the MICA application for the allocation of the Mode S Interrogator Code (IC) at: https://ext.eurocontrol.int/mica/Index.action

2.5 As a follow-up action to the above Conclusion, the ICAO MID Office issued State Letter Ref.: AN 7/27– 17/329 on 26 November 2017. Replies were received from three (3) States (Jordan, Kuwait and Sudan). The States' registered User(s) on MICA website is at **Appendix B.**

2.6 It should be underlined that MICA focal Points shall revalidate the IC allocations under their responsibility every 5 years, and confirm to the MICA Cell whether the issued IC allocations are still in use. This revalidation is to occur every 5 years following the effective date of the issued IC allocation, according to the MID Doc 005 (SSR Code Management Plan). The registered IC Codes in the MID Region is at **Appendix C**.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) urge States to implement Conclusion 16/22, and revalidate IC allocations on timely manner to avoid codes withdrawal;

b) review and update, as deemed necessary, the surveillance plan at **Appendix A;** and

c) endorse the following Draft Conclusion:

DRAFT CONCLUSION 8/X: ***SURVEILLANCE PLAN***

*That, States review the Draft MID Region Surveillance Plan at **Appendix 8X**, and provide the ICAO MID Office with their comments/inputs by **15 April 2018** in order to present the consolidated version to the ATM SG/4 and ANSIG/3 meetings for further review and improvement.*

2/24/2018

MID Surveillance Plan

Version 1.0

CNS SG
ICAO MID OFFICE

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1- BACKGROUND

The purpose of this document is to review the available surveillance technologies and highlight their strengths and weaknesses, in order to develop a MID Region Surveillance Plan based on Regional operational requirements, Users' capabilities and specificities of the Region.

The global Air Navigation Plan (GANP) through B0-ASUR, defined the possibility of using lower cost ground surveillance supported by new technologies such as ADS-B OUT and wide area multilateration (MLAT) systems.

MIDANPIRG/16 through Decision 16/24 tasked the CNS SG to develop MID Surveillance Plan based on the Regional operational requirements identified by the ATM SG:

> *DECISION 16/ 23: MID REGION SURVEILLANCE PLAN*
>
> *That, the MID Region Surveillance Plan be developed by the CNS SG, based on the operational needs identified by the ATM SG.*

This document provides summary of the available surveillance technologies for Civil aviation use, strengths and weaknesses, comparison between them and implementation timelines in the MD Region. The plan timelines are divided into three stages; short-term until 2020, mid-term from 2021 to 2025, and long-term beyond 2025.

2- INTRODUCTION

The surveillance service delivered to users may be based on a mix of three main types of surveillance:

a) independent non-cooperative surveillance: the aircraft position is derived from measurement not using the cooperation of the remote aircraft; like Primary Surveillance Radar (PSR);

b) independent cooperative surveillance: the position is derived from measurements performed by a local surveillance subsystem using aircraft transmissions. Aircraft derived information (e.g., pressure altitude, aircraft identity) can be provided from those transmissions, like Secondary Surveillance Radar (SSR) and Multilateration; and

c) dependent cooperative surveillance: the position is derived on board the aircraft and is provided to the local surveillance subsystem along with possible additional data (e.g., aircraft identity, pressure altitude). Like Automatic Dependent Surveillance-Broadcast (ADS-B) and Automatic Dependent Surveillance-Contract (ADS-C).

The main applications of ATC Surveillance in civil aviation are:

1- Aerodrome Control Service;
2- Approach Control Service; and
3- Area Control Service.

3- SURVEILLANCE IN GANP

The GANP addressed the emerging Surveillance technologies through the thread Alternative Surveillance in block 0 (B0-ASUR), the technologies laid down in that module are ADS-B out and MLAT.

The lower costs of dependent surveillance infrastructure (ADS-B and MLAT) in comparison to conventional radars support business decisions to expand radar-equivalent service volumes and the use of radar-like separation procedures into remote or non-radar areas.

