



INFORMATION PAPER

**SPECIAL AFRICA-INDIAN OCEAN (AFI)
REGIONAL AIR NAVIGATION (RAN) MEETING**

Durban, South Africa, 24 – 29 November 2008

Agenda item 6: Development of a set of comprehensive work programmes in the Air Navigation field, aimed at improving efficiency of the Air Navigation System (Efficiency Committee)

SITA's experience and services to expedite the implementation of sustainable and reliable air navigation services in AFI

(Presented by SITA)

SUMMARY

As an air transport community owned organisation (including the majority of the world's airlines) SITA fully supports ICAO's initiative to expedite the implementation of sustainable and reliable air navigation service and infrastructure improvements in the AFI region. This Information Paper highlights specific technological areas in which SITA could facilitate the realisation of improvements in the AFI region. These include the leveraging of SITA's AFI wide data communications network services and the deployment of ICAO defined CNS/ATM technology such as ADS-Broadcast where required to overcome identified safety deficiencies.

1. INTRODUCTION

1.1 Established over 60 years ago by a group of eleven airlines as a not-for-profit organisation to deliver ground/ground data communications services SITA rapidly evolved to become a global organisation. Today with over 600 members from the air transport community including airlines, airports, aerospace and Global Distribution Systems (GDS) providers SITA's strategic direction is driven by this vast membership from the air transport community; a key element of which is to facilitate and support the deployment of reliable and sustainable air navigation infrastructure throughout the world.

1.2 SITA has actively supported and contributed towards the standardisation, validation and implementation of ICAO recognised CNS/ATM technology. Today SITA provides VHF and satellite air/ground data link communications services to over 180 airlines and 40 air navigation service providers. Air/ground data traffic trend analysis demonstrate that data link communications in support of air traffic management are increasing on an average of 10% per annum confirming the value and benefits of this technology to airlines and air navigation service providers alike.

1.3 Recognising the values of collaboration in the delivery of air navigation infrastructure and services SITA has established significant CNS/ATM related partnerships with the air navigation service providers of a number of States including Germany (DFS), Spain (AENA) and Australia (Airservices Australia).

1.4 With the emergence of the Internet Protocol (IP) as the de-facto international standard and recently adopted by the ICAO Aeronautical Communications Panel SITA encourages and promotes air navigation service providers to migrate to this cost-effective technology for the international and domestic data communications with the rapid obsolescence of legacy technology such as X.25 and low speed AFTN connections. Today SITA provides the critical Eurocontrol Central Flow Management Unit (CFMU) application with over 100 IP connections across Europe to enable the exchange of flow management data between the participating air navigation service providers and the CFMU. The European plans to establish an IP enabled Pan European Network Service (PENS) to support the exchange of multiple application data including flight plans, radar data, NOTAMS, flow management etc. on a regional basis is an example that other regions will benefit from. Such connectivity will enable the implementation of advanced concepts such as System Wide Information Management (SWIM) and Collaborative Decision Management(CDM) which involve the hosting and sharing of relevant stakeholder information (airlines, airports, ATC) in centralised databases so as maximize information sharing and therefore enable the optimal use of available capacity.

1.5 Given the lack of electronic airspace surveillance in many parts of the continent coupled with the Eleventh Air Navigation Conference's endorsement of ADS-Broadcast as an enabling technology necessary for the implementation of the global air traffic management concept there is a clear need to introduce this technology in the region. Airservices Australia and SITA have recently established an Alliance that is developing and promoting the provision of regional ADS-B services to the air navigation service providers in the Asia-Pacific region as a means to accelerate ADS-B implementation in order to realise early safety, efficiency and operational benefits that the technology has the potential to deliver. With SITA's experience in the delivery of regional/global services and the Airservices Australia experience of being the first air navigation service provider in the world to deploy an operational ADS-B service on a large scale the SITA/Airservices ADS-B Alliance provides air navigation service providers with a compelling option to fast track the deployment of this technology.

1.6 The Directorate General Air Communications (DGAC) Indonesia recently completed the implementation of a pilot ADS-B trial in Indonesia that demonstrated the operational and safety benefits. The trial was supported by the Airservices/SITA Alliance and involved the deployment of up to three ADS-B receivers at strategic sites on Indonesian territory as per Figure 1 below. Received ADS-B data was delivered to adjacent States, namely Singapore and Australia which enabled each to acquire increased electronic surveillance of their airspace which without doubt would result in safety and efficiency benefits when an operational service is commissioned.

