



ICAO

INTERNATIONAL CIVIL AVIATION ORGANIZATION

A UN SPECIALIZED AGENCY

ICAO SURVEY ON MOVING FROM A
MAGNETIC TO A TRUE NORTH

AIM SG/10 (CAIRO, EGYPT, 28 - 29 FEBRUARY 2024)

ICAO Survey on Moving from a Magnetic to a True North Reference System for Heading and Tracking in Aviation Operations

Introduction

Background, objectives and methodology of the survey

Background

- Canada presented a WP at AN-Conf/12 (Nov 2012) and AN-Conf/13 (Oct 2018) and an IP at the HLCC (Oct 2021), to discuss the topic of moving to a true north reference system in air operations.
- At IFPP/15 (March 2022), Canada presented a WP to the Panel to consider a global switch to true north. The Panel supported the initiative but requested ICAO carry out a survey to investigate the level of support of States and industry for such a proposal.

Survey Objectives

- Determine the level of support of States and their aviation industry for ICAO to work on moving to true north.
- Identify any concerns or challenges that may need to be addressed for a transition to true north.
- The findings of the survey may be used to aid ICAO in developing any plans and strategies for true north.

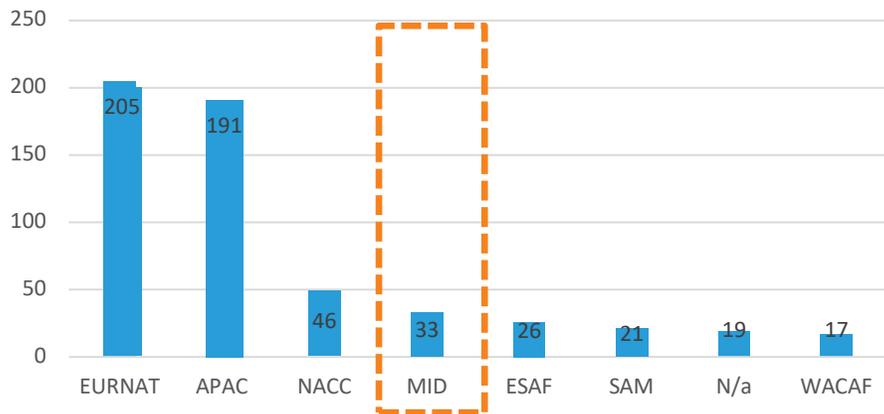
Methodology

- The survey was conducted online using Microsoft Forms.
- 65 survey questions divided by stakeholders.
- The survey link was sent by State Letter (SL AN11/57-22/87) on 21/9/2022.
- A link was provided in the SL to an ICAO website with supporting information related to the topic of true north.
- Two ICAO webinars were conducted to further inform States and industry of all considerations.

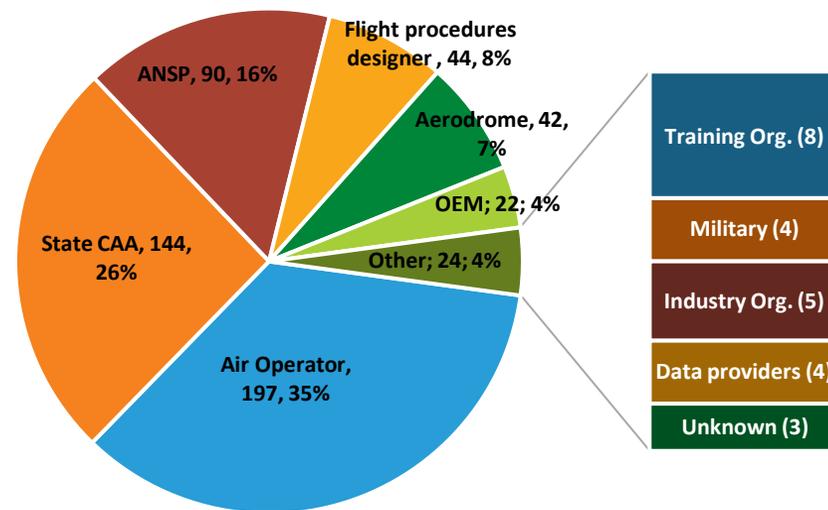
Respondents

- 564 responses from 103 States during survey period (21/09/2022 – 31/12/2022)
- 6% of responses from MID with 33 responses