The eleventh Air Navigation Conference recommended ADS-B on 1090MHz for international use and this is happening. Equipage rate is growing together with Mode S, airborne collision avoidance system (ACAS) and ADS-B OUT mandates. ADS-B OUT, Version 2 also provides for ACAS RA DOWNLINK information.

The GANP Surveillance roadmap is depicted in figure (1).

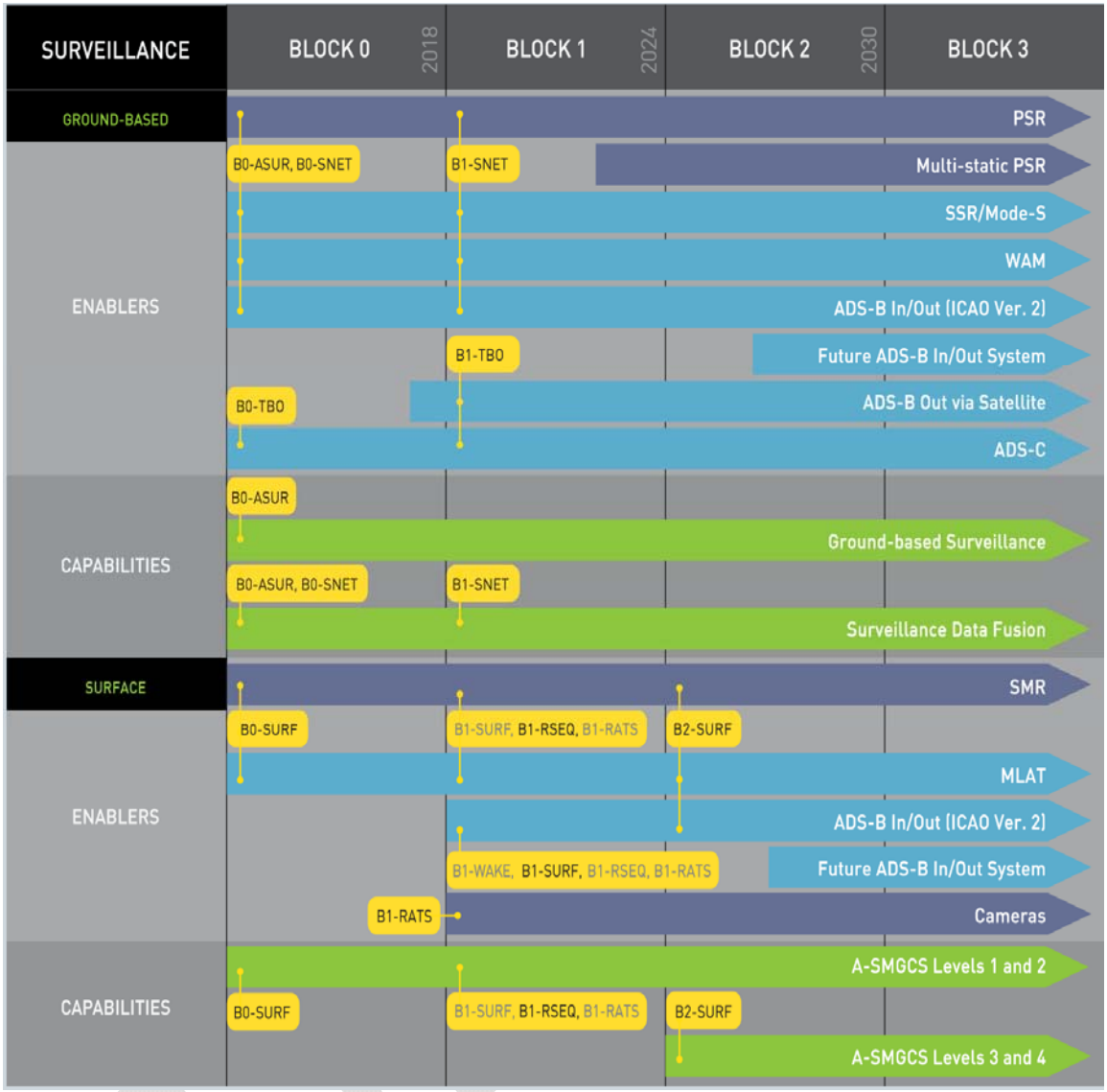

Figure (1)

4- SURVEILLANCE TECHNOLOGIES

4-1 PRIMARY RADAR

Primary Surveillance Radar (PSR) derives aircraft position based on radar echo returns, PSR transmits a high-power signal, some of which is reflected by the aircraft back to the radar. The radar determines the aircraft's position in range from the elapsed time between transmission and reception of the reflection.

