

Implementation of Free Route Airspace (FRA)

ICAO-MID ATM SG10 – WP/21

Jeddah, Saudi Arabia

20 – 23 October 2024



References:

ICAO Global Air Navigation Plan (GANP), Doc 9750-AN/963 Fifth Edition – 2016

ICAO Doc 4444

ICAO Annex 15

ICAO Doc 10066

EUROCONTOL, Free Route Airspace developments - for a route-free European (December 2016)



1. INTRODUCTION TO FREE ROUTE AIRSPACE

1.1 This paper presents an analysis of the of Saudia Arabia's advancements in implementing Free Route Airspace (FRA) within the Jeddah Flight Information Region (FIR). The WP will explore the potential for expanding this innovative concept to other Middle Eastern states.

1.2 OBJECTIVES

- Modernization of the airspace, consistent with the ICAO ASBU module B1-FRTO (improved operation through optimized ATS routing), specified in the Global Air Navigation Plan (GANP)
- Flight Efficiency
- Reduce controller workload
- Increase capacity
- Reduce CO₂ emission

2. Discussion

2.1 FRA CONCEPT DESIGN

Definition :

A specified airspace within which users may freely plan a route between a defined entry point and a defined exit point, with the possibility to route via intermediate (published or unpublished) way points, without reference to the ATS route network, subject to airspace availability. Within this airspace, flights remain subject to air traffic control.

Scope:

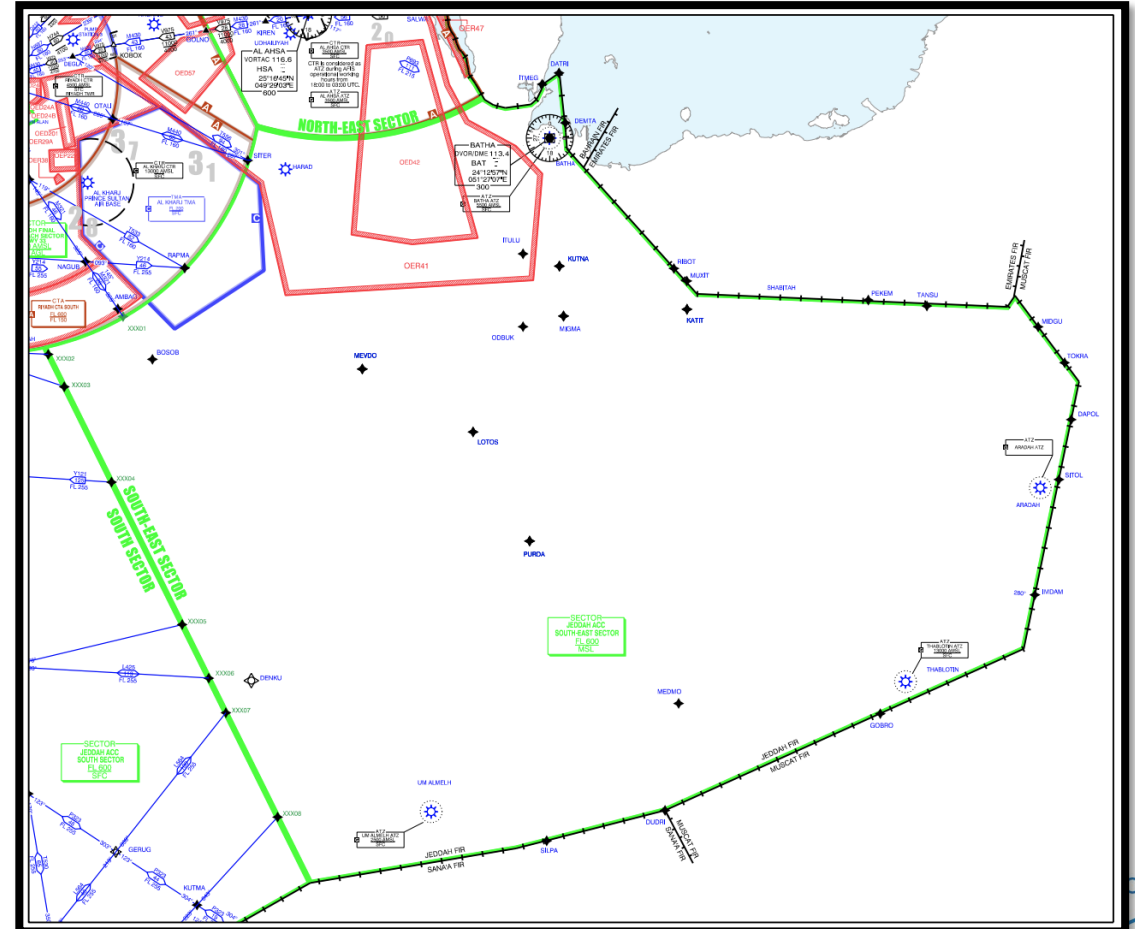
- Meet the Safety Objectives;
- Be compatible with existing operations;
- Be sustainable through further development;
- Be capable of expansion/connectivity to/with adjacent airspace