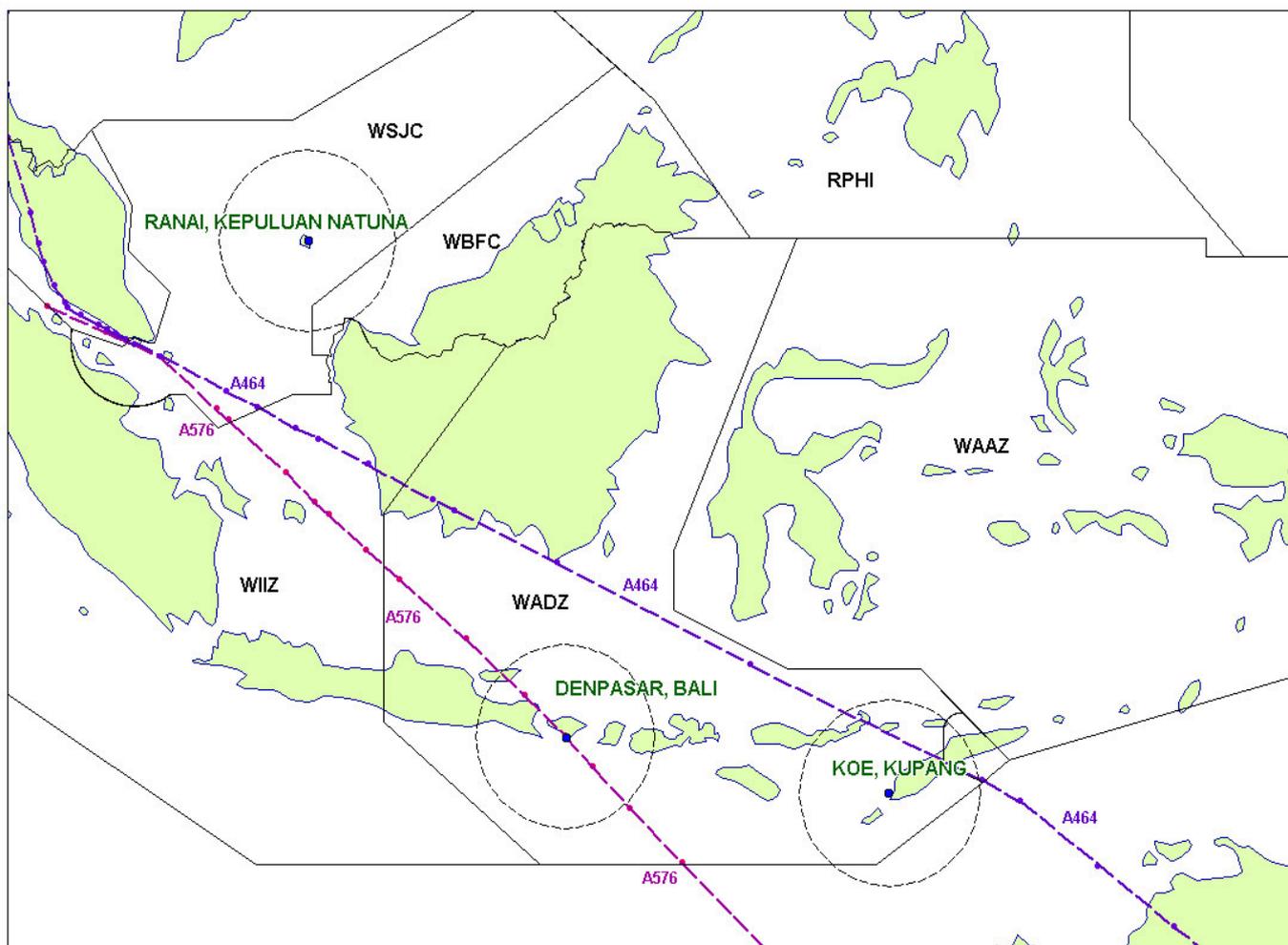


FIGURE 1 – DGAC INDONESIA ADS-B TRIAL SITES

2. CNS/ATM IMPLEMENTATION IN AFRICA

2.1 In recognition of the need to raise and maintain the awareness of air navigation service providers in the latest trends in CNS/ATM technology and implementation status SITA has over the recent years held a number of regional seminars in co-operation with the regional ICAO HQ wherever possible. These events have proved to be very well received and appreciated and result in requests that they be repeated on an annual basis. SITA held one such meeting in cooperation with the ESAF and WACAF offices in the ICAO facilities in March 2006. Recently SITA held CNS/ATM seminar in Cairo in May 2008. SITA is willing to partner with ICAO in the production and delivery of joint CNS/ATM seminars/conferences for the AFI region in order to continue to maintain awareness – the key to informed decision making.

2.2 Today SITA delivers reliable data communications services across the African continent to support airline requirements and has almost completed the migration to IP service availability across the continent. Given that sustainable and reliable telecommunications is an essential pre-requisite to the delivery of safe and efficient air navigation services SITA is willing to work with ICAO to identify areas where SITA’s capabilities can resolve deficiencies identified in the existing communications infrastructure.

2.3 SITA also delivers reliable VSAT based ground/ground networks, both domestic and cross-FIR, to support ANSPs to effectively integrate ATC data (surveillance, AFTN, operational data) and ATC voice (A/G VHF, ATS/DS, operational voice) on a single network. SITA is willing to work with ICAO in expanding this concept to AFI wide integrated ATM network in order to resolve identified communication deficiencies and interoperability issues.

