



National PBN Implementation Lebanon

Bo-APTA

(2019 – 2022)

Optimization of Approach Procedures including Vertical
Guidance



PBN Implementation

Strategic Objectives of the National PBN Implementation Plan in Lebanon

Lebanon has established a National PBN Implementation plan in accordance with the regional PBN plan that would provide benefits in all phases of flight including Departure, En-route, Arrival, and Approach.

The PBN Implementation aims to increase efficiency, safety, access and predictability of approaches to runways.



Current Situation

SURVEILLANCE INFRASTRUCTURE:

Sufficient surveillance coverage is provided to ensure the safety of operations within Beirut FIR.



En-Route RNAV Routes

En-Route RNAV5 Routes:

Taking into consideration the route network, minimum separation standards, assessment of obstacle clearance, Lebanon has established En-route RNAV5 Routes for more efficiency with flexible use of airspace, and increase airspace capacity.

Four /4/ En-route RNAV5 are currently published in Lebanon:

* L620, M425, N310, P300

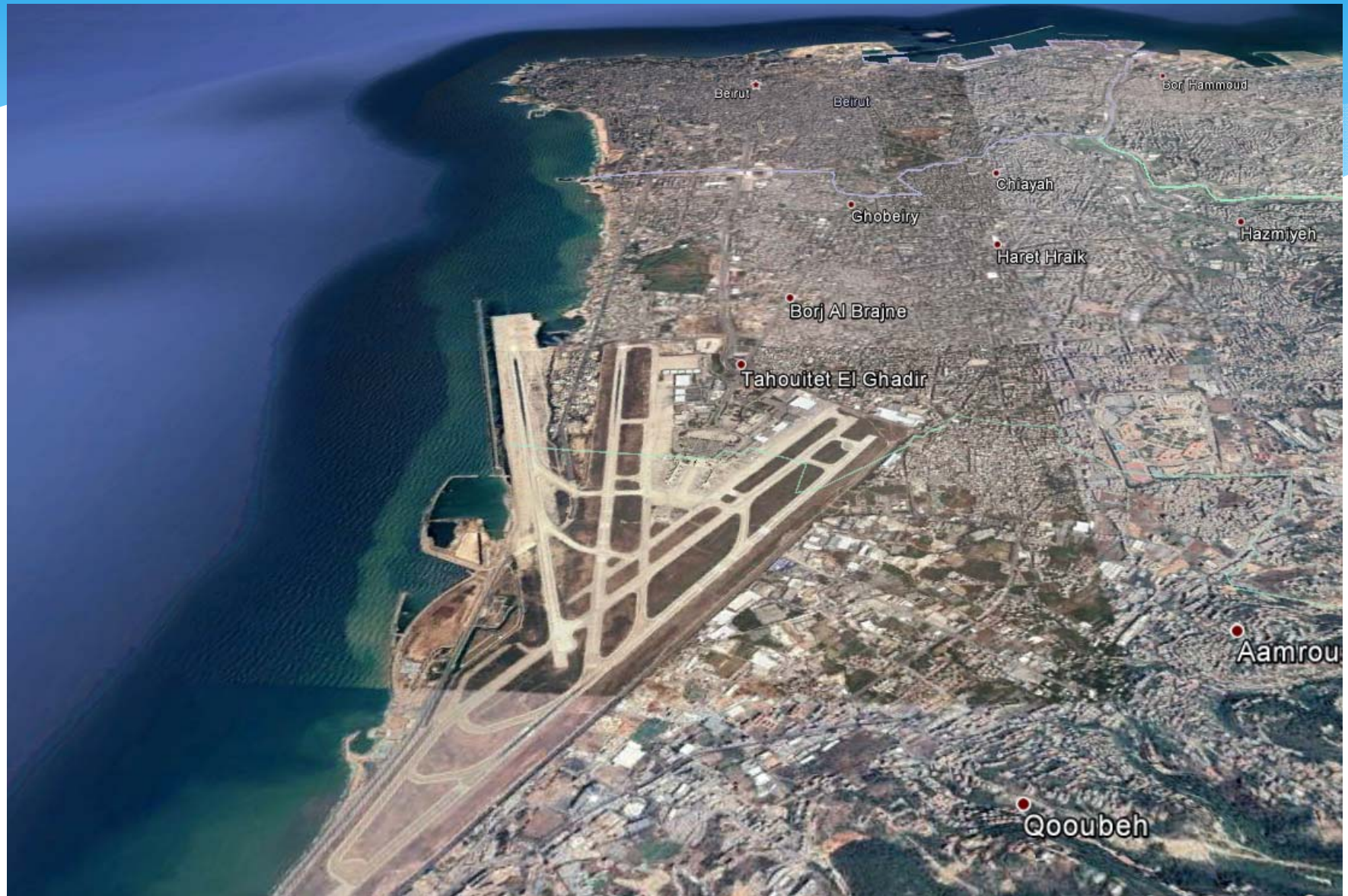


RNAV STARs & RNAV App. Procedures Beirut Rafic Hariri Int'l Airport (OLBA)