ICAO region of respondents



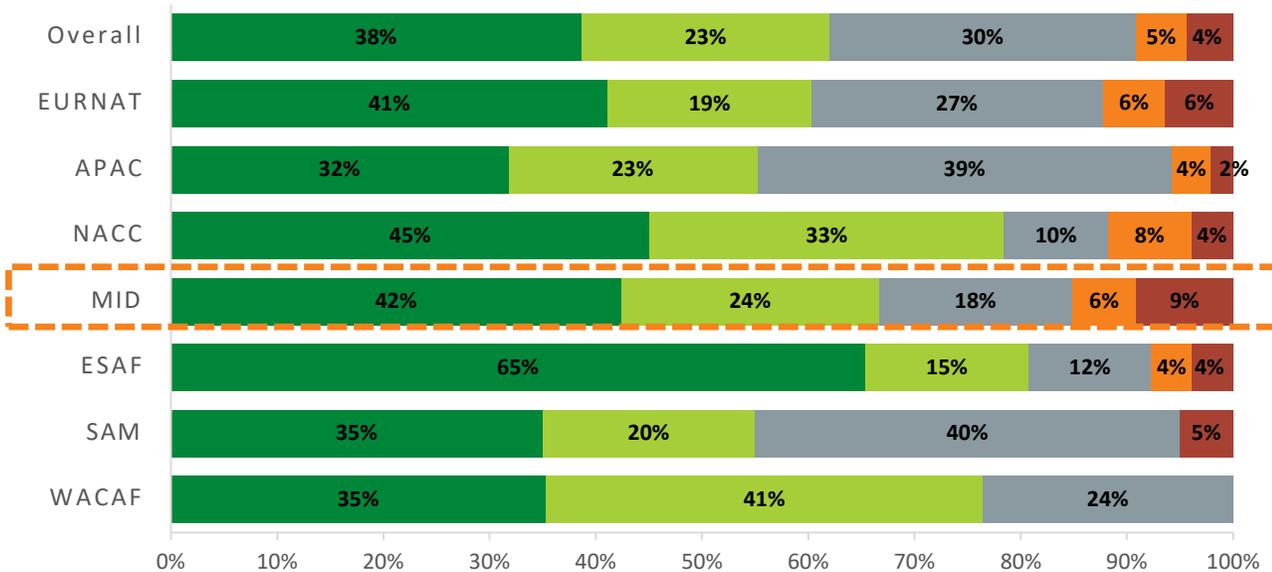
Distribution of responses by stakeholders



- Air operators, State CAAs and ANSPs accounted for 77% of respondents

Level of support

Overall and by ICAO regions



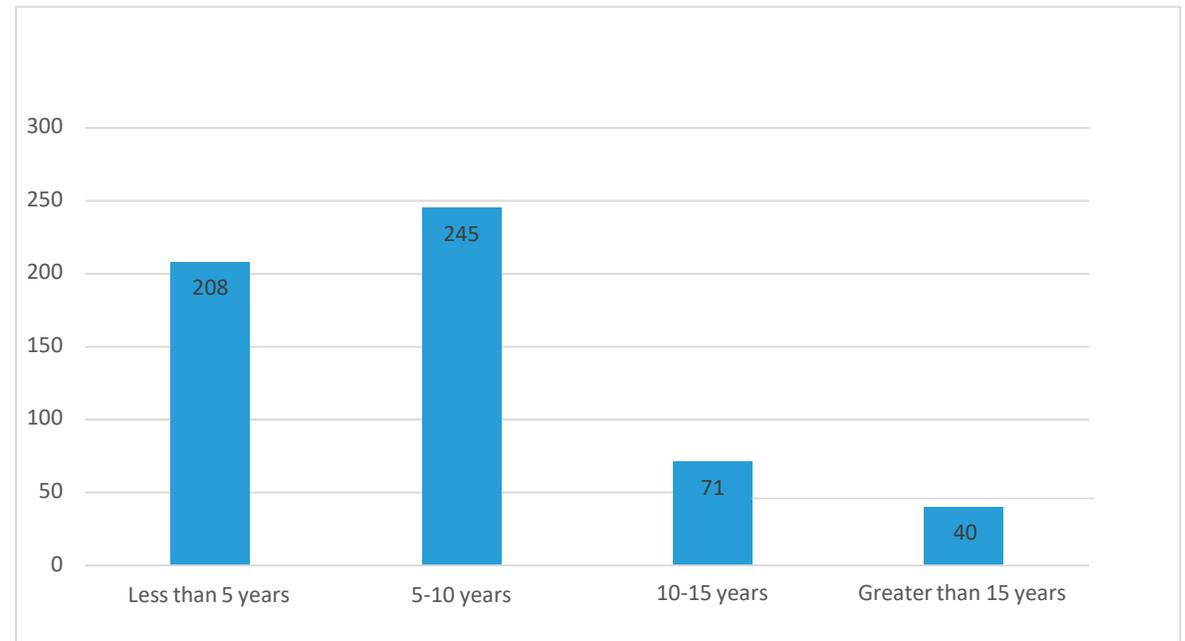
■ Strongly support
 ■ Somewhat support
 ■ Neutral
■ Somewhat not support
 ■ Strongly not support