Surface Movement Radar is the most widely used non-cooperative surveillance system for aerodrome surveillance. SMR is a primary radar that provides surveillance cover for the manoeuvring area, which is defined as that used for the take-off, landing and

taxiing of aircraft. In A-SMGCS, the non-cooperative surveillance service is typically provided by one or several SMRs.

Millimetre radar is an emerging technology used for aerodrome surveillance which provides higher resolution than traditional SMR. Millimetre Radar and SMR can be used for FOD Detection.

The strengths and weaknesses below are related to the PSR.

4-1-1 Strengths

- Independent Radar, does not require any specific equipment of the aircraft (Transponder).

4-1-2 Weaknesses

- Does not provide the identity or the altitude of the Aircraft
- cannot be easily sited in oceanic locations, or rough terrain such as in mountainous regions
- PSR has a heavy reliance on mechanical components with large maintenance requirements
- High CAPEX
- Can report false target

4-2 SECONDARY SURVEILLANCE RADAR (SSR/MSSR)

A surveillance radar system which uses transmitters/receivers (interrogators) and transponders.

4-2-1 Strengths

- receive aircraft data for barometric altitude, identification code

4-2-2 Weaknesses

- High CAPEX
- cannot be easily sited in oceanic locations, or rough terrain such as in mountainous regions
- has a heavy reliance on mechanical components with large maintenance requirements,

4-3 MODE S RADAR

An enhanced mode of SSR that permits selective interrogation and reply capability.

4-3-1 Strengths

- improve shortage and constraints in Mode a codes (Aircraft ID)
- backward compatible with transponder mode A/C
- ability to download enhance surveillance information

4-3-2 Weaknesses

- has a heavy reliance on mechanical components with large maintenance requirements
- cannot be easily sited in oceanic locations, or rough terrain such as in mountainous regions
- High CAPEX

4-4 ADS-B

Dependent surveillance is an advanced surveillance technology that allows avionics to broadcast an aircraft's identification, position, altitude, velocity, and other information.

4-4-1 Strengths

- improve shortage and constraints in Mode a codes (Aircraft ID)
- Low cost
- Easy to maintain
- The non-mechanical nature of the ADS-B ground infrastructure make it easy to relocate and maintain.
- it to be sited in locations that are difficult for radar installations, like hilly areas, filling the surveillance gap between radar coverage
- provide radar-like separation procedures into remote or non-radar areas
- Use of dependent surveillance also improves the search and rescue support provided by the surveillance network, ADS-B's positional accuracy and update rate allows for improved flown trajectory tracking allowing for early determination of loss of contact and enhances the ability for search and rescue teams to pinpoint the related location

4-4-2 Weaknesses

- aircraft must be equipped with ADS-B OUT
- dependent on GNSS, outage of GNSS affect ADS-B

4-5 ADS-C

The aircraft uses on-board navigation systems to determine its position, velocity and other data. A ground ATM system establishes a "contract" with the aircraft to report this information at regular intervals or when defined events occur. This information is transmitted on point-to-point data links.

4-5-1 Strengths

- can be easily sited in oceanic locations, or rough terrain such as in mountainous regions
- does not need ground infrastructure
- minimal cost at ANSP

- use of dependent surveillance also improves the search and rescue support provided by the surveillance network

4-5-2 Weaknesses

- high cost per report, as the airline use third party network.
- long latency when satellite used.

The ADS-C used in Oceanic and remote areas (non-Radar area), therefore, it will be excluded in the next section as it's not applicable in the MID Region.