Runways Used for Landing at (OLBA)

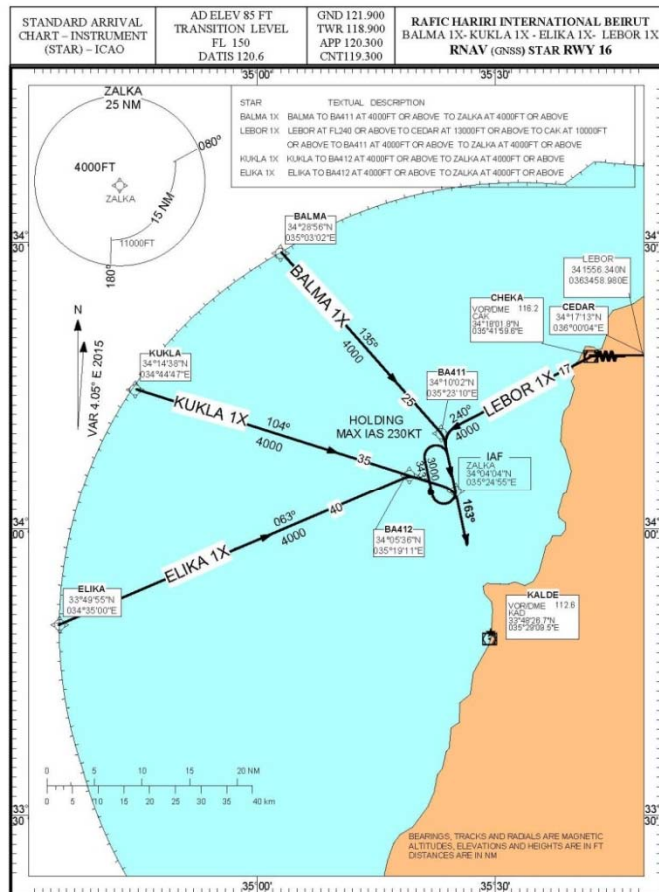
- * Four Runways may be used for landing at Beirut Rafic Hariri Int'l Airport (OLBA):
 - * RWY16 , RWY 17, RWY 03, RWY21
- * RNAV(GNSS) STARS and RNAV(GNSS) Approach Procedures have been published to serve all runways used for landing at (OLBA)

Beirut Rafic Hariri Int'l Airport (OLBA)



