



## INTERNATIONAL ASSOCIATION OF INSTITUTES OF NAVIGATION

### International Civil Aviation Organization (ICAO) Representative

### ANNUAL REPORT 2021/2022

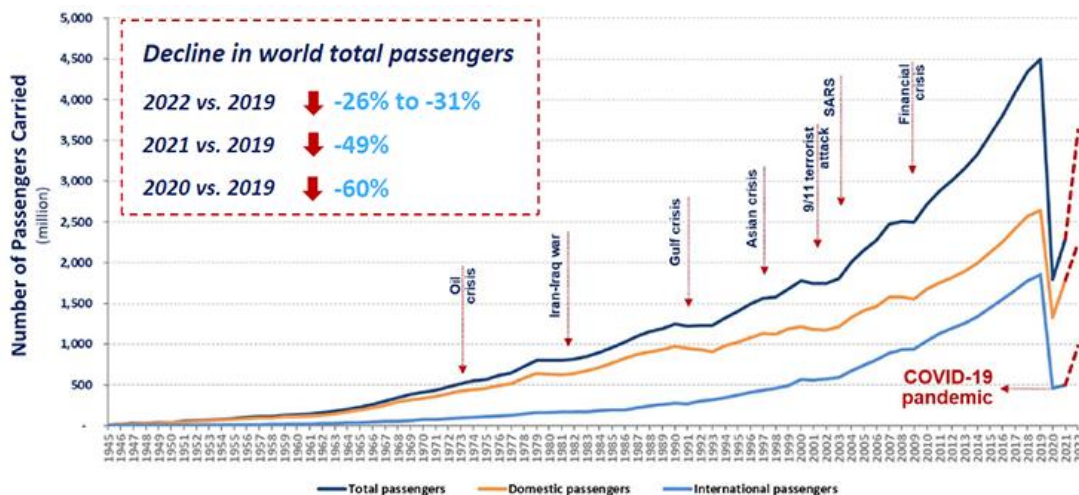
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ICAO is the United Nations' International Civil Aviation Organization with its headquarters in Montreal. IAIN has observer status to ICAO meetings.

The 193 countries who cooperate through ICAO are currently working toward their agreed global safety target of zero fatalities by 2030, in tandem with the strengthening of their regulatory capacities, while pursuing a range of programmes and targets relevant to current core areas of global aviation safety planning, oversight, and risk mitigation.

### **Covid-19**

Global passenger traffic recovered modestly in 2021, with the latest ICAO economic impact analysis of COVID-19 on civil aviation revealing that the number of passengers worldwide was 2.3 billion or 49 percent below pre-pandemic (2019) levels, up from the 60 percent drop seen in 2020.



In an optimistic scenario, passenger traffic is expected to recover to 86 percent of its 2019 levels by December 2022, based on 73 percent international traffic recovery and 95 percent domestic.

## Navigation

Despite the continuing COVID-19 crisis, most technical meetings have continued, mostly on-line. Following is a digest of relevant developments in the field of navigation from ICAO groups and panels.

### **FLTOPSP-AWO** (Flight Operations - All Weather Operations)

- AWO manual 5<sup>th</sup> edition approved by panel for publication in 2022
- Update of PANS-OPS VOL III with new jobcard
- RNAV substitution for Navaids – no significant progress, regarded as lower priority by ANC
- Intensive co-operation with ATMOPSP on aspects of “Cold Temperature correction” – Discussion at ANC, multiple SG meetings, now waiting for new proposal from ATMOPSP
- Final version of RPAS SARPS (Annex 6 Vol. 4) with coordination with Annex 10
- Guidance for High Altitude Aerodromes approved for publication as ICAO circular
- PB AOM –Performance Based Airport Operating Minima no new comments - relaunch
- Work on helicopter AWO operations, to conclude as ICAO circular in 2022
- Completion of circular on RNP A (VPT) as AR operation
- Discussions on compatibility of new OLS surfaces with PBAOM to start in 2022

