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Agenda Item 25: Other issues to be considered by the Technical Commission

INTERNATIONAL HARMONIZATION OF FLIGHT SIMULATION TRAINING DEVICE (FSTD) STANDARDS USING CONSENSUS STANDARDS

(Presented by the United States)

EXECUTIVE SUMMARY

The purpose of this Information Paper is to provide the Assembly with background information on the recognition and use of ICAO Document 9625, *Manual of Criteria for the Qualification of Flight Simulation Training Devices*, as an internationally accepted flight simulation training device (FSTD) standard and solutions to improve international harmonization and responsiveness to innovation through a consensus standards approach.

<i>Strategic Goals:</i>	This information paper relates to the Strategic Goals <i>Every Flight is Safe and Secure</i> ; and <i>No Country Left Behind</i> .
<i>Financial implications:</i>	This information paper has no direct financial implications
<i>References:</i>	Doc 9625, <i>Manual of Criteria for the Qualification of Flight Simulation Training Devices</i>

1. INTRODUCTION

1.1 When the first edition of the *Manual of Criteria for the Qualification of Flight Simulation Training Devices* (Doc 9625), was developed in 1989, an international working group convened with the purpose of establishing and recognising internationally common test criteria. While Doc 9625 has had some success at being used as a common reference document to harmonise and drive change to national flight simulation training device (FSTD) standards, some inefficiencies continue to exist with both how the document is updated and how it is being used by Civil Aviation Authorities (CAAs). These inefficiencies prevent States from fully realising the benefits of internationally harmonised FSTD standards.

1.2 This information paper provides background information on the methods used to update and maintain Doc 9625 as well as how it has been used by CAAs as a standard reference document for FSTD qualification. Additionally, this paper discusses various inefficiencies impacting the State's ability to effectively address and harmonize FSTD standards in a rapidly developing environment with many evolving technologies. Finally, the paper discusses some potential solutions approved by the Personnel

Training and Licensing Panel (PTLP) which may assist in creating an agile and flexible framework for the continuous development and implementation of modernised FSTD standards by CAAs.

2. BACKGROUND/DISCUSSION

2.1 The benefits of international harmonization of FSTD standards have been widely recognized by industry and regulatory authorities for several years. Common standards enable FSTD data providers, manufacturers, and operators to benefit from the reduced regulatory burden of compliance with multiple FSTD standards issued by various CAAs. By recognizing common standards, manufacturers and data providers can develop common products that may be used by multiple CAAs with harmonized standards. Finally, the harmonization of common standards can simplify bilateral agreements between CAAs for FSTD oversight and evaluation.

2.2 When Doc 9625 was first developed, most CAAs maintained national FSTD qualification standards through guidance documents, such as the FAA's Advisory Circular (AC) 120-40B and the Joint Aviation Authority's JAR STD-1A document. With FSTD standards defined in guidance documents, changes could be easily implemented to harmonize with other CAA regulations or Doc 9625. In some instances, CAAs issued guidance documents that were based upon the work of industry-led international working groups and published concurrently with Doc 9625 revisions to maintain harmonization.

2.3 In recent years, some CAAs have transitioned FSTD standards from guidance documents into regulations, such as FAA's Part 60 and EASA's CS-FSTD. Various reasons have been cited for the move from guidance documents to regulations; however, the effects result in excessive time delays inherent to the rulemaking process. While specific processes vary by country and CAA, most rulemaking processes include public consultation, economic assessments, and formal review and approval processes that take considerable time. Furthermore, due to the nature of rulemaking, formalized industry/government rulemaking committees are typically established which sometimes excludes sectors of the industry due to *ex parte* requirements.

2.4 While Doc 9625 was envisioned as an internationally recognized FSTD Standard for CAAs to base their national standards, in practice, this has not occurred in an efficient manner. The primary reason is the transition of FSTD standards from guidance to regulations, as well as Doc 9625 update process itself. Currently, Doc 9625 describes an update process where changes to the document are proposed by a CAA and published in State guidance material or in State issued rules before being submitted to the ICAO International Pilot Training Consortium (IPTC) Training Device Work Stream (TDWS) for preparation as an update to Doc 9625. Typically, before a CAA proposes updates to Doc 9625, they will conduct their own public consultation processes to update national regulations or guidance material which may take several years to complete. Additionally, once an update has been proposed, ICAO requires additional time to integrate and publish a new revision to Doc 9625 through its own processes. Finally, if another CAA intends to use Doc 9625 to harmonize and amend their national regulations, an additional period will be needed for that CAA to conduct their rulemaking proceedings. In summary, to achieve harmonization of FSTD standards under the current Doc 9625 amendment process, many years are necessary to advance an initial proposal for FSTD Standards changes from a CAA and into Doc 9625 update process.

3. POTENTIAL SOLUTION FOR IMPROVED HARMONISATION

3.1 In recent years, it has become clear to industry and regulators that the current methods for the international harmonisation of FSTD standards has not worked well in practice. The current process should

be modified to allow States to utilize incorporation by reference. This approach should be considered by CAAs because it will improve the responsiveness and international harmonization for updating FSTD Standards in a rapidly developing regulatory environment.