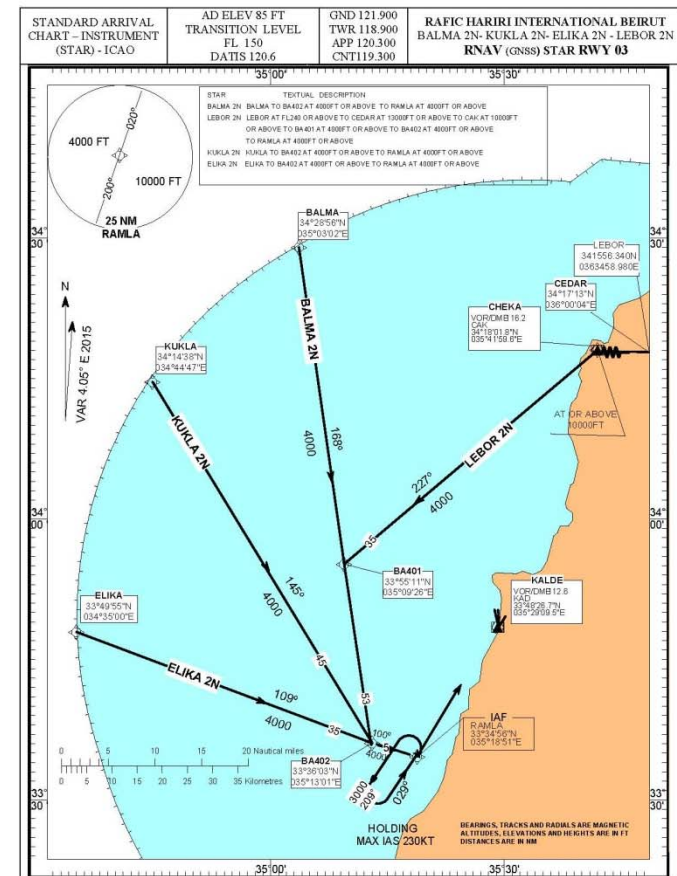
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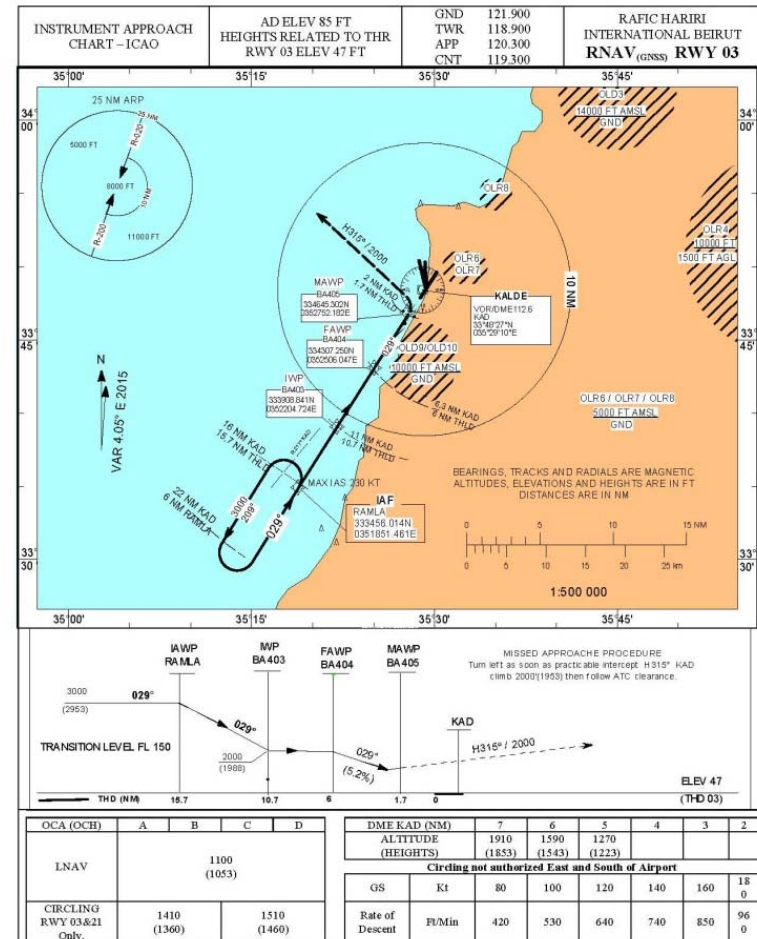