- Overall, 61% of respondents either strongly or somewhat support moving to true north, 30% are neutral and 9% not in support
- Regions with strongest level of support – ESAF (80%), NACC (78%) and WACAF (76%)
- EURNAT with 60% of support, 27% neutral and 12% not in support
- APAC and SAM regions indicated higher neutral responses with 39% and 40% respectively
- **MID with 66% of support, 18% neutral and 15% not in support**

Estimated timeframe to implement true north

- Majority of respondents indicated 10 years or less to implement true north in their organization (81%)

Overall responses



Benefits and Challenges Identified by the Survey

- Top identified benefits include:
 - Long term cost savings for many stakeholders, including ANSPs, air operators and aerodromes
 - Reduced maintenance of instrument flight procedures, charts, runway signage etc.
 - Elimination of two systems for reporting weather in MAG and True
- Key identified implementation related challenges:
 - The need for a global transition plan and CONOPs supported by SARPs and guidance
 - Harmonized transition and coordination with all relevant stakeholders
 - Resistance to change and awareness promotion
 - Cost benefit may need more analysis



Key questions identified by the survey

- What timeframe will be needed to transition to true north globally?
- How will global acceptance and a harmonized transition be achieved?
- Should a transition to true north take a phased approach on a regional basis or be done concurrently across States and industry?
- What are the safety risks associated with a change to true north and how can they be identified and mitigated?
- What is the scope of impact, including equipment changes and operational changes, for general aviation and small aircraft operations?
- What will be the impact on large aircraft systems, equipment and operations?