### **NSP** Navigation Systems Panel

#### **NSP - GNSS SARPs WG**

- New GNSS SARPs State Letter 2021/041 (Amdmt 93) in consultation
  - Applicable 2 NOV 2023
- SBAS
  - SARPs change for receiver design constraints (filter roll-off, clarification)
  - SBAS Approach Performance Designator (APD) –OPS concept work continues
    - Could see extension to H-ARAIM
  - SBAS NAV Message Authentication
    - Good convergence on technical concept with Over The Air Rekeying (OTAR)
    - I-channel TESLA Little MAC
    - Authentication CONOPS
- H-ARAIM (now known as “Service Type A”)
  - JWG8 plenary approved Baseline Development Standard, to be published as e-Bulletin
  - Key milestone on the way to ISM Broadcast via constellations and ISM Generator Concept
  - Starting validation work, NSP/7 is goal for completion, Vertical / ST B ARAIM thereafter
- GNSS Manual Update
  - First alignment to address new constellation features and DFMC SBAS completed
  - Update to RFI mitigation material will include more information on spoofing
  - Completion target by NSP/7

#### **NSP - GBAS WG**

- DFMC Concept –GAST F vs. GAST X; detailed concept paper by end 2022

- Discussion of GAST D+ (including Galileo and BDS on single frequency)
- Completed VDB Same Airport Compatibility GM (joint with SWG / CNTWG)

#### NSP - Spectrum WG

- Continued intense discussion on LDACS / DME Compatibility Test Plan
  - Debate over “non-ICAO systems” and Extraneous Pulse Environment
  - Required test effort becoming very significant!
- Transfer of Frequency Assignment Planning Criteria to ICAO Spectrum Handbook (Doc 9718)

#### NSP - Conventional NAVAIDS and Testing WG

- Reduction of ILS Flight Inspection Runs and FI using Drones (Paper from China)
- Changes to Annex 10 arising from EUROCAE WG107
  - DME Coverage, ILS integrity, accuracy budget, pulse spectrum and rise time
- Doc 8071 Vol 2 Testing Manual –Chapter 5 on GNSS RFI
  - Expect Vol 2 Final Draft by end 2022
- A-PNT Papers including LDACS-NAV

#### **SASP** - Separation and Airspace Safety Panel

- Oceanic/Remote Continental:
  - MIT Lincoln Lab study on space-based ADS-B performance to support ATS surveillance
    - Problems encountered in high traffic density environments due to:
      - Frequency congestion on 1090 MHz. Attributed to number of aircraft ‘squitting’ as well as SSR interrogation of aircraft.
      - Single Iridium Next satellite coverage in areas close to the equator
      - No top ADS-B antenna -indicated by TCAS-operational ability
      - Poor performing ADS-B with possible low-power transponders.
  - ATS Surveillance Separation using RCP240 or better (historically called Target-to-Target separation):
    - Improved Collision Risk Modelling (CRM) permits a reduction from 18 to 15 NM to still meet the Target Level of Safety (TLS). This is still very conservative.
    - FAA looking to develop a standard with HF voice as the primary communication means.
- Higher Airspace Operations:
  - FAA to control facilitate the setting up and evolution of operations above FL600
  - Upper Class E Traffic Management (ETM) will:
    - *Include a cooperative, community-based traffic approach where operators are responsible for the coordination, execution, and management of operations, in accordance with industry-developed, FAA-approved cooperative operating practices (COPs).*
- RVSM Vertical Expansion
  - Work on-going
  - US changes to ruleset on wearing of O2 masks at higher altitudes

- Questions on expanding existing monitoring programmes
- EUOCONTROL Dataset #21 clearly shows the 'hole' now appearing at FL420
- Simultaneous Parallel Approach Operations:
  - SOIR implementation experience suggested that possible clarification required in SOIR manual.
- Ancillary Elements:
  - Operational Trials
    - Circular evolving to support the PfA.
    - Still requires en-route and terminal examples.
    - PfA aimed to be complete by Q4 2022 with planned applicability date Nov 2024
  - GANP Update
    - Six proposals from SASP - all accepted (but two with title changes)
    - Looking to leverage A-RNP performance to support simultaneous parallel approach operations