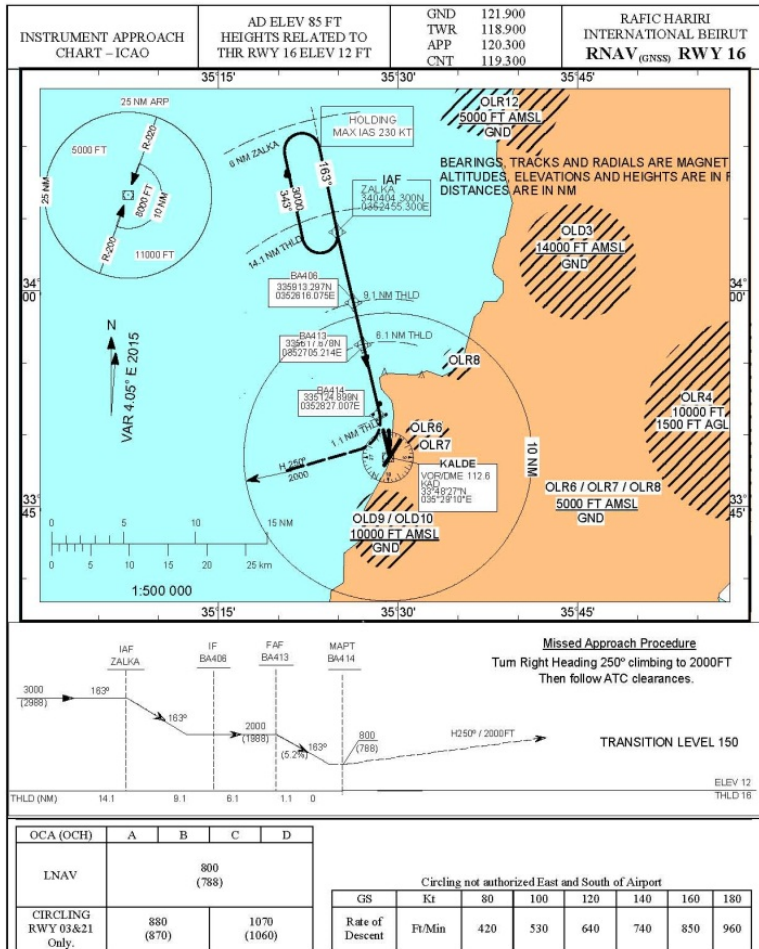
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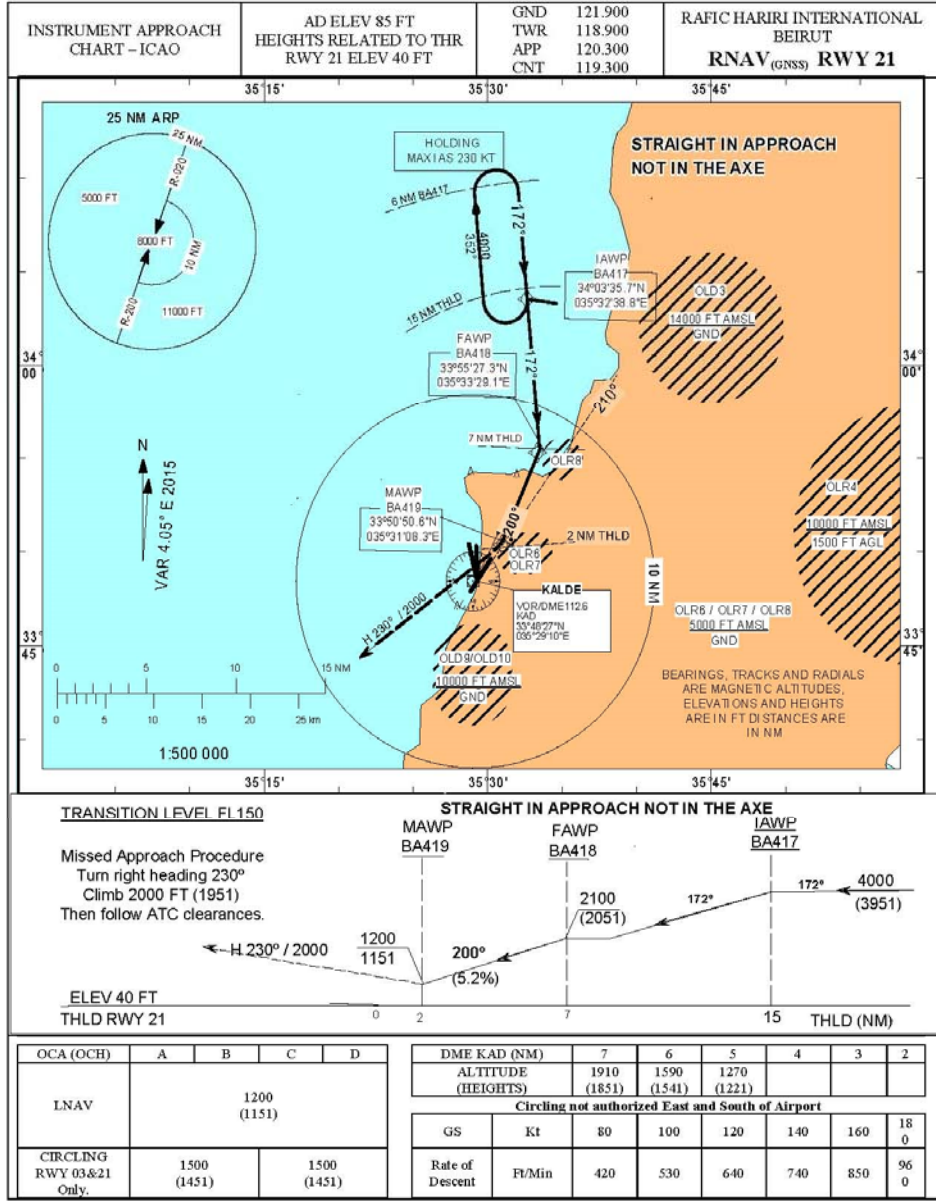