3.2 Further international harmonization in the FSTD standards development process could be accomplished through moving FSTD standards development from a CAA function to an industry consensus standards organization function. This move may also encourage wider participation in the FSTD standards development process. In this method, CAAs and industry would participate in consensus working groups to develop and recommend FSTD standards published by the standards organization. One benefit of this approach would be the expansion of stakeholder participation without the restrictive protocols on participation often required during CAA-led rulemaking processes. This would allow for a wide range of industry technical experts in various technical disciplines to support harmonized standards development and would also allow for any interested CAA to participate in the process. This concept is very similar to how previous changes were made to Doc 9625 by leveraging international working groups organised by the Royal Aeronautical Society.

3.3 With FSTD Standards published in an industry consensus standard, CAAs would have more flexibility to incorporate the standards by reference into national regulation or allow for deviations/special conditions to accept the consensus standards as an alternate means of compliance. Similar methods have been followed in the FAA for small airplane certification where industry consensus standards are incorporated by reference in an expedited rulemaking process. Another example is the industry consensus standards for safety management.¹ In fact, the use of voluntary consensus standards is recommended to all U.S. government agencies to maximize the benefit from the expertise of the private sector.²

3.4 One obstacle to the adoption of Doc 9625 is the inconsistency between the defined FSTD levels or types with those required for training and licensing in national regulations. Even when applying the flexible “a la carte” method as described in Part III of Doc 9625, a direct equivalency to FSTDs defined in national standards is difficult to find in some instances. Furthermore, many pilot training standards issued by CAAs do not contain sufficient flexibility to use unique FSTD configurations or FSTD levels defined in other international standards. Where national regulations and guidance material define specific FSTD levels or types required for pilot training and proficiency checking, CAAs should consider incorporating flexibility (through deviation or special conditions processes) to allow for the use of FSTD levels and types as defined in other CAA national regulations, Doc 9625, or in industry consensus standards.

3.5 While adopting an FSTD standards update process which incorporates industry consensus standards would help with international harmonization, CAAs would still need a special condition process for reviewing and approving new and emerging technologies in a more timely manner than waiting for a full revision of the standards. Some CAAs have well defined special conditions processes for FSTD qualification, so information sharing between CAAs would allow other CAAs to recognize and adopt these special conditions. To improve harmonization, this information paper recommends that ICAO develop a common special conditions process for inclusion into Doc 9625. Additionally, when CAAs issue special conditions for new and emerging technologies on a qualified FSTD, these special conditions should be made available to the public and/or to other CAAs where possible.

¹ <https://www.aia-aerospace.org/standards/sms-standard/>

² U.S. Office of Management and Budget, Circular A-119, “Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities”.

4. **BENEFITS**

4.1 Developing FSTD standards through industry-led consensus standards organizations would expand participation from many industry and government technical experts as compared to the more restrictive CAA-led rulemaking proceedings.

4.2 Incorporating FSTD standards by reference would likely reduce the amount of time required to enact updated FSTD standards into national regulations, would reduce numerous redundant rulemaking proceedings, and would enhance flexibility.

4.3 International harmonization of FSTD standards would be promoted through mutual recognition of a common industry consensus standard.

4.4 Aligned special conditions processes and the publication of approved special conditions would allow other CAAs to potentially recognise and adopt special conditions under other national regulations.

5. **CHALLENGES**

5.1 A consensus standards organization would need to be identified and agreed to by CAAs and ICAO. This could potentially be coordinated and sponsored by ICAO as done in the past with the Royal Aeronautical Society for Doc 9625. Alternatively, other existing consensus standards organizations, such as SAE or ARINC could be considered. It is likely, however, that such organisations would charge for the use of their standards.

5.2 To fully adopt this framework, CAAs would need to amend national regulatory and/or guidance material to allow for FSTD standards to be incorporated by reference or approved through a special conditions process.

5.3 When satisfying entity specific training needs that are not aligned with specific aircraft design/function, consensus standards should be met whether they are broad or specific; applicable to the State CAA's Type Certificate Data Sheet (TCDS); Aircraft Flight Manual (AFM); or modified through Supplemental Type Certificate (STC), Engineering Order (EO), etc. Consensus standards should never fall short of or exceed aircraft certification requirement standards. In other words, consensus standards should never create an unrealistic condition when attempting to replicate the simulated certified aircraft platform; e.g. handling qualities and characteristics, performance, systems and interfaces, manoeuvres, procedures, tasks, functions, and areas of operation, etc.

6. **CONCLUSION**

6.1 Member States should consider adopting a consensus standards-based approach to enable the incorporation of FSTD standards by reference.

6.2 The ICAO Secretariat, in coordination with the ICAO PTLF, should consider coordination with an industry consensus standards organization to develop and publish an FSTD standard that could be incorporated into Doc 9625 by reference.