
# EGYPT PBN IMPLEMENTATION STATUS

# Outline

- EGYPT-National PBN Implementation Plan
- Status of B0-APTA, B0-CDO, B0-CCO Implementation.
- Update of B0-APTA Table e-ANP VIII
- Challenges
- Lessons Learned

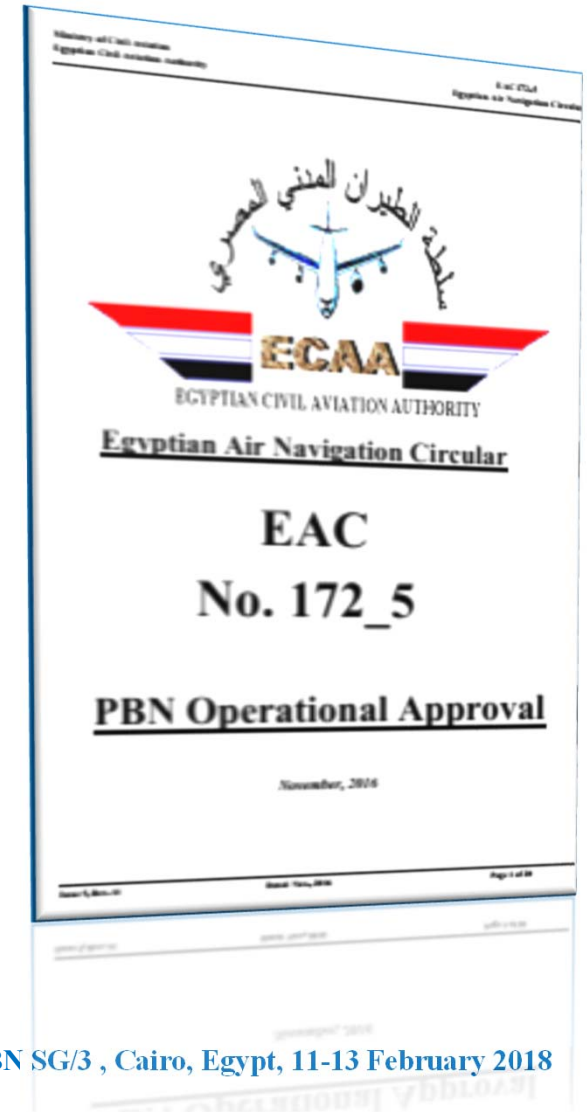
# Egypt
# PBN Implementation Plan

# EGYPT PBN Implementation Plan

**Egypt PBN Committee**


- ECAA PBN Committee is held Periodically.
- Egypt PBN Implementation Plan is provided to ICAO MID Office by the end of the year.
- National PBN Implementation Plan is implemented aligning with (MID Doc 002).