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Current Situation at Rafic Hariri Int'l Airport (OLBA)

RWY	ILS Approach Procedure	RNAV SATRS (CDO)	RNAV(GNSS) Approach Procedure Backup for ILS	RNAV SID (CCO)
16	Yes	Yes	Yes	Not Used for Departure
17	Yes	Yes	Yes	No
03	Yes	Yes	Yes	No
21	No	Yes	Yes	No
34	Not Used for Landing			No
35	Not Used for Landing			No



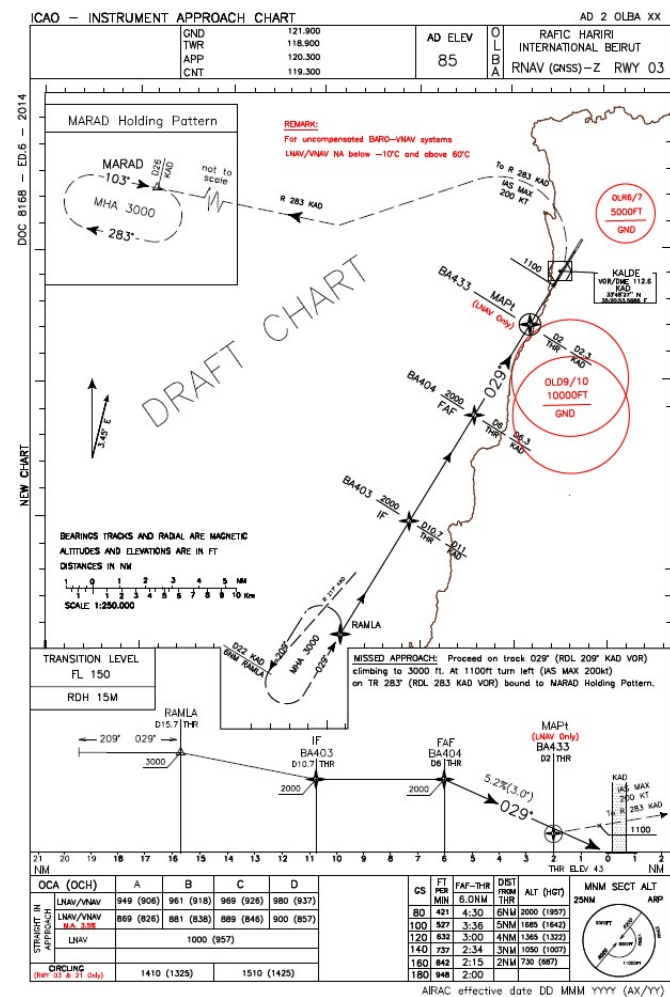
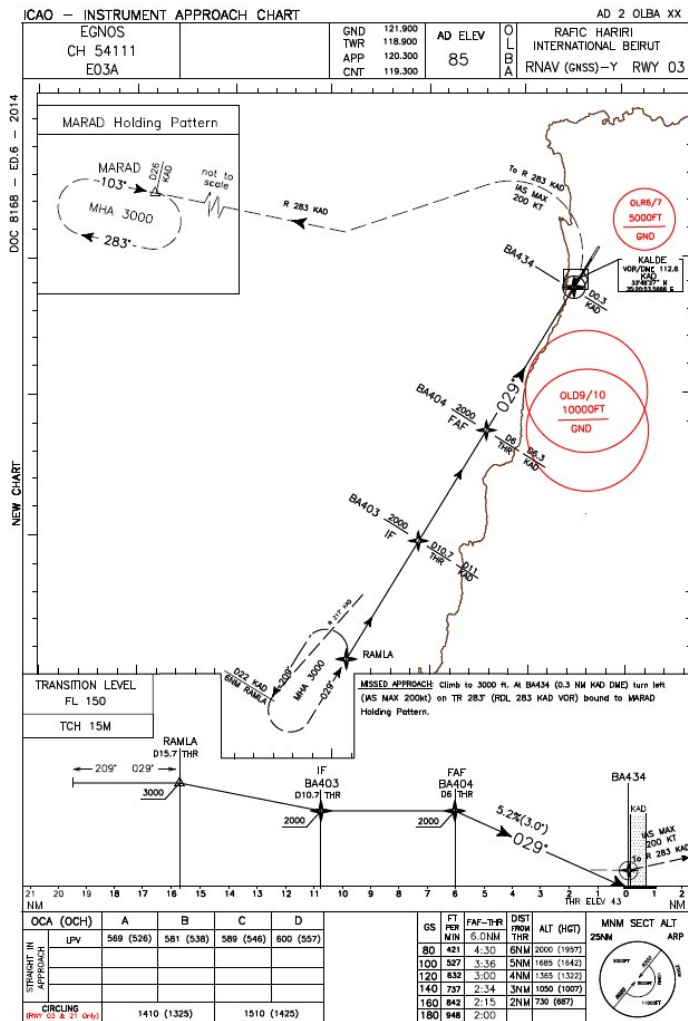
PBN Approaches with Vertical Guidance (Bo-APTA)

