



ICAO

**Second Meeting of the Steering Group for the continued Improvement of Air traffic Services
over the South Atlantic (SAT/SG2)**

Dakar, Senegal, 9-12 December 2024

Agenda Item 5: SAT Members initiatives

Establishment of the ICAO True North Advisory Group (TRUEAG)

(Presented by South Africa)

SUMMARY	
This working paper outlines activities relating to the establishment of the ICAO True North Advisory Group and the activities which requires consideration and action by the SAT Region.	
Action by the Meeting is in paragraph 3.	
<i>Strategic Objectives</i>	A Safety B Capacity and Efficiency D – Economic Development of Air Transport

1 INTRODUCTION

- 1.1 The magnetic compass is the most fundamental instrument used by the pilot to determine or verify an aircraft's heading. It operates by detecting the geomagnetic field generated by electrical currents in the Earth's core, as well as deposits of iron and other chemical elements in the Earth's crust.
- 1.2 Magnetic North remains the primary reference for aircraft navigation today. However, there is increasing interest in transitioning to a system based on True North instead, which is believed to offer potential benefits in safety and cost reduction.
- 1.3 The magnetic variation data is utilised in various aviation systems such as Air Traffic Management (ATM) systems, aircraft flight management systems (FMS), nav aids and wind direction indicators. Runway (RWY) direction indicators are also defined in degrees magnetic.
- 1.4 The current reliance on magnetic references for navigation introduces known safety risk and inefficiencies within the global aviation ecosystem. The use of multiple magnetic variation models across aviation systems can lead to systematic and latent errors, posing safety risks and complicating system interoperability /data exchange between air operators, ANSPs, and airports.

- 1.5 Transitioning to a True North reference presents an opportunity for the global aviation community to adopt safer and more efficient navigation standard. This change, while subtle, could have a significant impact and can be managed safely and effectively through robust sound change management, communication, and collaboration across all stakeholders in global aviation.
- 1.6 During the Twelfth and Thirteenth Air Navigation Conferences (AN-Conf/12 and AN-Conf/13), in 2012 and 2018 respectively, Canada presented working papers proposing a shift from a magnetic to a True North reference for heading and track in air operations. The proposal aimed to enhance safety and reduce the significant cost associated with maintaining magnetic variation (MAGVAR) tables.
- 1.7 The Conferences recommended that ICAO investigate the technical and operational impact and/or merits, as well as the potential cost of such a transition across the spectrum of aviation activities before advancing the adoption of “True North” as a global reference.
- 1.8 At the Instrument Flight Procedure Panel (IFPP) 15 held in March 2022, a working paper was presented by Canada for IFPP to consider a global switch to true north. The Panel supported the initiative but requested ICAO to conduct a survey to gauge the level of support of States and industry stakeholders.

2. DISCUSSION

- 2.1 On the 21st of September 2022, ICAO issued State Letter: SL AN11/57-22/87 requesting States to complete a survey, gathering input from all relevant stakeholders including air navigation service providers, aerodromes, air operators, aircraft or other original equipment manufacturers (e.g. FMS manufactures), and flight procedure design organizations.
- 2.2 The survey had the following objectives:
- 2.2.1 To determine the level of support from States and their aviation industry for ICAO to proceed with the transition to true north.
 - 2.2.2 To identify any concerns or challenges that might arise during the transition to true north.
 - 2.2.3 To provide ICAO with data to aid in developing plans and strategies for migrating from magnetic to true north as the reference system for heading and tracking in air operations.
- 2.3 Based on the responses received from the States, the Air Navigation Commission (ANC), at the seventh meeting of its 224th Session, held on 7 November 2023, supported the establishment of the True North Advisory Group (TRUE-AG). ICAO communicated this through a State Letter AN 11/65-IND/24/1 dated 21 January 2024, requesting States to nominate experts to support the initiative. South Africa submitted nominations, which were accepted.
- 2.4 The TRUE-AG was established to assist ICAO in developing a framework for transitioning to True North as the reference system for heading and tracking in air operations. The group is responsible for conducting in-depth studies, developing a Concept of Operations (CONOPS), creating a transition plan, and providing strategic advice to ICAO. The outcome of TRUE-AG’s work, including the framework, will inform the global decision

on adopting True North and the possible implementation phases.

- 2.5 The TRUE-AG officially began its work on the 13th of March 2024.
- 2.6 The Group has developed a draft Concept of Operations (CONOPS) and categorised potential impacted areas under: Laws and Regulations (Policy, Instructions), Orders and Standards (all standards), Organisations (ICAO, ANSPs, Airports, Airlines, etc), Training, Material (Hardware, Software, RWY Markings, etc.), Personnel (ATC, Pilots, etc) and Facilities (Airports, Nav aids, Radar, ATM Systems, publications, etc).
- 2.7 Three focus groups, namely ANSP, Aerodromes and Aircraft Operations are assigned to further develop the CONOPS and impact analysis matrix. These groups will assess the scope, effort and schedule needed for each State or region to transition to true north.
- 2.8 Key activities identified for implementation include:
- 2.8.1 Developing a global transition plan and Concept of Operations (CONOPS), supported by SARPs and guidance material.
 - 2.8.2 Harmonizing the transition and coordinating efforts with all relevant stakeholders.
 - 2.8.3 Ensuring buy-in from States and raising awareness.
 - 2.8.4 Conducting further cost benefit analysis.
- 2.9 After each TRUE-AG meeting, members are assigned tasks to coordinate with stakeholders in their respective states and report back on the next meeting.
- 2.10 For this collaboration to succeed, States should establish formal structures to consolidate inputs to the TRUE-AG and provide a comprehensive perspective on the State's impact.
- 2.11 At the APIRG 27 held in South Africa from the 4th to the 8th November 2024, the development of the terms of reference for the establishment of the AFI TRUE NORTH Project Team was endorsed with a target date of 31 October 2025.
- 2.12 The TRUE-AG conducts two virtual meetings and two in person per year and notable progress has been made in the group's assignments.
- 2.13 South Africa is actively participating in the TRUE-AG meetings and related activities. However, participation from AFI region has been limited.
- 2.14 The impact analysis to support the development of a global transition plan and Concept of Operations (CONOPS) will need substantial contributions from an AFI and SAT Regions, as well as global experts.

3 ACTION BY THE MEETING

- 3.1 The meeting is invited to
- a) take note of the information provided in this working paper;
 - b) review and discuss the aspects raised within this working paper relating to the activities of the TRUE-AG and the impact on the SAT area of transitioning from magnetic to true north reference system for heading and tracking in air operations;
 - c) encourage SAT States, that have not yet done so to nominate members and advisors, to

- participate in the TRUE-AG; and
- d) encourage members to contribute to the work of TRUE-AG by assisting the States' appointed members and advisors in their tasks and activities through applicable platforms within their States.