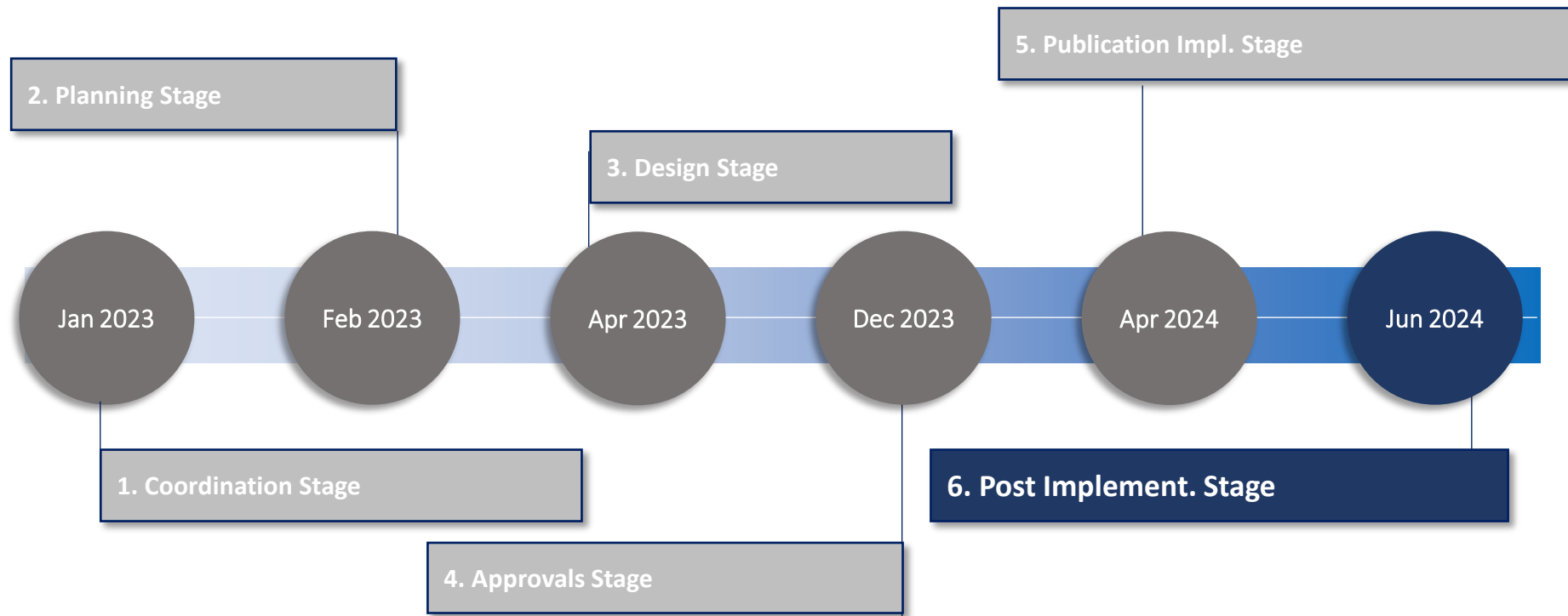
3. IMPLEMENTATION OF FRA

3.1 General

- Effective from **18th April 2024**, the South-East of Jeddah FIR, FL300 and above, is designated FRA
- The FRA procedures are published in the KSA AIP, ENR 2.2.4 and ENR 6-23.
- The ATS route network remains applicable FL290 and below.
- Implementation of FRA was based on the existing CNS/ATM infrastructure
 - NAV : RNAV 5
 - COM: VHF
 - SUR : Radar
- No change to ATC separation



3.2 IMPLEMENTATION PROCESSES



3.2 IMPLEMENTATION PROCESSES

Project Overview:

- Duration: Over a year and a half
- Scope: Comprehensive transformation of airspace operation
- Involvement: Internal and external stakeholders, including SANS, GACA, and national carriers

Key Stages:

- Planning and Design:
 - Team of ATCOs, flight procedure designers, and airspace planners
 - Simulated design concept for compatibility with existing operations
- Safety Assessment:
 - Comprehensive assessment conducted by SANS' Safety Team
 - GACA Approval: Implementation approved following review of necessary documents
 - ATCO Training: Classroom and simulator training prior to implementation



3.3 POST-IMPLEMENTATION

- The feedback from ATCOs was very encouraging. The change was accepted by ATCOs without any change to the procedures.
- However, initially concern was that several airlines were not adhering to FRA procedures, as reported by ATC.
- Pilots reported unaware of the change, although the publication were according to the AIRAC Cycle.
- The issue was eventually resolved, after coordinating with the operators to make sure airspace users are fully aware of the FRA procedures.

4. METHODOLOGY

- In FRA airspace, a user may freely plan a route from ENTRY point DCT (or via Intermediate point) to EXIT point.
- But this initial implementation is based on DCT routing via predetermined ENTRY and EXIT (or Intermediate) waypoints
- This methodology was considered to reduce complexity. It will also serve as a precursor for future expansion of FRA

Entry point	Routing	Exit	Control Frequencies	Remarks
PEKEM	DCT MEDPO DCT	SITUK	134.5*	@MEDPO change to 132.9
	DCT MEDPO DCT	ITRUX	132.9**	
TANSU	DCT	ULUXU	134.5* 132.5**	@175NM after TANSU, change to 132.5
	DCT ASTIN DCT	NOMRU	133.35* 132.5**	@175NM after TANSU, change to 132.5
TOKRA	DCT MEDPO DCT BOSOB DCT	SITUK	134.5* 132.9**	@MEDPO change to 132.9
	DCT MEDPO DCT BOSOB DCT	ITRUX		
	DCT	DUDRI	134.5* 133.35** 132.5***	@80NM after TOKRA, change to 133.35 @85NM before DUDRI, change to 132.5
SITOL	DCT BOSOB DCT	SITUK	133.35* 132.9**	@200NM after SITOL, change to 132.9