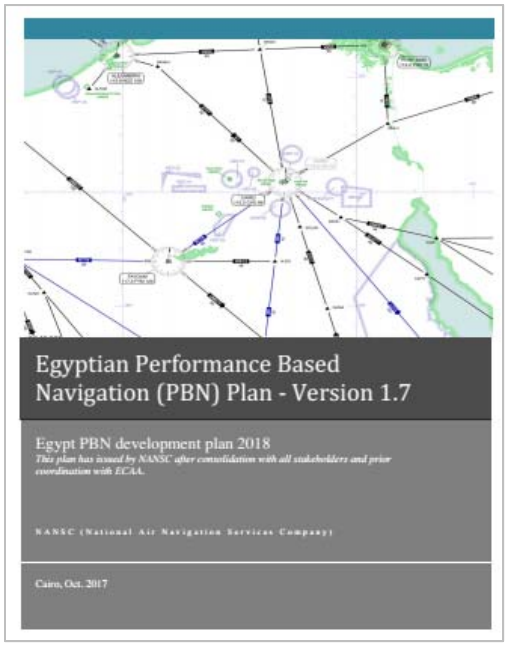
# EGYPT PBN Implementation Plan



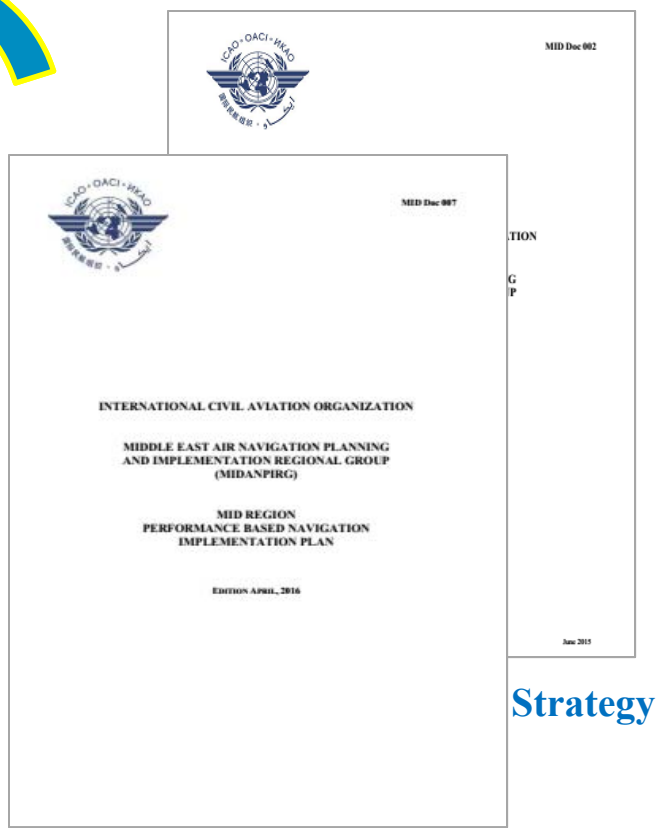

- Egyptian Air Navigation Circular, 172_5 apply to an Air Navigation Service Provider and Airspace Users on how to implement PBN applications, and how to ensure that the performance requirements are appropriate for the planned application

# EGYPT PBN Implementation Plan

ICAO CAPACITY & EFFICIENCY




National PBN Plan




MID PBN Implementation PLAN

Strategy


ICAO - GANP

# EGYPT PBN Implementation Plan

## ❑ Updated Version 1.7 by October 2017

| Edition | Date | Status | Author | Justification |
|---|---|---|---|---|
| Version 1.1 | Sept. 2012 | Issued by NANSC | PBN Implementation Plan Working Group | First version |
| Version 1.2 | Dec. 2013 | Issued by NANSC | PBN Implementation Plan Working Group | Plan not updated Explanatory text revised based on comments from Stakeholders |
| Version 1.3 | Mar. 2014 | Issued by NANSC | PBN Implementation Plan Working Group | Plan updated per Mar. 2014 Explanatory text revised accordingly |
| Version 1.4 | Jan. 2015 | Issued by NANSC | PBN Working Group | |
| Version 1.5 | July 2016 | Issued by NANSC | PBN Committee | New version |
| Version 1.6 | May 2017 | Issued by NANSC | PBN Committee | |
| Version 1.7 | Oct. 2017 | Issued by NANSC | PBN Committee | New version |

