



WORKING PAPER

THIRTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 9 to 19 October 2018

COMMITTEE A

**Agenda Item 3: Enhancing the global air navigation system
3.5: Other ATM issues**

EVOLVING AVIATION PHRASEOLOGY CHALLENGES

(Presented by Canada)

EXECUTIVE SUMMARY

This paper presents four emerging phraseology safety issues that stem from the evolution of global aviation procedures namely;

- a) the absence of standard ICAO phraseology for certain procedures (performance-based navigation (PBN));
- b) the emerging differences between voice phraseology and data link communications;
- c) the lack of a global system that accurately tracks significant State differences in phraseology; and
- d) how the strain on the air traffic control and pilot “read-back – hear back” contract is such that new training and quality assurance measures are warranted.

Assessed individually, these issues do not accurately reflect the actual burden on the aviation system they create. The heavy reliance on air traffic services (ATS) personnel and pilots to mitigate these issues may lead to the creation of other safety related challenges.

Action: The Conference is invited to agree to the recommendations in paragraph 4.

1. INTRODUCTION

1.1 The rapid evolution of certain aviation aspects (e.g., increase in traffic growth, performance-based navigation (PBN) procedures, data link communication, etc.) and more specifically the collateral effects on air traffic controller (ATC) – pilot communications must be safely and efficiently managed. This is specifically important because of the level of gravity errors may carry to the system. In this light, one of the key elements of any new deployment in an operational context is how it relates to communication.

1.2 The asynchronous evolution of the global air navigation system has sometimes made it difficult to pinpoint and address specific communication issues linked to that evolution. This fast progression often creates a void where there is a lack of ICAO standard phraseology or there is inadequate harmonization between old and new means of communications.

1.3 This, in turn, often puts the lack of reliable communication difference tracking processes in the spotlight.

1.4 Additionally, the excess burden linked to the aforementioned challenges is not mitigated by an improvement in operational communication training and quality assurance processes required for air traffic services (ATS) and pilot work force.

1.5 Operational communication threats will only be exacerbated by the different advances if they aren't specifically addressed.

2. DISCUSSION

2.1 PBN Phraseology

2.1.1 Firstly, the multiplication of new PBN procedures (e.g., SID (standard instrument departure-STAR (standard arrival route) transitions, PBN approach clearances from a STAR, PBN approach from vectors, etc.) forces States to adapt their phraseology regionally, due to either, lack of specific ICAO Standards, or lack of specific examples to understand what is required. This in turn leads to a global lack of phraseology harmonization for these important procedures. The amount of new phraseology required has led Canada to work in the creation of an area navigation (RNAV) phraseology manual aimed at standardizing communication between pilot and ATS personnel.

2.1.2 It is believed this manual could help ICAO develop and detail new phraseology to help States harmonize their PBN communication procedures. Similarly, to what the ICAO *Manual of Radiotelephony* (Doc 9432) offers, the creation of a specific manual dedicated to PBN phraseology; illustrated with examples, would make it easy to understand and apply for those who require the information. This highly practical approach would also help States track and report their own differences to ICAO standard phraseology.

2.2 Old versus new means of communication

2.2.1 Secondly, the interaction between voice phraseology and data link communication is becoming problematic. Following the strict order of sequence in which communication shall be conducted and using the adequate phraseology is sometimes impossible with datalink communication due to the limitations in adapting the different message sets with existing on board equipment.

2.2.2 As the usage rate of data link communication accelerates, there is a need to ensure standardized phraseology is reflected adequately by electronic means. The electronic means should be easily adaptable to ensure timely updates when new phraseology arises.

2.2.3 The lack of flexibility in the current electronic means of transmission leads to non-standard ways of communicating messages. (e.g., excessive use of "free text" options, use of non-standard abbreviations, creation of regionalisms, etc.)

2.2.4 More stringent coordination mechanisms between ATS system and air traffic management (ATM) experts would lead to a synergistic development of phraseology/system approach.

2.2.5 It is strongly felt that the different communication systems should be adaptable to address the actual and future requirements of standard ICAO phraseology and not the contrary.