Extraction from the FRA routing table in the AIP

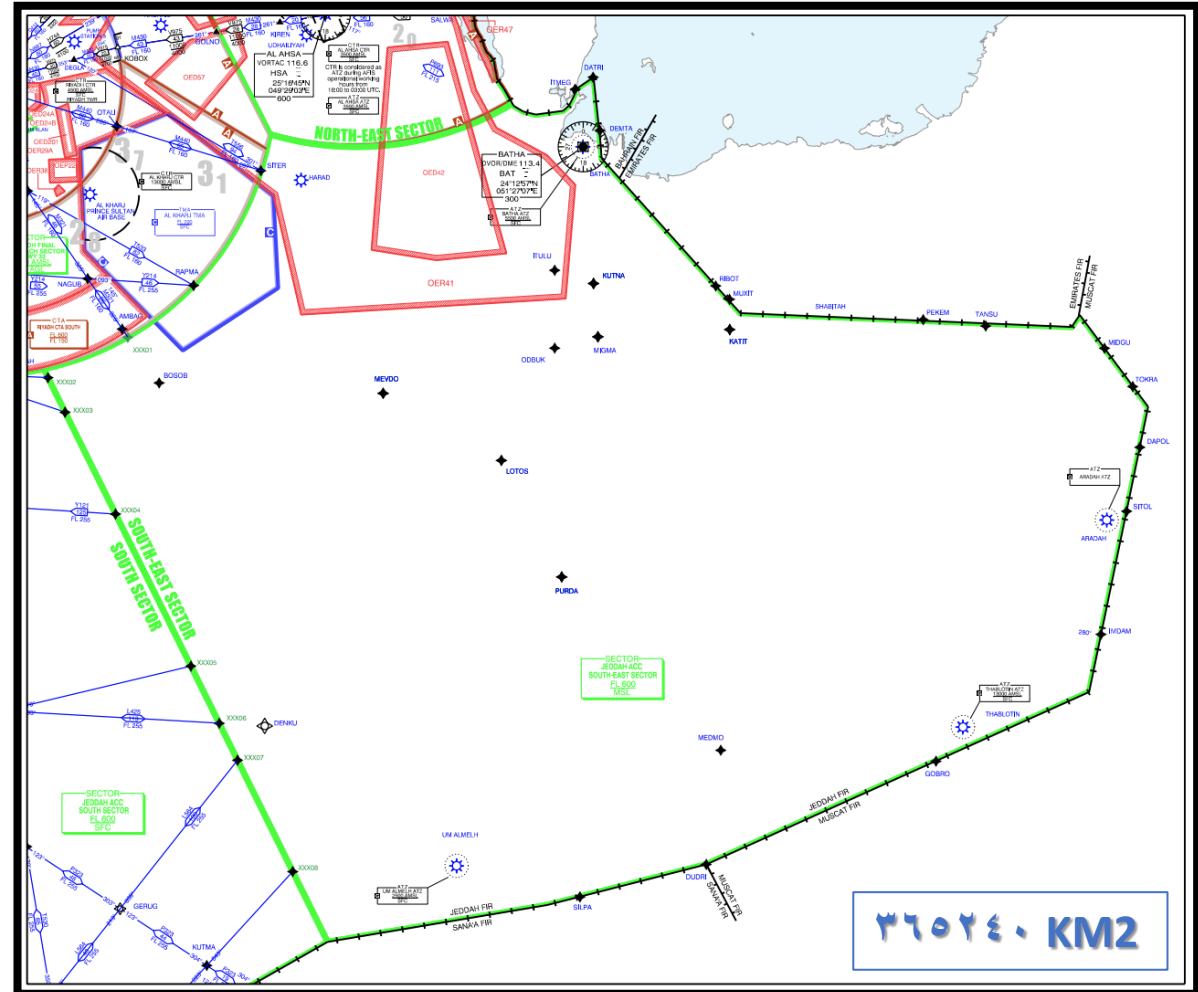