Priority in the Region and the state of Lebanon

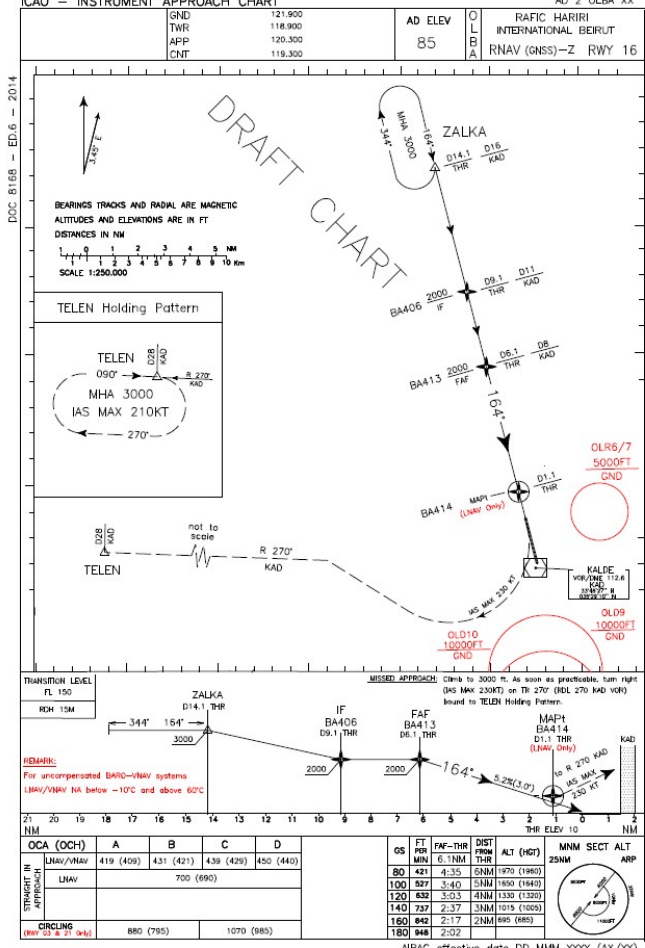
- * APTA was considered as first priority in the MID region
- * Lebanon started the implementation of APTA by making use of the LNAV Approach procedures as backup for the ILS on all runway ends in Rafic Hariri Int'l Airport (OLBA)
- * Lebanon took into consideration the need of LPV Approach procedures especially for RWY21; however, the Lebanese Air Regulations (LARs) to approve the LPV is not available and the onboard equipment for SBAS delayed the validation and publication.

