



International Civil Aviation Organization

MIDANPIRG Communication, Navigation and Surveillance Sub-Group

Ninth Meeting (CNS SG/9)
(Cairo, Egypt, 19 – 21 March 2019)

Agenda Item 4: CNS planning and implementation in the MID Region

SURVEILLANCE MODE S IMPLEMENTATED IN THE SUDAN

(Presented by Sudan)

SUMMARY

This paper reports about the Surveillance Mode S Implemented in Sudan, the Radars & ADS-B (Mode S) was in operation since 24th of April 2011.

REFERENCES

- Selex Sistemi Integrati (Sudan Radar, Project Manager).
- Sudan Surveillance Implementation plan

1. INTRODUCTION

1.1 *SSR Performance and Limitations:* The following contains part of Annex 10 of the Convention of International Civil Aviation and gives specifications and recommendations of ICAO for SSR to which SSR systems must adhere:

- detection of the aircraft position without to use necessarily decoding Equipments;
- identification of all aircraft, using coding/decoding equipments;
- derivation of the aircraft height code (from the board altimeter);
- identification, if requested, of a single aircraft from the reply of a **SPI** (Special Pulse Identification); and
- to indicate, immediately, an aircraft in an emergency conditions or with the radio communication in trouble.

1.2 Such performance must be available, typically within following limits for all weather conditions:

- up to 200 nautical miles range; and
- up to an altitude of 30.480 m (100.000 feet) for elevation angles between 0.5°+45°; for an azimuth angle of 360°.

2. DISCUSSION

2.1 Sudan civil aviation authority has 6 Radars (Mode S) installed in 2008 at (Khartoum A/P, Port Sudan A/P, Dongola A/P, El Obeid A/P, Damazine A/P and Fashir A/P) and All of them was integrated and started the on air operation since April 2011, except Fashir and Damazine started on 2011 and integrated on 2012.

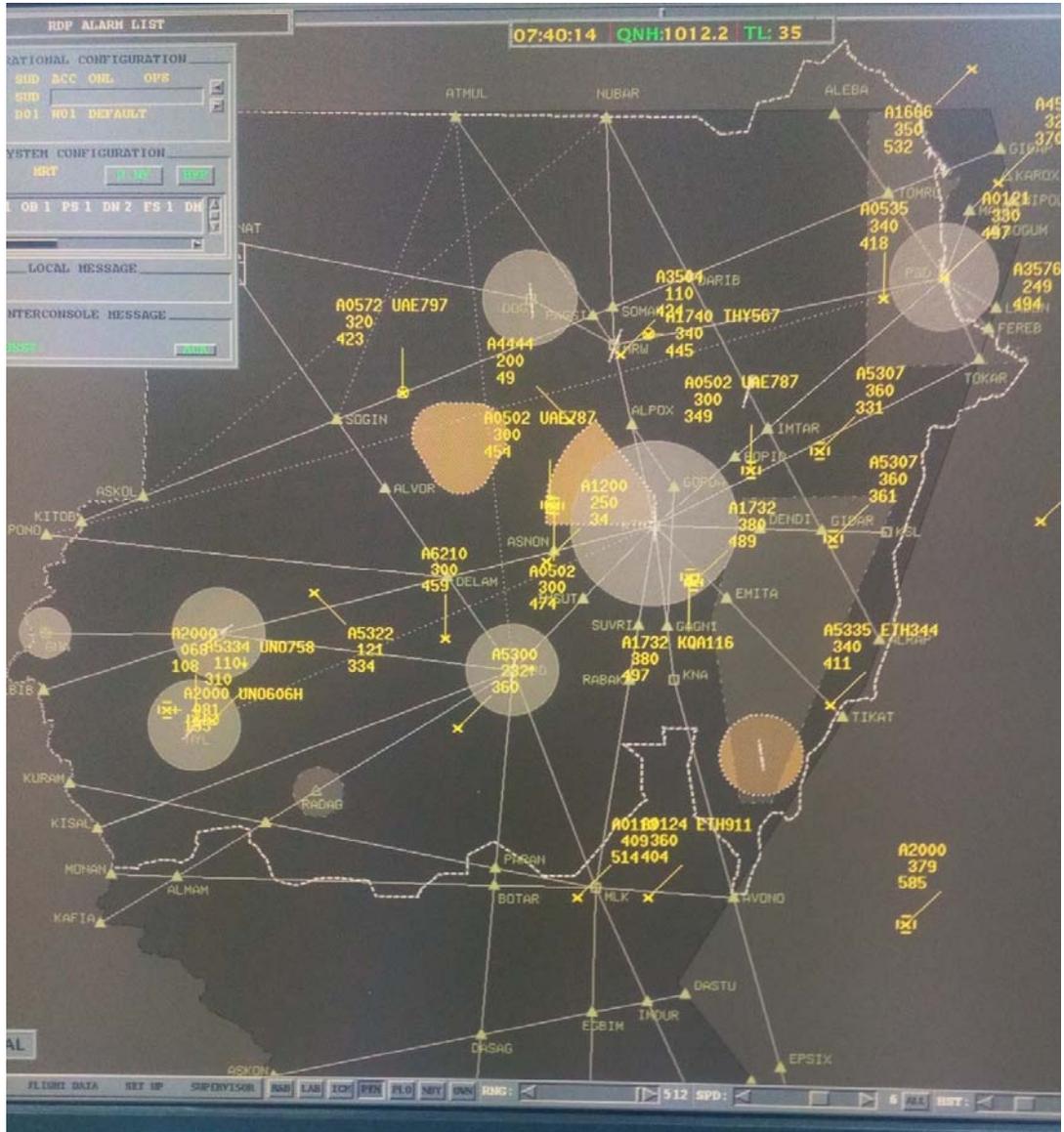
2.2 The type of Radars installed in Sudan are SIR-S Monopulse Selective SSR RADAR ALE- 9 LVA antenna.