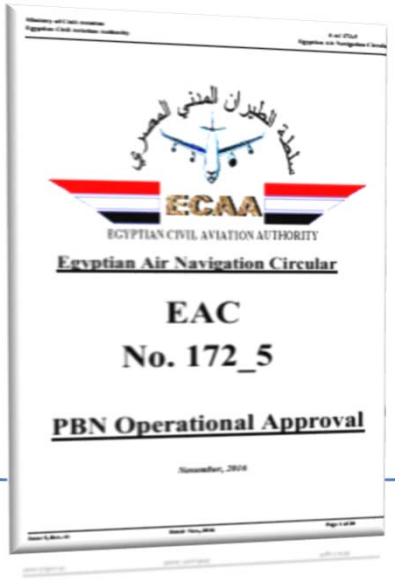
## Implementation Targets

| Airspace | Short term 2015-2018 | | Medium term 2019-2023 | |
|---|---|---|---|---|
| | Navigation Specification Preferred | Target | Navigation Specification Acceptable | Target |
| En-route Continental | RNAV5<br>RNAV1 | 100% by 2018 | RNP 2*<br>Defined airspace (A-RNP) | TBD |
| En-route Local/domestic | RNAV5<br>RNAV1 | 100% by 2018 | RNP 2*<br>Defined airspace (A-RNP) | TBD |
| TMA - Arrival | RNAV 1 in surveillance environment and with adequate navigation infrastructure. Basic RNP 1 in non- surveillance environment | 100% by 2018<br>100% by 2018 | RNP 1 and RNP 2 beyond 30 NM from ARP (A-RNP) | TBD |
| TMA – Departure | RNAV 1 in surveillance environment and with adequate navigation infrastructure. Basic RNP 1 in non- surveillance environment | 100% by 2018<br>100% by 2018 | RNP 1 and RNP 2 beyond 30 NM from ARP (A-RNP) | TBD |
| Approach | LNAV: for all RWY Ends at International Airports<br><br>LNAV/VNAV: for all RWY Ends at International Airports | 100% by 2018<br><br>36% by 2017<br>100% by 2018 | GLS (GBAS) approach For the defined RWY Ends depend on Egyptian GNSS plan | TBD |
| CCO and CDO | W/A | TBD | W/A | TBD |