Implementation & Demonstration Activities

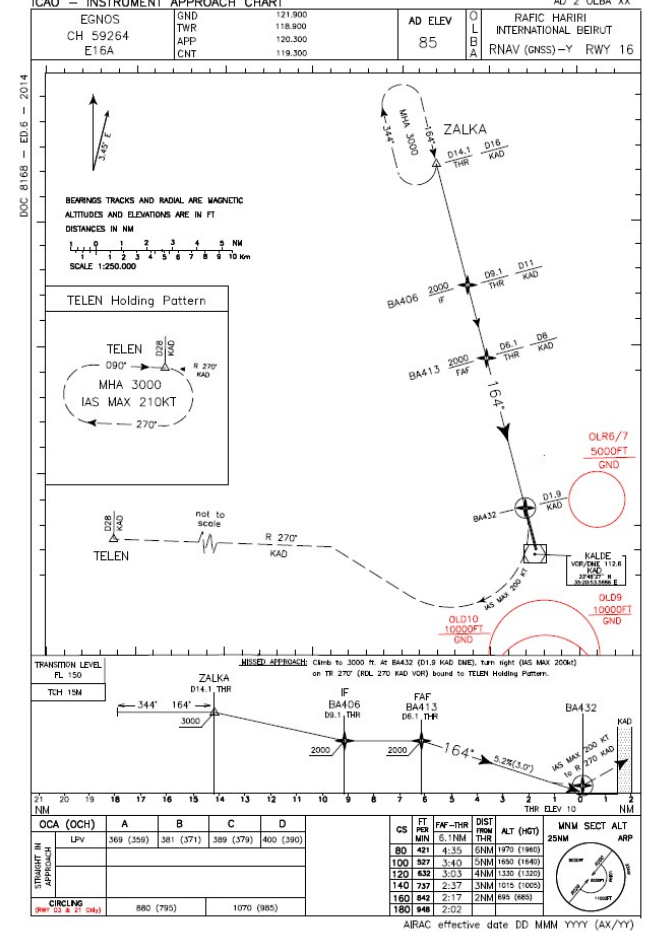
- * Lebanon has published four /4/ LNAV minima for all landing runway ends at Beirut Rafic Hariri Int'l Airport (OLBA) as of 2011.
- * Plans to add three /3/ LNAV/VNAV minima & three /3/ LPV minima to serve runways (RWY16, RWY03, RWY21).
- * Plans to add one /1/ RNP AR Approach to serve RWY21 during bad weather due to obstacles on final.
- * Plans to establish RNAV Approach procedures for both Rayak and Kelyat Air Bases (OLRA & OLKA) taking into consideration the location, terrain and obstacles.
- * RNP-Visual Approach procedure might be considered as solutions for some runway ends in both (OLKA & OLRA).

