ICAO NAIROBI UNITING AVIATION

NO COUNTRY LEFT BEHIND

# Workshop on LOC-I and UPRT

## Air Navigation Service Provider's Contributions to Reduce LOC-I

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# Outline

- What is LOC-I
- Environmental factors affecting LOC-I
- ANSP – best practices that can help reduce LOC-I

# LOC-I – General Definition

- Loss of Control In-flight (LOC-I) remains one of the most significant contributors to fatal accidents worldwide.
- LOC-I refers to accidents in which the flight crew was unable to maintain control of the aircraft in flight, resulting in an unrecoverable deviation from the intended flight path.

# LOC-I – General Definition

- LOC-I can result from a range of interferences including engine failures, icing, or stalls.
- It can involve numerous contributing factors that act individually or, more often, in combination.
- LOC-I range from considerations of aircraft design, performance under specific conditions, pilot training and regulatory oversight.

# ENVIRONMENTAL FACTORS

# Environmental Factors

- Environmental factors to be considered are meteorological phenomena such as adverse weather conditions:
- clear air turbulence in-flight
- Icing
- thunderstorms, hurricanes, tornados, etc.
- volcanic ash activity
- turbulence, wind shear on approach

# Other factors…

- ATC clearances, including radar vectoring that compels pilots to execute abrupt manoeuvres (taking avoiding action, sequencing of aircraft to final approach, etc.)
- Aircraft wake vortices
- Wildlife

# Environmental Factors

- **Mitigation**: Effective upset prevention, recognition and recovery training is necessary to mitigate the risk of LOC-I.
- Different aircraft types (fly-by wire, manual interventions)

# LOC-I & UPRT




# LOC-I & UPRT

# ATC best practices that can help reduce LOC-I incidents

- **Wake Vortex Separation**
- Ensure application of minimum wake vortex separation between aircraft at all times (departing, climbing, en-route, descending and landing).

# How ATM procedures can help reduce incidents related to LOC-I

- **Adverse Met Conditions**
- Ensure information on adverse met conditions is passed to pilots in a timely manner.
- Pilots to decide whether to avoid, divert, take precautionary measures, etc.
- Role of MET Office – data

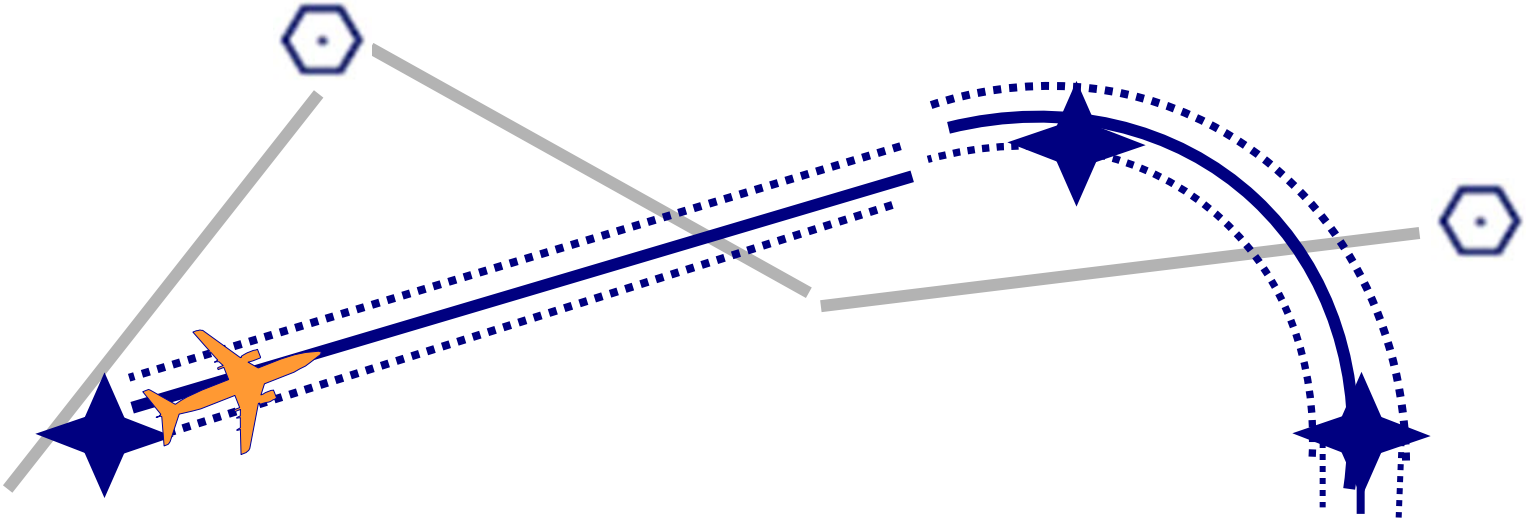
# Performance-Based Navigation

- ICAO Assembly Resolution A37-11 urges all States to implement ATS routes and approach procedures in accordance with the ICAO PBN concept.
- Introduction of ASBU Modules
- Increase airspace capacity, efficiency, safety…

# Performance-Based Navigation

- ICAO Assembly Resolution A37-11 called implementation of PBN required navigation performance (RNP) approaches with vertical guidance (APV) with satellite-based augmentation system (SBAS) or barometric vertical navigation (Baro-VNAV) - *Benefits*

# Performance-Based Navigation



# Performance-Based Navigation

- With satellite navigation, there is limited risk of the GPS signal being interfered with from the ground, compared to signal from an ILS (runway incursion while landing aircraft on final approach).

# Performance-Based Navigation

- Introduction of performance-based navigation (RNAV GNSS) in terminal areas results in more stabilized approaches, reduced inputs/maneuvres by pilots.
- Can also prevent CFIT.
- Unserviceable Navaids not published by notams

# What is required

- Awareness/sensitization of CAAs, ANSPs, MET Authorities and other stakeholders on causal factors to LOC-I and their roles /contributions to prevent such occurrences.
- Installation of advanced MET equipment to detect adverse weather, including presence of windshear at airports where they are common.

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THANK YOU