# Status of Egypt B0-APTA, B0-CDO and B0-CCO Implementation

# Status of Egypt PBN Implementation

## *Egypt's PBN Capabilities*



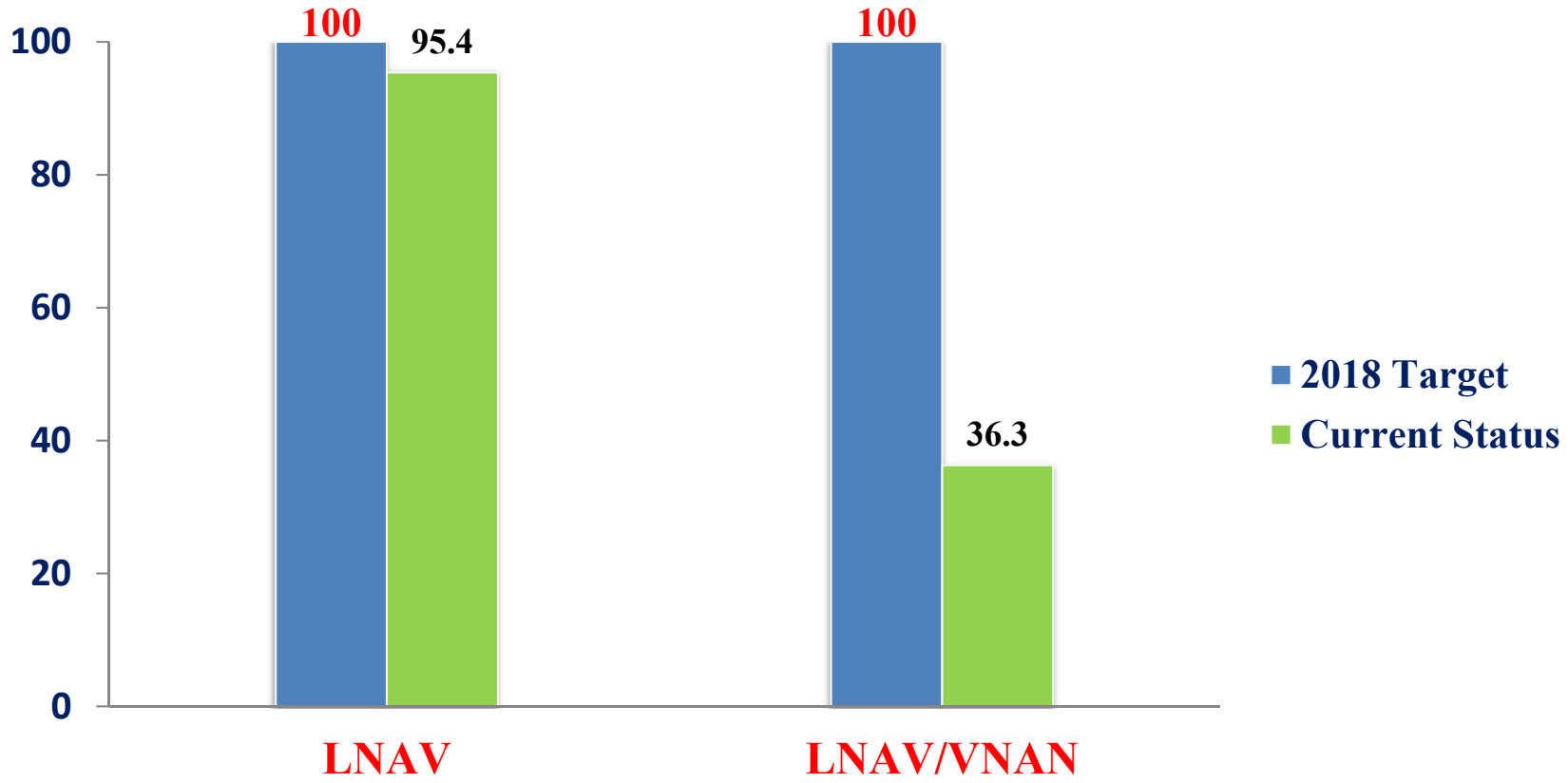

- ECAA is the Regulatory Body
- Egyptian Regulations: ECAR 311, EAC 311_1 , ECAR 172 , EAC 172_5


- NANSC is the recognized entity for designing PANS-OPS procedures
- (9) PANS OPS designers
- Automated tool : WVX based on AutoCAD platform.

# Status of Egypt B0-APTA Implementation

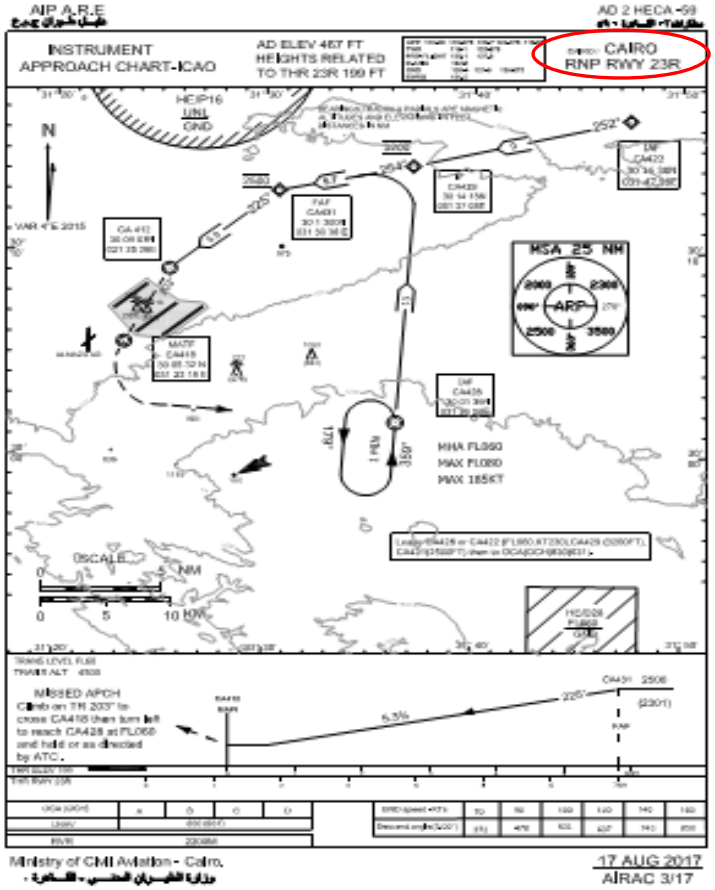
| B0 – APTA: Optimization of Approach Procedures including vertical guidance | | | | |
|---|---|---|---|---|
| **Elements** | **Applicability** | **Status** | **Action Plan/Timelines** | **Remarks** |
| **States' PBN Implementation Plans** | **Egypt** | **Implemented** | | **Updated Version 1.7 by October 2017** |
| **LNAV** | All RWYs Ends at International Aerodromes | **95.4 % of RWY Ends (21 THR) with RNP APCH** | 100% by 2018 | **HECA RWs 05R/23L have been implemented with LNAV during 2017** |
| **LNAV/VNAV** | All RWYs Ends at International Aerodromes | **36 % of RWY Ends (8 THR) provided with Baro-VNAV APP procedure** | 100% by 2018 | **HESH RWYs Ends have been implemented with LNAV/VNAV during 2017**<br><br>**Baro-VNAV HELX & HESN under life trails procedures (On progress)** |