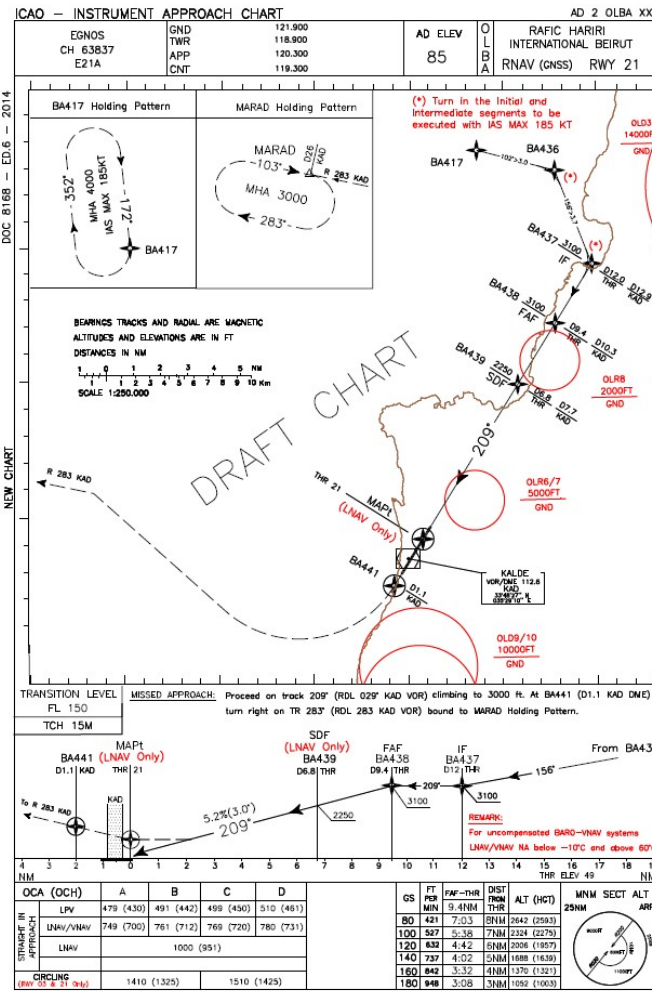


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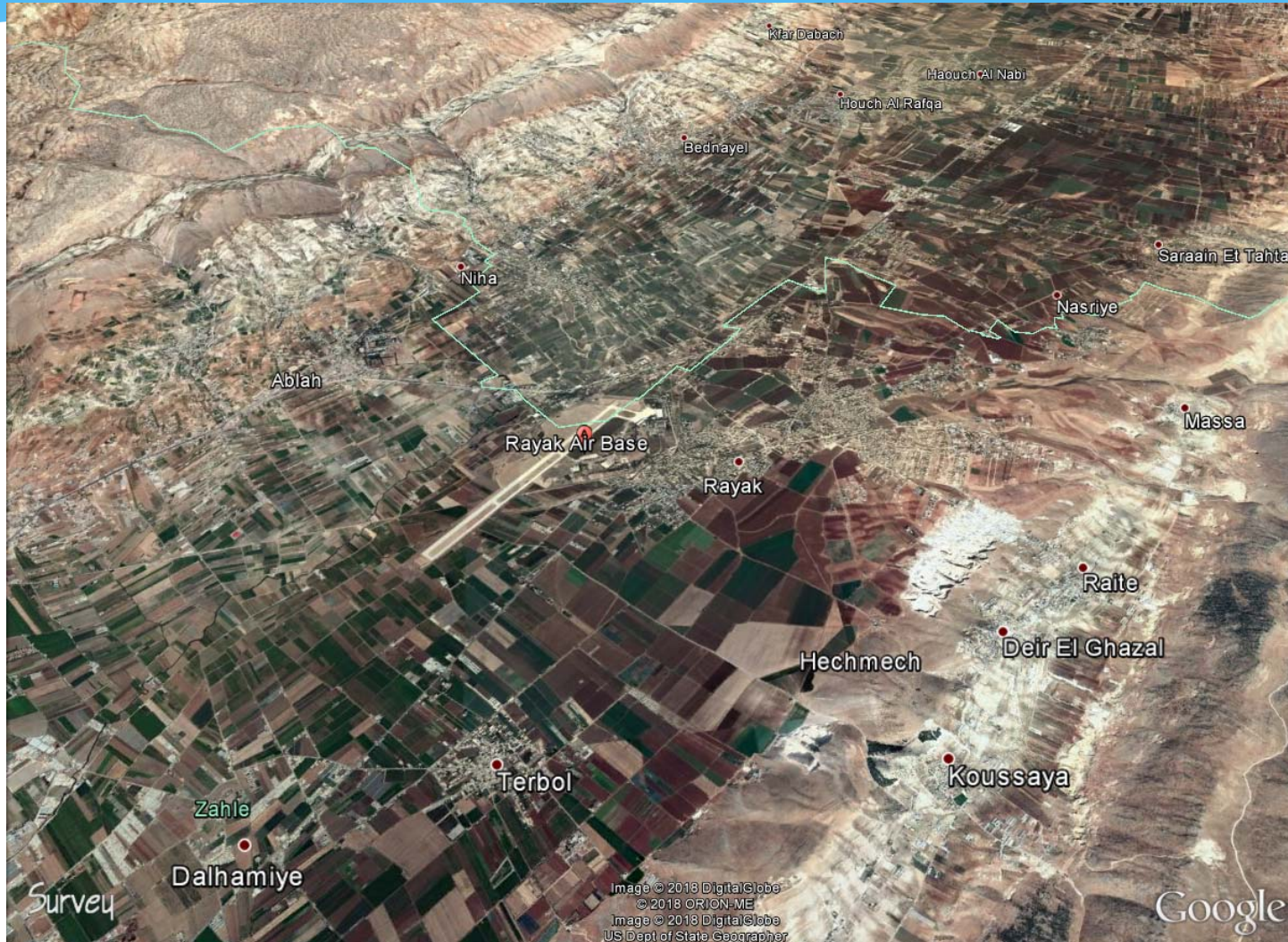


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Rayak Air Base (OLRA)



Kleyat Airport (OLKA)





Challenges

- * Lack of experts to promulgate the Lebanese Air Regulations (LARs) for procedure design in accordance with ICAO PANS OPS provisions;
- * Lack of qualified and trained technical staff (procedure designers and airspace planners) ;
- * Lack of trained experts to carry out safety oversight related tasks (review and revision of regulations, training of technical staff, development of guidance material, issuance of approvals, conducting of surveillance, resolution of identified safety concerns);
- * Quality Management and assurance
- * Onboard Fleet equipage (IATA)



Optimum Solution

MID FPP will provide the optimum solution and foster the implementation of PBN.



On behalf of the Ministry of Public Transport – Directorate General of Civil Aviation in Lebanon we would like to thank ICAO and ACAO for hosting this symposium and for the kind hospitality in Marrakesh.