



Sudan PBN Implementation Plan

PBN SG/4

- **Cairo, Egypt, 19-21 January 2020**

SUDAN PBN

Implementation Plan



- In Sudan there are four international airports:
 - HSSS
 - HSPN
 - HSOB
 - HSNN



Status of Implementation

RWY Ends	ILS / CAT	LNAV	LNAV / VNAV	LPV	RNP AR	RNAV SID	RNAV STAR
18/36 HSSS	1	YES	Approval process	NO	NO	YES	YES
17/35 HSPN	1	YES	Approval process	NO	NO	YES	YES
19/01 HSOB	-	YES	NO	NO	NO	YES	YES
04/22 HSNN	-	YES	NO	NO	NO	YES	YES

SUDAN PBN Implementation Plan

- SUDAN apply RNAV₁ for SIDs and STARs for the international airports.
- Basic RNP₁ for the other airports.
- International aerodromes/TMA with CCO and CDO for both HSSS and HSPN will be design during this year 2020.

SUDAN AIRSPACE

- Sudan airspace restructure represents a significant work that carried by **SCAA** with the assistant of **CGX AERO** and **DSNA** services (The French Aeronautical Expertise)

SUDAN AIRSPACE

- The main objective of the restructure of Sudan (FIR) upper and lower airspace to be in line with National PBN road map, ICAO MID&AFI plan and (ASBU) methodology to ensure capacity, efficiency environmental benefits and safe of air navigation.

SUDAN PBN

Implementation Plan

- 42 new RNAV routes added to the existing conventional network.
- 12 are unidirectional routes.
- RNAV₅ routes above FL285.
- Free routes airspace above flight level 390 in the second step of the project.
- LOA assigned between SCAA and Military Authority contains the application of FUA.