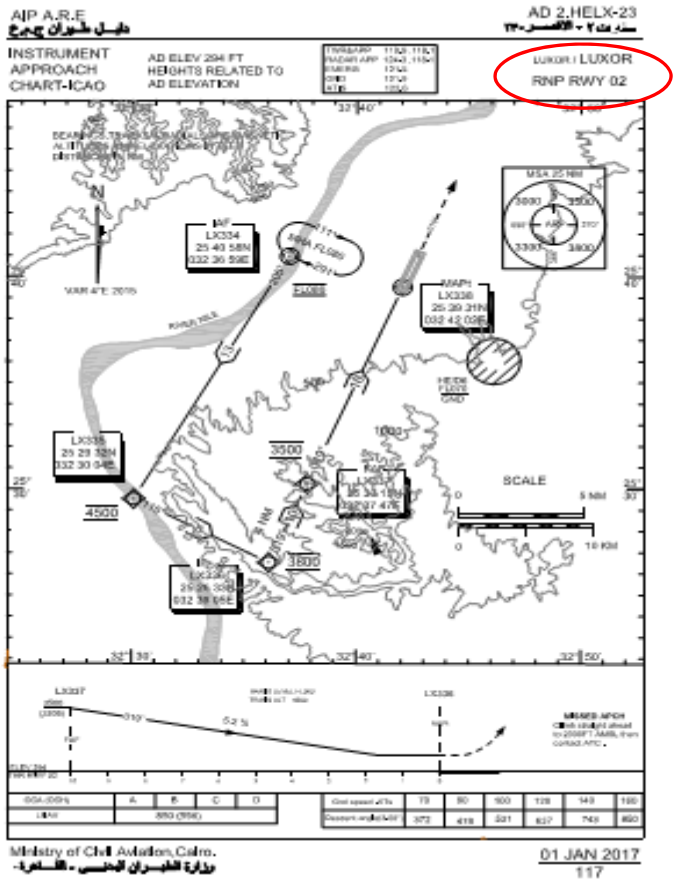
# Status of Egypt B0-APTA Implementation



# Status of Egypt B0-APTA Implementation
## *LNAV*

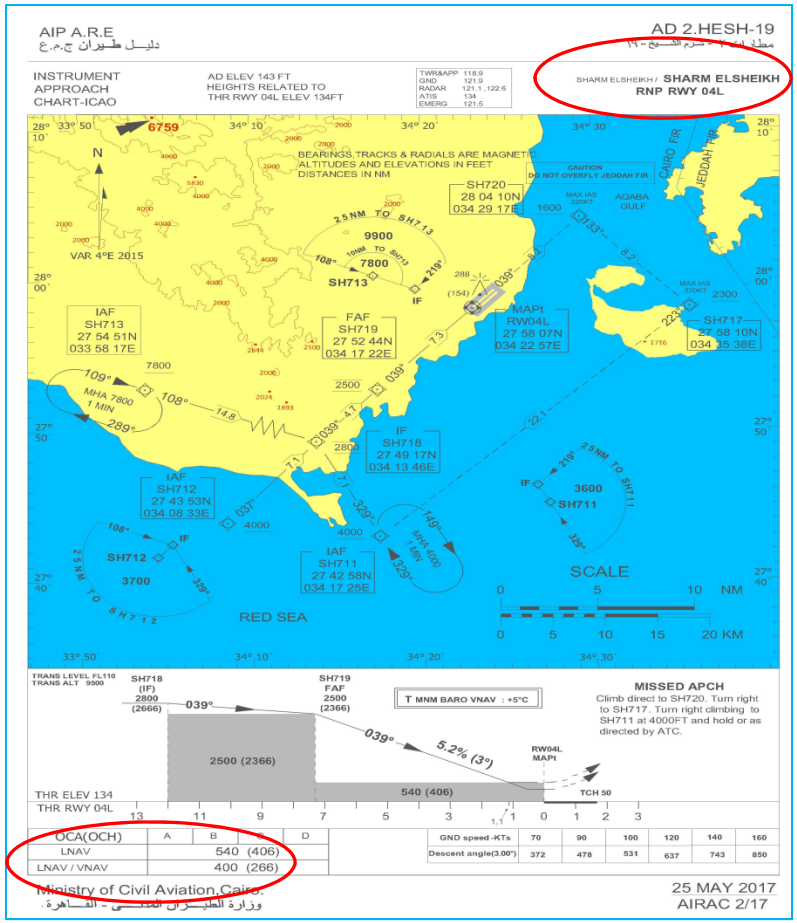
❑ **All Approach Charts include the term RNP in the identification.**