4-6 MLAT

MLAT is a system that uses currently existing aircraft transponder signals to calculate, usually as a minimum, a three-dimensional position. it requires a minimum of four receiving stations to calculate an aircraft's position. If the aircraft's pressure altitude is known then the position may be resolved using three receiving stations.

MLAT can act in two modes; Passive mode where it uses the existing transmissions made by the aircraft, or active mode, to trigger replies in the manner of Mode S SSR interrogations.

The technique is used to provide surveillance over wide area (wide area MLAT system - WAM).

4-6-1 Strengths

- can make use of currently existing aircraft transmissions, does not requires specific avionic.
- improve shortage and constraints in Mode A codes (Aircraft ID)
- provides a transition to an environment where the majority of aircraft will be equipped with ADS-B.

4-6-2 Weaknesses

- requires multiple sensors to calculate aircraft's positions
- high running cost; including maintenance; telecommunication; multiple secured sites
- needs a common time reference to determine the relative TOA of the signal at the receiving stations (time-stamped by a common clock or synchronism by a common reference such as GNSS)

5- COMPARISON BETWEEN SURVEILLANCE TECHNOLOGIES

	MSSR	Mode S	ADS-B	MLAT
1)Required Avionics	Mode A/C	Mode S transponder	ADS-B or 1090 ES (Mode S + ADS-B)	Can process data from all ADS-B/ES, Mode S, Mode A/C
2)Information Provided	mode A codes, Pressure altitude	mode A codes; Pressure altitude; 24-bit address of the aircraft; aircraft "on-the-ground" status; aircraft ID; aircraft pressure-altitude with 25-ft resolution; and other information	Position, flight level (barometric), position integrity, geometric altitude (GPS altitude), 24 bit unique code, Flight ID, velocity vector, vertical rate, emergency flags, aircraft type category	Position, flight level (barometric), calculated altitude, 4 digit octal identity, calculated velocity vector +mode s data
3)Accuracy & update rate	moderately high update rate	Moderately high update rate	High accuracy, inherent accuracy of the GPS determined position, and very high update rate	High accuracy, GNSS is critical for MLAT
4)Coverage	250 NM	250 NM	250 NM	**Depending on the geometry, covering 250NM may require 15 sensors as

				average, hilly areas requires more
5)Failure effect	Total loss of coverage	Total loss of coverage	Total loss of coverage	Partial or negligible, (N-1) principle
6) Cost*				
6.1 CAPEX				
Sensor Purchase	3 M $	4 M$	300 K$	Depending on geometry, for 15 sensors average cost is 5M$
Site requirement (Civil work, renting/buying land(s), fence,…, etc.)	One site required High cost of the tower	One site required High cost of the tower	One site required Cost less	15 sites required
6.2 OPEX				
Maintenance cost (periodic, preventive, emergency)	Heavy maintenance (mechanical parts)	Heavy maintenance (mechanical parts)	Less maintenance cost	High maintenance costs to multiple sites (15)
Telecommunication media	Dual Telecom. connections Required From the sensor site to the ATM centre	Dual Telecom. connections Required From the sensor site to the ATM centre	Dual Telecom. connections Required From the sensor site to the ATM centre	Multiple (15) Dual Telecom. connections Required From the sensor site to the ATM centre

Site physical Security	One secured site	One secured site	One secured site	Multiple (15) secured Site

**The cost does not take into consideration fleet equipage cost*

*** Number of MLAT sensor depends on geometry area and number of clusters, 15 sensors is an estimated number to cover flat 250 NM.*

6. OPERATIONAL REQUIREMENTS

To be added by ATM SG

7. BASELINE IN THE MID REGION

- All MID State have been using SSR/MSSR
- Few MID States implemented MLAT at International Aerodromes
- ADS-B has been installed at some States as backup and complementary means to the MSSR
- Several States have installed Radar Mode S
- States have installed MLAT as WAM and to be used as ADS-B in later stage , ???
- Many Surveillance Gap areas are existing in the Region
- State issued ADS-B Mandate to commence in 2020
- Adjacent Regions mandated carriage of ADS-B. Europe and FAA in 2020.
- Several ADS-B mandate worldwide will accelerate the ADS-B equipage. However, Regional Airline, General flights and Military aircraft impeding the ADS-B implementation in the MID Region.