#### **IFPP – Instrument Flight Procedures Panel**

- Publication in case obstacles penetrate the Visual Segment Surface (VSS)
  - VSS penetration should no longer be identified on the chart, but an indication that the VSS has been penetrated shall be promulgated in AD 2.23.
- Update of Doc 9905 (RNP AR Procedure design Manual) endorsed.
- ATS Route Designator Allocation - Amendment proposals agreed.
- Charting Nav Specs and Accuracies - Amendment proposals agreed.
- Clarification of the use of the term "Altitude" in PANS OPS - Work ongoing.
- Update of Annex 14 Obstacle Limitation Surfaces – New concept proposed
  - A joint OLS ADOP / IFPP Task Force is developing the concept;
  - Planned to be applicable by 2026 (challenging).

#### **PBNSG - Performance Based Navigation Study Group**

- PBN Manual Edition 5 commenting and review period closed
- Still a couple of internal comments came up and were reviewed by study group
- RNAV 1 for approach transition to ILS procedures and missed approaches
- PDE for RNP 0.3 helicopter procedures
- Comments resolved by e-mail correspondence and ad-hoc meetings
- Final Draft of PBN Manual Edition 5 under editorial review and processing by ICAO secretariat
- PBNSG in a low activity state, possible re-formatting of the PBNSG to focus on operational implementation

- Plans to organize Webinar for new PBN Manual Edition 5 presentation - 2022
- Final publication –Q3 2022?

## ICNSS TF – Integrated CNS and Spectrum Task Force

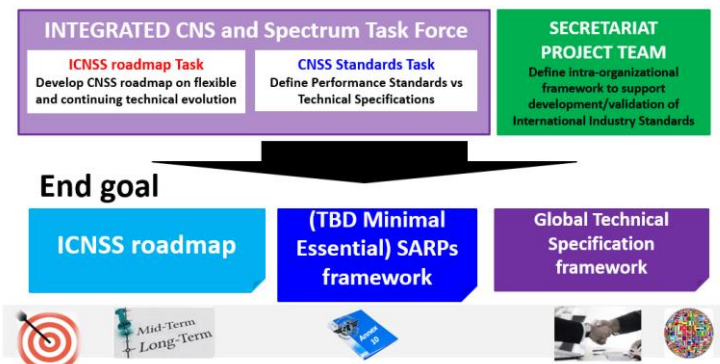
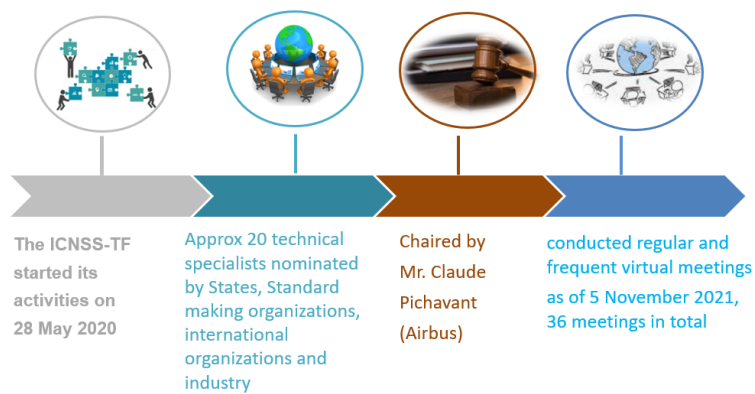
### Background

The Integrated CNS and Spectrum Task Force (ICNSS-TF) to be established in line with:

- AN-Conf/13 Recommendation 2.2/1 c),
- Confirmed by 40th Assembly

to:

- launch a study, built on a multi-disciplinary view of the Communication, Navigation and Surveillance (CNS) elements and frequency spectrum;
- evolve the required CNS and frequency spectrum access strategy and systems roadmap in the short, medium and long term, in a performance based and service-oriented manner;
- ensure that CNS systems remain efficient users of the spectrum resource.



...- (end of report)