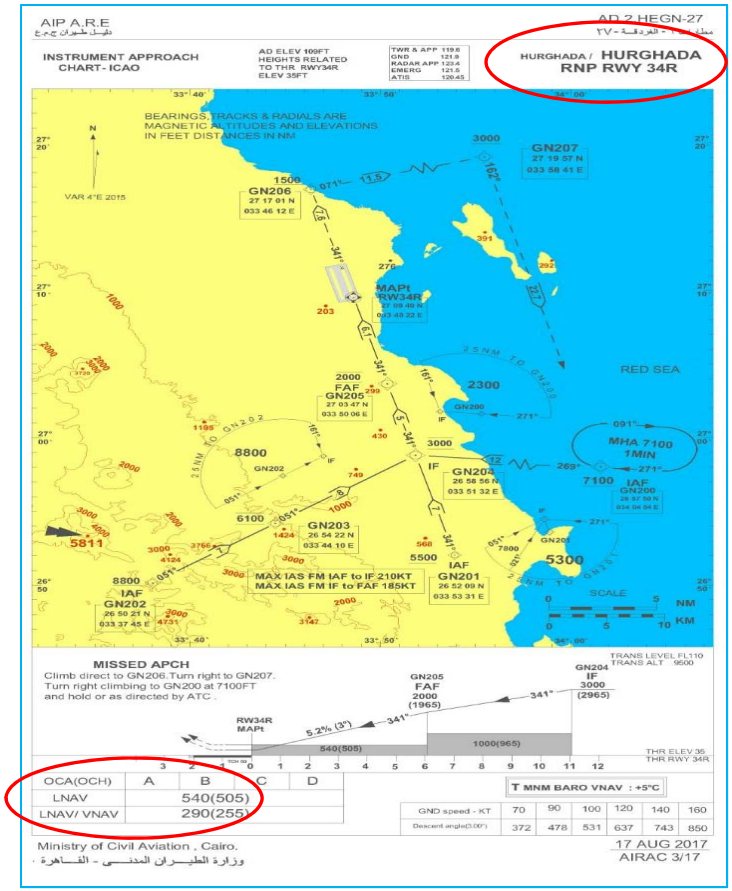


# Status of Egypt B0-APTA Implementation
## *LNAV/VNAV*

- 8 Runways ends at HESH and HEGN provided with **Baro-VNAV** approach procedures (LNAV/VNAV)