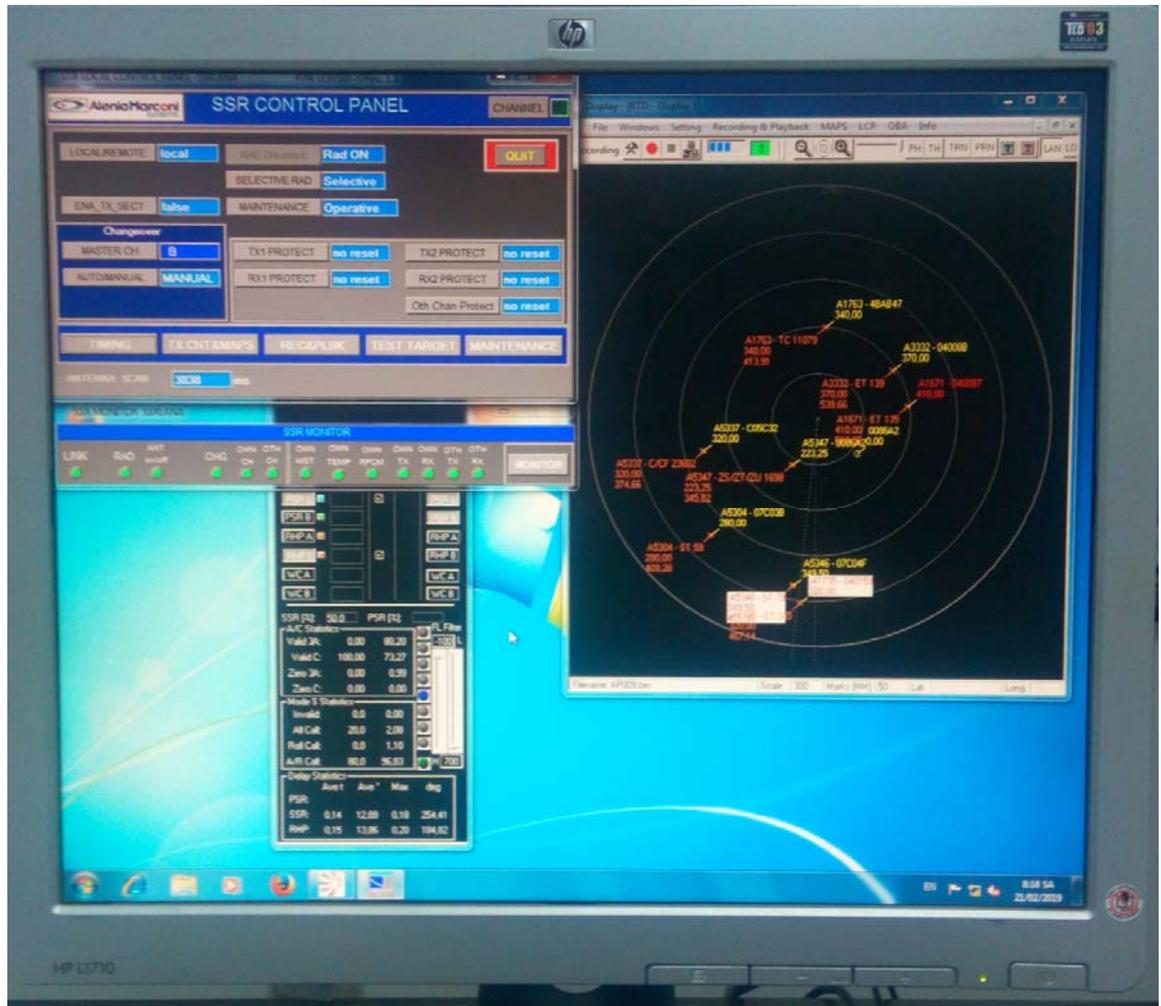
2.3 Sudan installed 4 ADS-B in ATBARAH, ATROUN, MARAWI, NYALA, installed by selex company 3 of them are working normally, except ATROUN Due to problems in power.

2.4 Now we are in project to install 9 new ADS-B in portsudan , Dongola, Damazine Fashir, as a redundancy to the radars and also in Juba, Hagleig, Deaain, Wadi Halfa and Geinana.

2.5 There is a project now running to upgrade 4 of radars in Khartoum, Portsudan, Dongola, Elobied , by new radars system from selex they contain ADS-B installed in (Sudan MSSR Life cycle extension with enhanced functionalities).

2.6 The picture below show the Sudan map covered by surveillance services:





3. Action by the meeting:

The meeting is invited to note the information and update the Draft MID Region Surveillance plan accordingly.

