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AIR NAVIGATION SERVICES

COMMUNICATION

ADS-B 1090 MHz and Mode S “Extended Squitter” AIRCRAFT TRANSPONDER REQUIREMENTS IN SOUTH AFRICA

1. Purpose

The purpose of this AIC is to communicate to the South African ATM community the enhancements necessary to improve the Air Traffic Surveillance Services. It also serves to introduce the subject for collaboration by all affected members of the ATM Community prior to the proposed implementation of the Surveillance Services.

In the Republic of South Africa, transponder equipage while operating in CLASS A and CLASS C airspace is mandated according to SA-AIP ENR 1.6.1 to ENR 1.6.5. Furthermore, Regulation 91.05.1 of the Civil Aviation Regulations, 2011 (CAR 2011) read together with the SA-CATS 91.05.1; provide further clarity and support to this ENR mandate.

2. Introduction

For ATNS and any other Air Navigation Service Provider (ANSP) to ensure that adequate conflict management and relevant navigational assistance can be provided as mandated by the State and ensured by the SACAA, it is necessary to continuously review and appropriately update the enabling technologies that allow for improved services, in line with Global, Regional and National plans.

It is expected that provision is made to supplement current surveillance systems as a matter of improvement and eventually replace certain of the current elements which may become obsolete or irrelevant in future. Surveillance Technologies such as Automatic Dependent Surveillance-Broadcast (ADS-B) has been identified as such a technology. In addition, due to the increased traffic volumes, especially in complex terminal areas, the introduction of Extended Squitter Mode Select, (Mode S) transponders are also required to ensure effective operational performance of the surveillance sensors.

ADS-B Mode S enables the automatic provision of essential information fed to the Automated Air Traffic Management Systems required to meet the challenges posed by the global concepts and resultant plans.

3. General

It is recommended that all new transponder installations consist of an ADS-B Extended Squitter/ Mode S. It is envisaged that all aircraft required to carry transponders will need to upgrade in accordance with a schedule consistent with Regional and National Plans which will be appropriately defined.

Considering the outcome of APIRG 22, it is expected that an assessment as to equipage be concluded by 2022, thereafter all aircraft operating in RVSM airspace, should be equipped with ABS-B transponders, extended squitter 1090 by AIRAC EFF 15 June 2023. Thereafter, all aircraft must be equipped operating in the AFI region by AIRAC June 2025.

Concerning the requirement for ABS-B transponders extended squitter 1090 by AIRAC EFF 15 June 2023. An assessment for a Go or No-Go Decision to be conducted during 2022 targeting 90% aircraft equipped with Transponder Extended Squitter 1090 for AFI RVSM airspace as the threshold. This will determine if the requirement for ABS-B transponders extended squitter 1090 by AIRAC EFF 15 June 2023 stands.

4. Conclusion

Implementation progression and installations carried out on South African registered aircraft will need to meet the specification as will be laid down in the CATS to be developed and in accordance with the schedules as defined by the CARS, also to be developed.

During the absence of said CATS/CARS, the interim minimum specification as sanctioned by the ATM/CNS Implementation Committee is as follows:

- i. For aircraft operating in RVSM airspace as well as Class A and C airspace, the RTCA/DO-260B/EUROCAE ED-102A standard and associated TSO's as supported by the FAA and EASA for ABS-B 1090 MHz and Mode S transponder (ES) including GNSS position and altitude source equipment is required.
- ii. For aircraft operating below RVSM airspace but intending to operate in class A and C airspace having a maximum take-off weight (MTOW) of greater than 5700KG and/or operating at or above 250 KIAS, the above-mentioned standard and associated TSO's applies.
- iii. Aircraft operating below RVSM airspace but intending to operate in Class A and C airspace with a (MTOW) of 5700kg or less and/or operating at 250 KIAS or less must comply with the RTCA/DO 260A/EUROCAE ED-102 and associated TSO's as supported by the FAA and EASA for ABS-B 1090 MHz and Mode S transponder (ES) including GNSS position and altitude source equipment.

The Class C airspace referred to in points i – iii above shall be inclusive of the following:

- CTA's (FAOR, FACT, FALE, FABL)
- TMA's (FAOR, FACT, FAGG, FAPE, FAEL, FALE, FABL, FAKM, FAKN, FALA)
- CTR's (FAOR, FACT)



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