2.4 SITA is currently engaged by a number of states for the design and implementation of domestic VSAT based ATC networks for reliable and efficient voice and data communication between ACCs and remote sites. Our Build, Operate and Transfer (BOT) approach has been well accepted by ANSPs as the right direction in to the future. SITA is willing to work with ICAO in assisting states to audit, redesign and implement their communication infrastructure so as to maximize safety and efficiency.

2.5 Following the introduction of SITA's VHF air/ground data communications service in 1984 and Satellite data communications service in 1991 the industry has witnessed exponential growth in the expansion and use of this service by the majority of the world's airlines for aeronautical operational control (AOC) purposes. Today SITA operates over 1,000 VHF data radios across the globe and delivers the satellite service via two Ground Earth Stations that provide access to INMARSAT geostationary satellites; the combined service is used on a daily basis by over 6,000 aircraft. Since the early 1990's a number of air navigation service providers pioneered the use of this service for the delivery of air navigation services including Digital-ATIS, Departure Clearances, ADS-Contract and Controller Pilot Data Link Communications (the latter two more commonly referred to as "FANS 1/A" in the industry). Since then the deployment of these services has also grown exponentially as air navigation service providers and equipped airlines benefit from the performance of delivery (as compared to voice) and clarity of communications. Today SITA operates over 50 VHF Ground stations and provides blanket SATCOM coverage across the African region.

2.6 In addition to Satcom data link SITA delivers a Satcom Voice service that has the potential to deliver significant safety benefits in the AFI region given the lack of VHF R/T in some areas and performance issues associated with HF voice communications. SITA is willing to work with ICAO to maximise the delivery of efficiency and safety benefits for air navigation that can be accrued through the use of digital air/ground communications.

2.7 This SITA/Airservices ADS-B Alliance service, which integrates Airservices Australia's capabilities and experience with ADS-B in domestic airspace and SITA's experience as a global data link service provider, is a model that SITA will seek to replicate with one or more leading ANSP's in Africa to support any ICAO initiative to deploy ADS-B in a timely, efficient, affordable and most importantly a uniform manner throughout the African region. The ADS-B ground station technology is especially suited to the Africa region as the cost of the stations is approximately 10% of the cost of a radar and the ADS-B stations have no moving parts so they require much less maintenance. SITA proposes to work with the ANSP's in Africa to support efforts to establish cross border surveillance data exchange allowing long range conflict detection.

2.8 Based on feedback that SITA has received from many air navigation service providers from around the world, including many in the AFI region, the ICAO recommendation to migrate from AFTN To AMHS has resulted in many questions given the inherent complexity to specify, procure, install and maintain AMHS equipment especially when the operational and cost/benefits are not clear. As an established service provider with significant experience in messaging services for the airline community (including the transmission and conversion of flight plans from SITA to ICAO formats) SITA is well positioned to deploy an AMHS service which would obviate the need and burden on air navigation service providers to make intensive capital investments for AMHS equipment leaving them with the simple requirement to operate user terminals whilst still complying with ICAO recommendations. SITA is willing to work with ICAO to develop cost-effective solutions for enhancing the migration from AFTN to AMHS.

2.9 Today, the temporality, accuracy and integrity of Aeronautical Information do not meet future Navigation system requirements. Moreover, the current ATM system is based upon isolated information islands: civil and military AIS, MET, ATFM (Air Traffic Flow Management)... This implies a series of transaction points at which aeronautical information integrity is potentially reduced: the same information is manually re-entered a number of times in discrete systems. Migrating from AIS to AIM will ensure uniqueness of aeronautical information throughout the ATM/CNS system. AIM is a new function of ATM/CNS that broadens the current scope of Aeronautical Information. It ensures its quality, integrity and timeliness through the use of fully digital interoperable systems and enables dynamic context based retrieval/delivery of Aeronautical Information. Being at the heart of the aviation Information and Communication Technology, SITA is well positioned to assist ANSPs in migrating from AIS to AIM. SITA is willing to work with ICAO in achieving the above in a reliable and cost effective manner.

3. CONCLUSION

3.1 In general it is important to note:

- a) the value of States collaborating with international service providers that have the capability to facilitate harmonized implementation of complex CNS/ATM technology across regions such as Africa in a more cost effective and accelerated manner than can be achieved by independent national implementations.
- b) the significant areas of expertise and services that SITA has to offer in order to expedite the implementation of reliable CNS/ATM infrastructure and services so as to contribute the delivery of sustainable, safe and efficient air navigation services for the travelling public;
- c) that SITA is willing to support the execution of the Comprehensive Implementation Plan for Africa through providing support and guidance in the relevant areas Programme Phases including Programme Planning (Gap Analysis), Programme Implementation (resolution of relevant identified deficiencies (e.g. data communications, electronic airspace surveillance enabled by ADS-B technology) and educational CNS/ATM seminars);
- d) That SITA congratulates ICAO in taking the initiative to expedite the improvement of air navigation in Africa and that ICAO and the AFI States can rely on SITA as a trusted partner to ensure the success of the initiative under ICAO's leadership and vision.

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