8- MID REGION SURVEILLANCE PLAN

8.1 Short Term (2018 – 2020)

- Make full use of SSR Mode 'S' capabilities, reduce reliance on 4 digit octal code.
- States to consider emerging dependent Surveillance technologies (ADS-B and MLAT) in their national Surveillance Plans.
- State should conduct safety assessment for ADS-B/ MLAT implementation as per [5].
- The proportions of equipped aircraft are critical for the ADS-B deployment, therefore, States should early involve Users, communicate the change, the rationale and the impact.
- States are encouraged to use INCENTIVE strategy with stakeholders to accelerate ADS-B equipage; incentive approach might be financial or operational incentive or combined (e.g. Most Capable Best Served principle, waive fees).
- Prioritize ADS-B implementation in areas where there is no radar coverage surveillance.
- MLAT/SMR to be implemented at Aerodrome to enable A-SGMC

8.2 Mid Term (2021-2024)

- ADS-B to be implemented for Area and approach Control Services, where implementation would bring capacity and operational efficiencies;
- Relocate, as appropriate, WAM Sensors to work as ADS-B receivers
- States to share Radar/ADS-B data to improve boundary coverage and enhance the surveillance availability.
- Retain Mode S Radar as backup to ADS-B
- Airlines to upgrade ADS-B Avionic to ADS-B in/out.

8.3 Long Term (2025 Onward)

- ADS-B is foreseen to be main Surveillance technology. The existence of Multi-constellation GNSS (GPS, Galileo, Glonass, …, etc.) reduces the likelihood of ADS-B outage.

- Implementation of Airborne Collision Avoidance System (ACAS) adapted to trajectory-based operations with improved surveillance function supported by ADS-B aimed at reducing nuisance alerts and deviations.

REFERENCES

[1] ICAO Annex 10, Vol V

[2] ICAO Doc 9924, Aeronautical Surveillance Manual

[3] The Aviation System Block Upgrade Doc, July, 2016.

[4] ICAO Doc 9871, Technical Provisions for Mode S Services and Extended Squitter.

[5] ICAO circular 326, Assessment of ADS-B and Multilateration Surveillance to Support Air Traffic Services and Guidelines for Implementation

[6] EUROCONTROL Standard Document for RADAR Surveillance in EN-Route Airspace and Major Terminal Areas.

[7] Guidance Material on Comparison of Surveillance Technologies (GMST), APAC Region.

Mod S IC Allocation

Users

Region:	MID	User ID:	Phone:		
Country:		First Name:	Last Name:	not ldap user	false
Organisation		Profile:	Email:	Only incomplete:	false