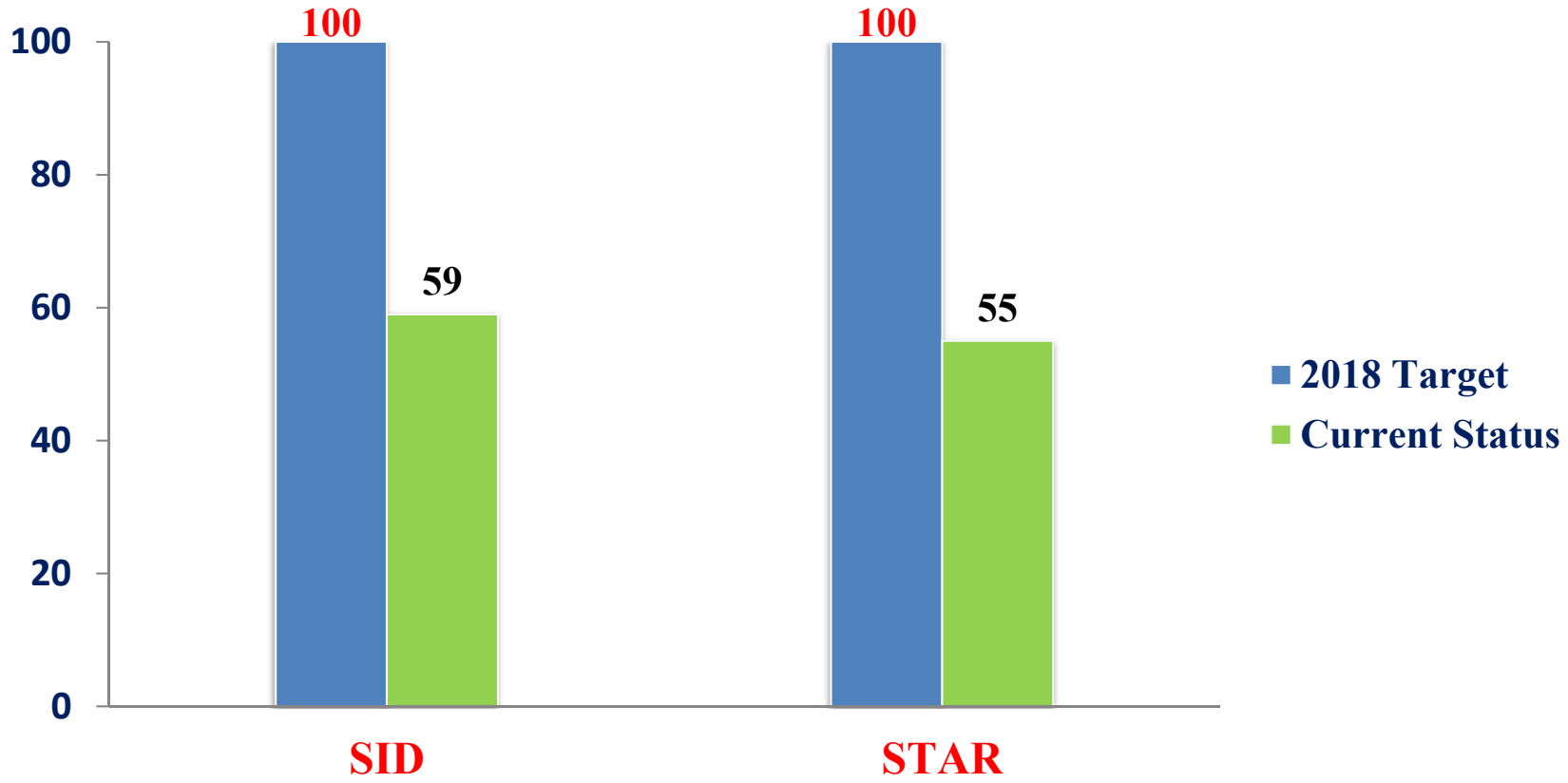
# Status of Egypt B0-CDO Implementation

| B0 – CDO: Improved Flexibility and Efficiency in Descent Profiles (CDO) | | | | |
|---|---|---|---|---|
| **Elements** | **Applicability** | **Status** | **Action Plan/Timelines** | **Remarks** |
| PBN STARs | As per the MID Air Navigation Strategy | 55 % of International Aerodromes/TMAs with PBN STAR | 100% by Dec 2018 | |
| International aerodromes/ TMAs with CDO | As per the MID Air Navigation Strategy | Not Implemented | TBD | |

# Status of Egypt B0-CCO Implementation

| B0 – CCO: Improved Flexibility and Efficiency Departure Profiles - Continuous Climb Operations (CCO) | | | | |
|---|---|---|---|---|
| **Elements** | **Applicability** | **Status** | **Action Plan/Timelines** | **Remarks** |
| PBN SIDs | As per the MID Air Navigation Strategy | 59 % of International Aerodromes/TMAs with PBN SID | 100% by Dec 2018 | |
| International aerodromes/ TMAs with CCO | As per the MID Air Navigation Strategy | Not Implemented | TBD | |