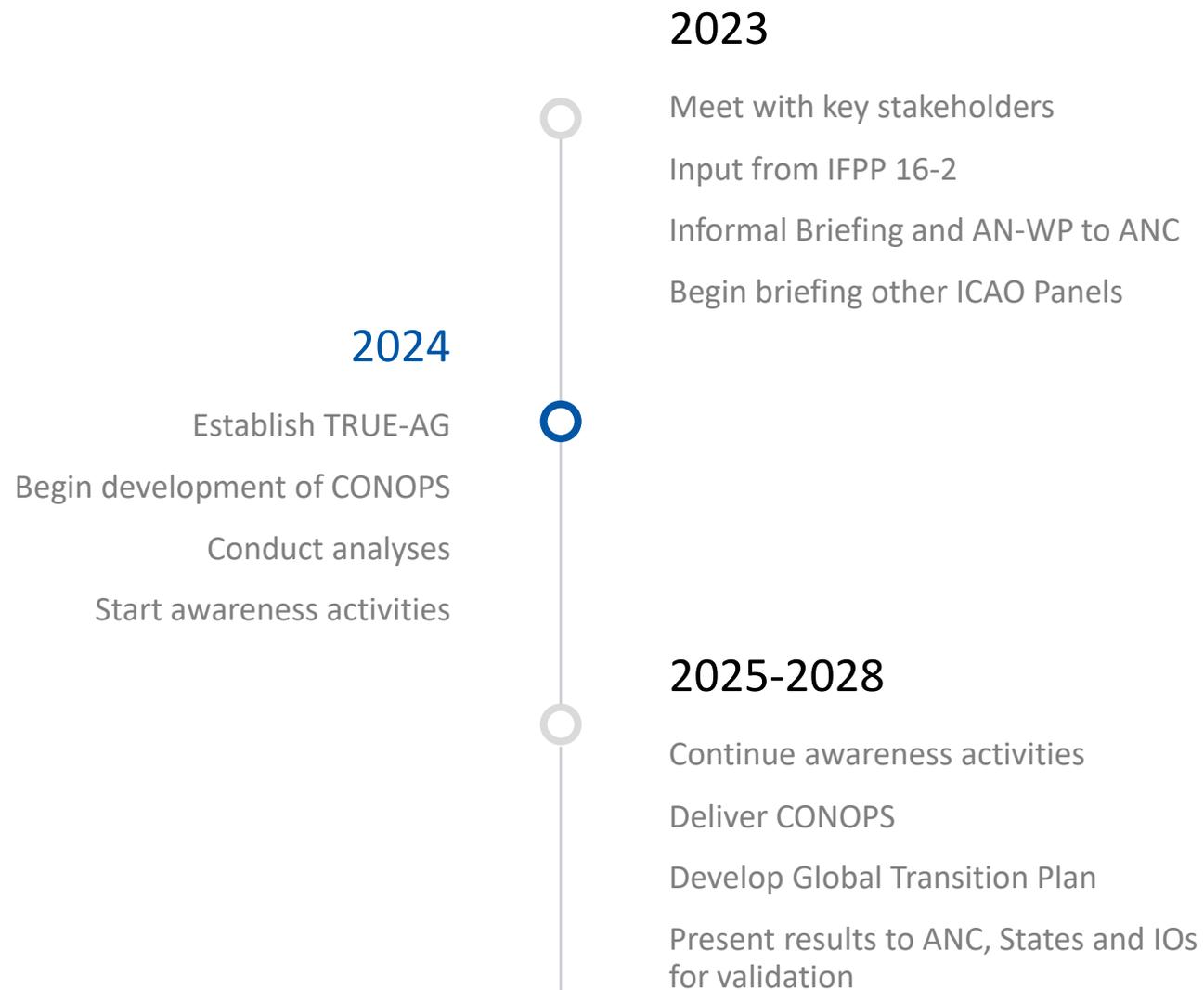
The way forward

True North Advisory Group (TRUE-AG)

- The ANC has approved the establishment of a multi-disciplinary expert group to assist ICAO in developing a framework for a safe and efficient global transition to True North
- The True North Advisory Group (TRUE-AG) tasks:
 - Develop a global CONOPS
 - Conduct further studies (Safety assessment, SWOT analysis, Cost-benefit analysis, Impact assessment)
 - Present results to ANC followed by States and industry for validation
 - Develop a comprehensive transition plan
 - Coordinate with relevant Panels
- **Expertise needed:** Air navigation service regulatory and policy experts, economic and analytical experts, aircraft and avionics manufacturers, air navigation systems engineers, airlines/pilots, ANSPs/ATCs, Instrument flight procedure designers, AGA experts and more...



Preliminary Timeline



Moving from Magnetic to a True North reference system in aviation webpage

[Presentation from Nav Canada on "Magnetic to True North"](#)

[True north frequently asked questions](#)

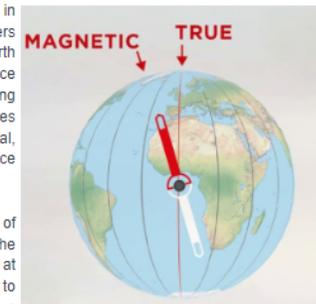
[FlyTrueNorth assessment tool](#)

[FlyTrueNorth assessment tool instruction](#)

[True North Survey Report \(March 2023\)](#)

Moving from Magnetic to a True North reference system in aviation

At the Twelfth and Thirteenth Air Navigation Conferences, in 2012 and 2018 respectively, Canada presented working papers with a proposal to move from a magnetic to a True North reference for heading and track in air operations, to enhance safety and reduce the considerable cost of maintaining magnetic variation (MAGVAR) tables. The Conferences recommended that further study on the technical, operational, and economic feasibility of changing to a "True North" reference system should be conducted.



Canada, in cooperation with the International Association of Institutes of Navigation (IAIN), has been investigating the feasibility of this topic and presented an information paper at the High-Level Conference on Covid-19 (HLCC) in 2021 to provide an update to States. Canada is currently developing a Concept of Operations (ConOps).

If "True North" reference is implemented among States it would mean the discontinuation of the traditional practice of converting aeronautical data from its original format in TRUE reference into a magnetic reference. It would simplify charting and aircraft operations and may result in considerable cost savings for air operators, air navigation service providers, airports, avionics original equipment manufacturers, and flight procedures designers going forward.

Survey

ICAO has developed a survey to seek feedback from States and their aviation industry on the level of support for ICAO to commence work on changing from a magnetic to True North reference for heading and track in air operations. The survey will also help to identify any concerns or challenges that may need to be addressed if True North reference is implemented.

1. State Letter AN 11/57-22/87_survey related to moving from magnetic to True north in air operations
2. Survey supporting documents
 - [Presentation from Nav Canada on "Magnetic to True North"](#)
 - [True north frequently asked questions](#)
 - [FlyTrueNorth assessment tool](#)
 - [FlyTrueNorth assessment tool instruction](#)
3. True North Survey Report (March 2023)

Webinars

- [Moving from Magnetic to True North in Aviation Webinar on 8th September 2022](#)
- [Moving from Magnetic to True North in Aviation Webinar on 27th October 2022](#)

Action by the meeting

The meeting is invited to :

- a) take note of the information contained in this presentation; and
- b) discuss any relevant matters as appropriate.



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Thank You!