Iso	Region	Country	User Name	Organisation	Role	Email	Phone
SA	MID	Saudi Arabia	Jamal FAGHIH	GACA	Focal Point	jfageh@sans.com.sa	+009 6612 6717717
XX	EUR, MID	International Org.	ALEXANDER ENGEL	Eurocontrol	Focal Point	alexander.engel@eurocontrol.int	+32 2 729 3355
AE	MID	United Arab	Ahmed AL OBEIDLI	GCAA Air Navigation	Focal Point	aobaidli@gcaa.gov.ae	+971 2 4054410
XX	EUR, MID	International Org.	BERNARD CUSTINNE	Eurocontrol	Viewer	bernard.custinne@eurocontrol.int	+31 (0)43 366
XX	EUR, MID	International Org.	NICOLAS EERTMANS	Eurocontrol	Viewer	nicolas.eertmans@eurocontrol.int	+32 2 729 3363
XX	EUR, MID	International Org.	ERIC JEANQUART	Eurocontrol	Administrator	eric.jeanquart.ext@eurocontrol.int	+32 2 729 3567
IQ	MID	Iraq	Ibrahim SABAH	Iraqi CAA	Focal Point	ibrahim@geca.gov.iq	+964 78128 01524
XX	EUR, MID	International Org.	JEROME BODART	Eurocontrol	Administrator	jerome.bodart@eurocontrol.int	+32 2 729 4695
XX	EUR, MID	International Org.	Jérôm BODAR	Eurocontrol	Focal Point	bodartjerome@hotmail.com	+32 2 7294695
ZM	MID	ICAO MID	Muna ALNADAF	ICAO MID	Super Focal	aftn_ais@carc.gov.jo	+962 79987 6710
JO	MID	Jordan	Mohammad AL-ROUSAN	Jordan CARC	Focal Point	m.rousan@carc.gov.jo	+00 962 4892282
OM	MID	Oman	Mohammed zahir AL-ABRI	PACA OM	Focal Point	m.alabri@paca.gov.om	+ 96824542752
EG	MID	Egypt	Osama KHALIL	NANSC	Focal Point	engineer.amir.aly@gmail.com	+02 0100 0097422
XX	EUR, MID	International Org.	ERIC POTIER	Eurocontrol	Administrator	eric.potier@eurocontrol.int	+32 2 729 4741
XX	EUR, MID	International Org.	Pulsar CONSULTING	Eurocontrol	Focal Point	tiv@pulsar.be	+32 010 435100
ZM	MID	ICAO MID	Raza GULAM	ICAO MID	Super Focal	rgulam@icao.int	+20 122 5503147
AE	MID	United Arab	Stan FACEY	GCAA Air Navigation	Focal Point	sfacey@gcaa.gov.ae	+971 50 8189407
XX	EUR, MID	International Org.	SYLVAIN WOLKENAR	Eurocontrol	Focal Point	sylvain.wolkenar.ext@eurocontrol.int	+32 2 729 3698

Mod S IC Allocation

Allocations

Region:	MID	Allocation Reference		and:		Ad hoc:	Yes
Country:		Allocation Status:	Issued	Cluster:		Regular:	Yes
Organisatio		Sensor Id:		Interrogator		Processing	

Allocation	Organisatio	Sensor ID	Status	IC	Effective	Cluster	Process ID	Country	Region
MICA/ALLOC 461	NANSC	Aswan ERR	Issued	II = 02	2009-05-14		Ad Hoc 2009-05-	Egypt	MID
MICA/ALLOC 464	NANSC	Hurghada ERR	Issued	II = 05	2009-05-14		Ad Hoc 2009-05-	Egypt	MID
MICA/ALLOC 465	NANSC	Mersa Matruh ERR	Issued	II = 06	2009-05-14		Ad Hoc 2009-05-	Egypt	MID
MICA/ALLOC 467	Lebanon DGCA	Baysour	Issued	II = 02	2009-04-23		Ad Hoc 2009-04-	Lebanon	MID
MICA/ALLOC 530	GACA	RAFHA	Issued	II = 05	2010-03-17		Ad Hoc 2010-04-	Saudi Arabia	MID
MICA/ALLOC 531	GACA	TURAIF	Issued	II = 10	2010-03-17		Ad Hoc 2010-04-	Saudi Arabia	MID
MICA/ALLOC 568	GACA	AL-WEJAH	Issued	II = 01	2010-10-21		ICAC 11	Saudi Arabia	MID
MICA/ALLOC 569	GACA	GASSIM	Issued	II = 03	2010-10-21		ICAC 11	Saudi Arabia	MID
MICA/ALLOC 570	GACA	HAIL	Issued	II = 02	2010-10-21		ICAC 11	Saudi Arabia	MID
MICA/ALLOC 571	GACA	KAIA	Issued	II = 08	2010-10-21		ICAC 11	Saudi Arabia	MID
MICA/ALLOC 572	GACA	TABUK	Issued	II = 06	2010-10-21		ICAC 11	Saudi Arabia	MID
MICA/ALLOC 615	PACA OM	Muscat	Issued	II = 11	2010-06-29		Ad Hoc 2010-06-	Oman	MID
MICA/ALLOC 630	NANSC	Cairo ERR	Issued	II = 11	2011-04-07		ICAC 12	Egypt	MID
MICA/ALLOC 631	GACA	ABHA	Issued	II = 02	2011-04-07		ICAC 12	Saudi Arabia	MID
MICA/ALLOC 632	GACA	BAHA	Issued	II = 06	2011-04-07		ICAC 12	Saudi Arabia	MID
MICA/ALLOC 633	GACA	KFIA	Issued	II = 08	2011-04-07		ICAC 12	Saudi Arabia	MID
MICA/ALLOC 634	GACA	KKIA	Issued	II = 01	2011-04-07		ICAC 12	Saudi Arabia	MID
MICA/ALLOC 635	GACA	QAISUMAH	Issued	II = 06	2011-04-07		ICAC 12	Saudi Arabia	MID
MICA/ALLOC 644	GACA	Training Station	Issued	II = 09	2011-03-02		Ad Hoc 2011-03-	Saudi Arabia	MID
MICA/ALLOC 674	GACA	AFIF	Issued	II = 10	2011-09-22		ICAC 13	Saudi Arabia	MID
MICA/ALLOC 675	GACA	HARAD	Issued	II = 11	2011-09-22		ICAC 13	Saudi Arabia	MID