# Status of Egypt SID/STAR Implementation



# Update of B0-APTA Table
# e-ANP VIII

# Update of Egypt B0-APTA Table
# e-ANP VIII

| State/Aerodrome Location Indicator | RWY | Conventional Approaches | | | APTA | | | | CCO | | | | CDO | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Precision | | VOR or NDB | PBN PLAN | LNAV | LNAV / VNAV | PBN RWY | RNAV SID | PER AERO | CCO | PER AERO | RNAV STAR | PER AERO | CDO | PER AERO |
| | | ILS | CAT | | Update date | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| EGYPT | | | | | | | | | | | | | | | | |
| HEBA | 14 | NIL | NIL | NIL | | N | N | N | N | | | | N | | | |
| | 32 | ILS | I | NIL | | Y | N | Y | Y | Y | | | N | | | |
| HESN | 17 | NIL | NIL | VOR/DME | | Y | N | Y | Y | Y | | | Y | Y | | |
| | 35 | ILS | I | VOR/DME | | Y | N | Y | Y | | | | Y | | | |
| HECA | 05L | ILS | I | DVOR/DME | | Y | N | Y | N | | | | N | | | |
| | 05C | ILS | II | DVOR/DME | | Y | N | Y | N | | | | N | | | |
| | 05R | ILS | II | NIL | | Y | N | Y | N | | | | N | | | |
| | 23L | ILS | II | DVOR/DME | | Y | N | Y | N | | | | N | | | |
| | 23C | ILS | II | DVOR/DME | | Y | N | Y | N | | | | N | | | |
| | 23R | ILS | I | DVOR/DME | | Y | N | Y | N | | | | N | | | |
| HEGN | 16L | NIL | NIL | VOR/DME | | Y | Y | Y | N | | | | N | | | |
| | 34R | ILS | I | VOR/DME | | Y | Y | Y | Y | Y | | | Y | Y | | |
| | 16R | NIL | NIL | VOR/DME | | Y | Y | Y | N | | | | N | | | |
| | 34L | NIL | NIL | VOR/DME | | Y | Y | Y | Y | | | | Y | | | |
| HELX | 02 | ILS | I | VOR/DME | | Y | N | Y | Y | Y | | | Y | Y | | |
| | 20 | ILS | I | VOR/DME | | Y | N | Y | Y | | | | Y | | | |
| HEMA | 15 | NIL | NIL | DVOR/DME | | Y | N | Y | Y | Y | | | Y | Y | | |
| | 33 | NIL | NIL | DVOR/DME | | Y | N | Y | Y | | | | Y | | | |
| HESH | 04L | ILS | I | DVOR/DME | | Y | Y | Y | Y | Y | | | Y | Y | | |
| | 04R | NIL | NIL | DVOR/DME | | Y | Y | Y | Y | | | | Y | | | |
| | 22L | NIL | NIL | NIL | | Y | Y | Y | Y | | | | Y | | | |
| | 22R | NIL | NIL | NIL | | Y | Y | Y | Y | | | | Y | | | |
| Total | 20 | 12 | - | 15 | Y | 21 | 8 | 21 | 13 | 6 | 0 | 0 | 12 | 5 | 0 | 0 |
| % | | 60 | - | 75 | Oct. 2017 | 95 | 36 | 95 | 59 | 86 | 0 | 0 | 55 | 71 | 0 | 0 |

# Challenges

- CBA for defining clear planning to implement GBAS in the medium Term Plan.
- Continues evolution of PBN navigation specifications and their deployment in the ATM system
- Software updates according to PANS-OPS new criteria.
- Implementation of ATFM system (efficient SID & STAR)
- Comprehensive training is required for operational personnel and Procedure designers.

# Lessons Learned

❑ **Working groups Development**

The implementation of working groups for different subjects has proven to be very useful and effective.

❑ **Stakeholder Engagement**

PBN implementation requires close collaboration between Airspace stakeholders.

❑ RNAV SID & STAR not efficient without arrival and departure management.

❑ Direct relation between PBN implementation plan and civil military cooperation.

# Thank You !