2.3 Global tracking of significant phraseology differences

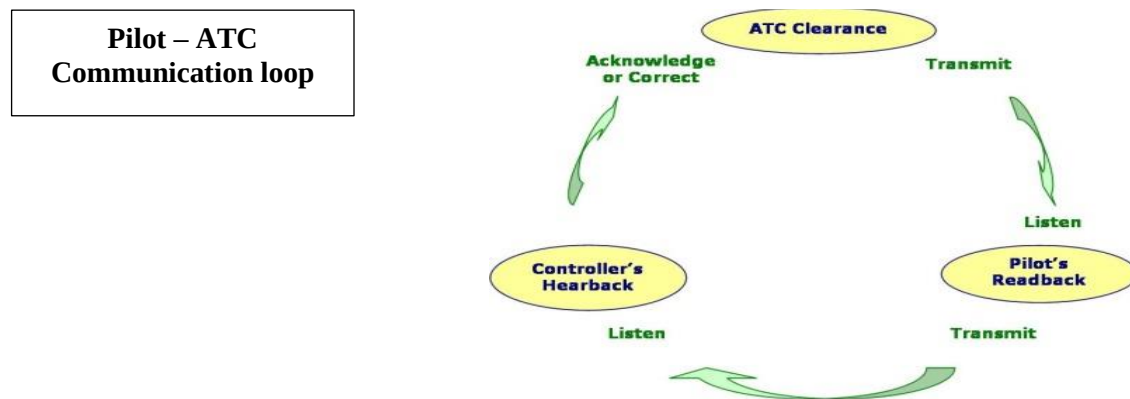
2.3.1 Thirdly, global differences in phraseology are many and hard to track.

2.3.2 As it is commonly accepted that standardization is very important in aviation communication, an assessment of the state of the disparity in global communication and the creation of a tracking system would help organize the deployment of efforts towards specific phraseology or specific regions.

2.3.3 Such an endeavour would help pinpoint which phraseologies may need to be updated and which region could benefit from support by ICAO. The *Pilots & Air Traffic Controllers Phraseology Study. 2011*, a joint project of International Air Transport Association (IATA), International Federation of Air Line Pilots' Associations (IFALPA), and International Federation of Air Traffic Controllers' Associations (IFATCA) highlighted some of the discrepancies that exist. Building on this initiative would help benefit the system.

2.4 Phraseology training and quality assurance processes

2.4.1 Finally, the evolution of phraseology, the multiplication of procedure types, and the increase in traffic levels are leading pilots and controllers to rely more heavily on the communication loop.



2.4.2 For a multitude of reasons, specific steps of this loop are sometimes inadequately conducted by pilots and air traffic controllers. These reasons include:

- a) insufficient knowledge of Standardized phraseology;
- b) reliance on air traffic control officers (ATCOs) or pilots to correct each other's mistakes;
- c) inadequate quality assurance processes;
- d) pilot workload;
- e) ATCO workload;
- f) frequency congestion;
- g) expectation of clearance;

- h) radio interference; and
- i) other human factors.

2.4.3 Improving the training and quality assurance processes in standard phraseology for pilots and ATCOs will directly and indirectly improve the aforementioned aspects. The adoption by national civil aviation authorities of ICAO standardized phraseology is a benefit to the overall safety of the system. Nevertheless, for this adoption to reach its maximum potential, professionals need to be trained and evaluated on their use of the phraseology periodically. In this light, insistence by managers and aircraft commanders on the use of standard phraseology is essential.

3. CONCLUSION

3.1 Improvement in the general aviation system sometimes has collateral effect that, if taken in isolation, can be considered acceptable. PBN and data link communication are definite enablers of a more efficient system. The increase in global traffic level is also seen as a positive sign of a striving global economy. Nevertheless, the accumulation of these effects puts a strain on the system and its operators. The creation of adequate PBN phraseology material and a better integration of data link communication in a standardized ICAO format would help reduce the impact of these changes. Finally, dedicated phraseology training and regular assessments for pilots and ATCOs on their communication skills should be mandated. This would help aviation professionals keep the system safe and reduce communication related safety events.

3.2 In light of the above, the Conference is invited to agree to the following recommendation:

Recommendation 3.5/X – Evolving aviation phraseology challenges

That the Conference:

- a) request ICAO to develop more performance-based navigation phraseology provisions and guidance for inclusion in a dedicated manual;
- b) request ICAO to closely monitor and develop a plan to mitigate any elements that differentiate datalink communication from standard ICAO phraseology;
- c) request ICAO to track significant global differences in phraseology and evaluate the reasons for these differences to formulate a plan for a better harmonization;
- d) urge States to report to ICAO any significant differences in their phraseology;
- e) request ICAO to review any provisions linked to phraseology proficiency requirements for air traffic control officers (ATCOs) and pilots to make them as robust as possible and
- f) urges States to hold ATCOs and pilots to the same standard of proficiency in phraseology by means of dedicated training and regular assessment.

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