Allocation	Organisatio	Sensor ID	Status	IC	Effective	Cluster	Process ID	Country	Region
MICA/ALLOC 677	GACA	SHARURAH	Issued	II = 08	2011-09-22		ICAC 13	Saudi Arabia	MID
MICA/ALLOC 678	GACA	SHAYBAH	Issued	II = 07	2011-09-22		ICAC 13	Saudi Arabia	MID
MICA/ALLOC 679	GACA	WADI AL-DAWASIR	Issued	II = 07	2011-09-22		ICAC 13	Saudi Arabia	MID
MICA/ALLOC 744	BCAA	Site 117	Issued	II = 09	2011-12-17		Ad Hoc 2011-12-	Bahrain	MID
MICA/ALLOC 884	DGCA Kuwait	ASR	Issued	II = 07	2013-07-25		ICAC 17	Kuwait	MID
MICA/ALLOC 974	Dubai ANS	DWC Thales	Issued	II = 06	2014-01-09		ICAC 18	United Arab	MID
MICA/ALLOC 975	Dubai ANS	DXB Thales	Issued	II = 03	2014-01-09		ICAC 18	United Arab	MID
MICA/ALLOC 1000	QCAA	SIR-S	Issued	II = 02	2014-06-26		ICAC 19	Qatar	MID
MICA/ALLOC 1057	Abu Dhabi	AUH	Issued	II = 05	2015-11-12		ICAC 22	United Arab	MID
MICA/ALLOC 1058	BCAA	Site 116	Issued	II = 10	2015-11-12		ICAC 22	Bahrain	MID
MICA/ALLOC 1064	GACA	SODA	Issued	II = 03	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1066	GCAA Air	RAK	Issued	II = 01	2015-11-12		ICAC 22	United Arab	MID
MICA/ALLOC 1074	Jordan CARC	ModeS-1	Issued	SI = 12	2015-11-12		ICAC 22	Jordan	MID
MICA/ALLOC 1078	NANSC	Asyut ERR	Issued	II = 10	2015-11-12		ICAC 22	Egypt	MID
MICA/ALLOC 1082	RSAF	ABHA (S-13)	Issued	II = 01	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1083	RSAF	AFIF (W-20)	Issued	SI = 28	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1084	RSAF	AL-BAHA (W-18)	Issued	II = 05	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1085	RSAF	AL-DHAHRAN (E-01)	Issued	II = 13	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1086	RSAF	AL-HADA (W-01)	Issued	II = 11	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1087	RSAF	AL-KHARJ (C-61)	Issued	II = 05	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1088	RSAF	AL-NARIYAH (E-08)	Issued	II = 04	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1089	RSAF	ARAR (N-68)	Issued	II = 11	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1090	RSAF	HAIL (C-20)	Issued	II = 13	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1091	RSAF	JABEL AL-LAWZ (N-04)	Issued	II = 03	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1092	RSAF	JABEL AL-WAARD (N-17)	Issued	SI = 60	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1093	RSAF	QUAISUMA (E-15)	Issued	SI = 12	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1095	RSAF	SAILBOUK (C-01)	Issued	SI = 60	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1096	RSAF	SHAROURAH (S-25)	Issued	II = 04	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1097	RSAF	SULAYEL (S-07)	Issued	II = 13	2015-11-12		ICAC 22	Saudi Arabia	MID