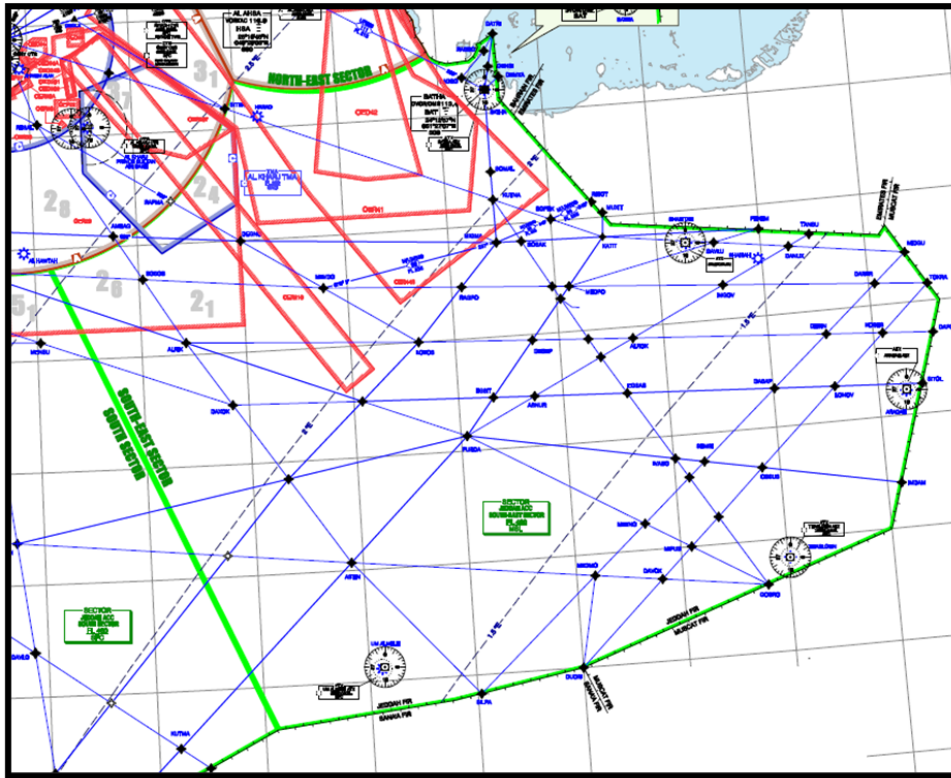
5. BENEFITS PER FLIGHT