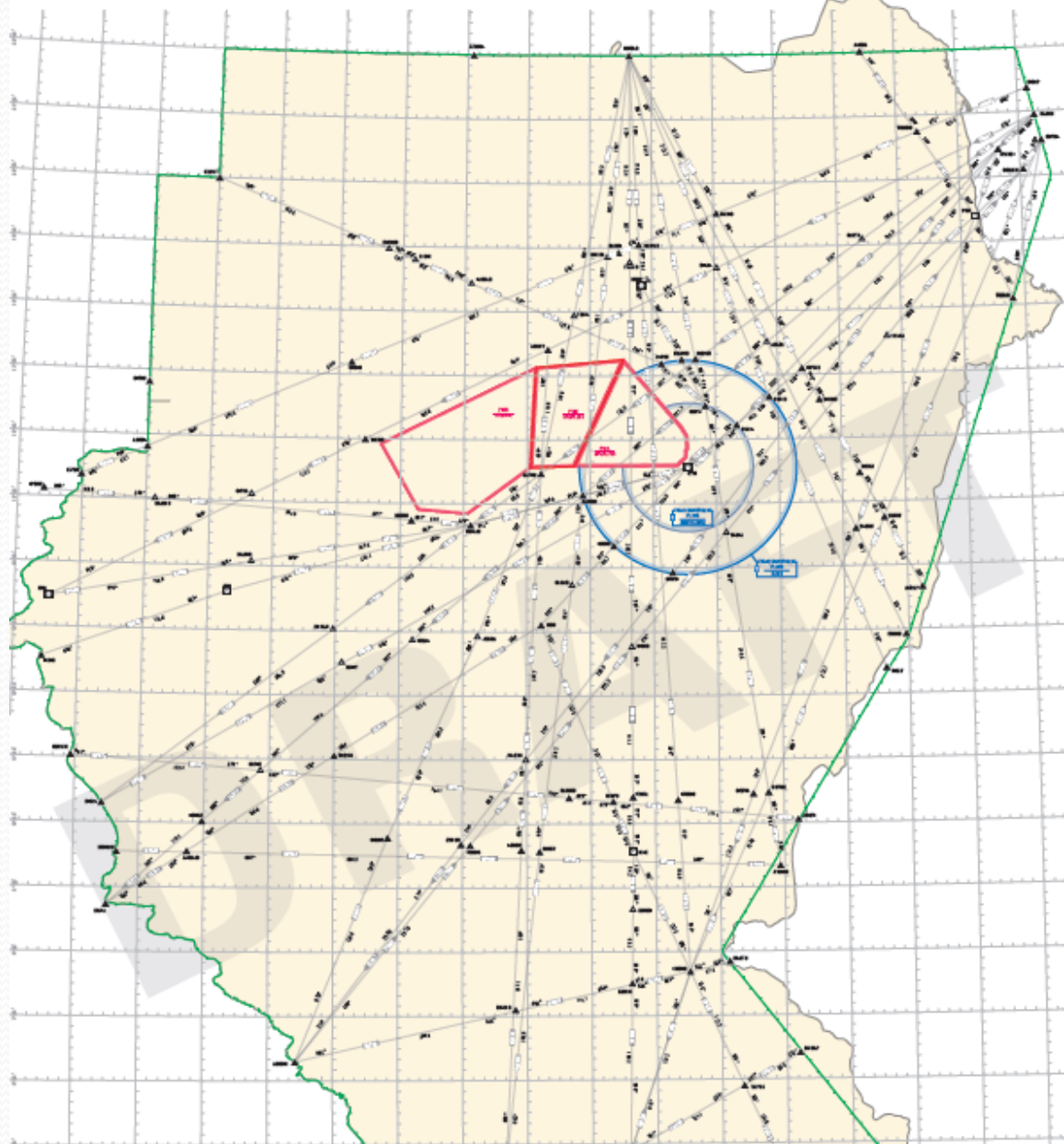
Military area P10s

Vertical limits

	Lower	Upper
P10A	<i>Ground</i>	<i>FL285</i>
P10B	<i>Ground</i>	<i>Unlimited</i>
P10C	<i>Ground</i>	<i>FL285</i>

UPPER RNAV ROUTES

Average Magnetic
Variation: 2° E



New RNAV routes network

- Advantages for the airlines:
 - Save flight time and fuel consumption by reducing distance.
 - Have several options for flight planning.
 - Improve flight plan adherence by formalizing direct routes usually cleared by the controllers.
 - Satisfy most of the requests of the airlines.

New RNAV routes network

- Advantages for Sudanese ATCOs:
 - Decongest hotspots as much as possible.
 - Split bidirectional routes by creating unidirectional routes as much as possible.
 - Formalize direct routes usually cleared by the controllers.
 - Have a network that can answer almost all requests .

Sudan ATS Surveillance System

- The Surveillance System in Sudan include the following:
- 6 MSSR antennas
- *PORT SUDAN*
- *DONGOLA*
- *KHARTOUM*
- *EL OBEID*
- *AL FASHER*
- *AD-DAMAZIN*

Sudan ATS Surveillance System

- SCAA has 16 ADS-B stations:
 - 8 integrated with the system.
 - 8 waiting for integration.

Sites



ATM System



- Sudan signed new contract with Thales company for 10 years to upgrade the hardware and Software of the ATM system (TOPSKY)

ATM System



- SCAA ATM system is supported by :
 - ✓ ADS-C
 - ✓ CPDLC
 - ✓ AIDC
 - ✓ OLDI
 - ✓ Safety net and monitoring function
 - ✓ Recording system



Tools & Facilities

- SCAA supply the IFPD section with very efficient software's
 - ❖ Geotitan
 - ❖ D4F
 - ❖ C4F
 - ❖ OLS
- As4E

Challenges

- Lack of Training in approval process.
- National Aircraft modification for the PBN application.
- Sudanese pilot training in order to safely conduct an operation.
- Regulations governing the application of PBN.

Conclusion



- The new RNAV Routes network, RNAV SIDs and STARs would have an impact for the national airlines, but it has positive effect for all airlines flying over Khartoum FIR or landing Sudan international airports, so that SCAA request from the national airlines to upgrade their fleets to meet the development in the PBN environment.

Conclusion

- The restructure of SUDAN airspace have a cross-border impact, but it has positive effect for all airlines flying over Khartoum FIR, so that we appreciate any support from neighboring countries, ICAO MID/AFI offices and ITATA.

Thanks for
your
attention