Allocation	Organisatio	Sensor ID	Status	IC	Effective	Cluster	Process ID	Country	Region
MICA/ALLOC 1098	RSAF	TURAIF (N-39)	Issued	SI = 28	2015-11-12		ICAC 22	Saudi Arabia	MID
MICA/ALLOC 1124	Dubai ANS	DXB 2 Thales	Issued	SI = 12	2016-04-28		ICAC 23	United Arab	MID
MICA/ALLOC 1128	PACA OM	Duqm	Issued	II = 13	2016-04-28		ICAC 23	Oman	MID
MICA/ALLOC 1129	PACA OM	Qayroon Heriti	Issued	II = 01	2016-04-28		ICAC 23	Oman	MID
MICA/ALLOC 1130	PACA OM	Ras Al Hadd	Issued	II = 09	2016-04-28		ICAC 23	Oman	MID
MICA/ALLOC 1131	PACA OM	Wodam Al Sahil	Issued	II = 04	2016-04-28		ICAC 23	Oman	MID
MICA/ALLOC 1140	GCAA Air	GHA	Issued	SI = 28	2016-10-13		ICAC 24	United Arab	MID
MICA/ALLOC 1160	Abu Dhabi	ALN	Issued	SI = 60	2016-09-30		Ad Hoc 2016-09-	United Arab	MID
MICA/ALLOC 1173	GACA	MADINAH	Issued	SI = 36	2017-03-30		ICAC 25	Saudi Arabia	MID
MICA/ALLOC 1177	NANSC	HURGHADA APPROACH	Issued	SI = 52	2017-03-30		ICAC 25	Egypt	MID
MICA/ALLOC 1178	NANSC	TABA Approach	Issued	SI = 20	2017-03-30		ICAC 25	Egypt	MID
MICA/ALLOC 1225	Iraqi CAA	AlNajaf	Issued	II = 01	2017-09-14		ICAC 26	Iraq	MID
MICA/ALLOC 1232	PACA OM	SLL APP Radar	Issued	II = 02	2017-09-14		ICAC 26	Oman	MID
MICA/ALLOC 1277	GACA	AL JOUF	Issued	SI = 08	2018-03-01		ICAC 27	Saudi Arabia	MID
MICA/ALLOC 1278	GACA	Khayber	Issued	SI = 23	2018-03-01		ICAC 27	Saudi Arabia	MID
MICA/ALLOC 1293	RJAF	Z1 (Qatraneh TPS-77)	Issued	SI = 07	2018-03-01		ICAC 27	Jordan	MID
MICA/ALLOC 1294	RJAF	Z2 (Azrak FPS-117)	Issued	SI = 55	2018-03-01		ICAC 27	Jordan	MID
MICA/ALLOC 1295	RJAF	Z3 (Ras AlNaqab TPS-	Issued	SI = 24	2018-03-01		ICAC 27	Jordan	MID
MICA/ALLOC 1296	RJAF	Z4 (Rweished TPS-77)	Issued	SI = 41	2018-03-01		ICAC 27	Jordan	MID
MICA/ALLOC 1297	RJAF	Z5 (Ajloun TPS-77)	Issued	SI = 09	2018-03-01		ICAC 27	Jordan	MID
MICA/ALLOC 1298	RSAF	RAFHA (N-69)	Issued	SI = 44	2018-03-01		ICAC 27	Saudi Arabia	MID

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