Saving: 30NM

Fuel: 308

CO2: 985.6

Time: 6.29



6. FUTURE EXPANSION OF FRA

6.1 General

- Free routes will be expanded to include whole Jeddah FIR, under the **Saudi Future Airspace Concept (SFAC)** project.
- The airspace users will have more freedom to plan routing from ENTRY to EXIT. The current restriction to use pre-determined ENTRY, INTERMEDIATE and EXIT waypoints will be removed.
- Cross-border FRA with adjacent FIRs will be our tiger goal under bilateral or regional agreements.

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6. FUTURE EXPANSION OF FRA

6.2 Plan for Cross-border FRA with Oman

- Implementation of cross-border FRA between Jeddah FIR and Muscat FIR is planned as a joint effort by the two countries
- Muscat FIR and the Southeast sector of Jeddah FIR are adjacent, making it possible to implement cross-border FRA even before the procedures are expanded to whole Jeddah FIR
- Currently the traffic flow between Jeddah FIR and Muscat FIR take place via 6 transfer of control points (TCPs) along the common boundary. The cross-border FRA between Jeddah FIR and Muscat FIR will be implemented in line with the current traffic flow. The current TCPs will serve as FRA Entry/ Exit points.
- The success of this project will determine further expansion of FRA between the two FIRs. This may include making the current TCP as FRA Intermediate points; or allowing aircraft to plan a route from and Entry point in one FIR to an Exit point in another FIR, without an Intermediate point.

6.3 Based on the above, the meeting is invited to review and agree on the following Draft Conclusion:

*Draft Conclusion 10/X: Establishment of a MID Regional Free Route Airspace (FRA)
Working Group*

That, Given the critical importance of implementing FRA in the MID region to enhance air traffic movement, reduce carbon dioxide emissions, and increase capacity and efficiency, it is recommended that a working group be established. This group should comprise representatives from key MID states, ICAO, and IATA. The working group's mandate should be to develop operational concept document for MID-FRA by December 2026.

ACTION BY THE MEETING

The meeting is invited to:

- a) note the progress achieved for FRA implementation in Saudia Arabia;
- b) encourage ICAO MID States to start implementation of FRA on a phased approach; and
- c) agree on the Draft Conclusion in para 6.3.



THANK YOU

BEYOND 