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(Lima, Perú, from 10 to 14 May 2005)

Item 3: Review of RVSM matters in the CAR/SAM Regions

b) Aircraft Operations and Airworthiness Working Group (OPS/AIR/WG)

Proposal of amendment to AC 6.425 Section J, item f. Initial theoretical training – Maintenance personnel

(Paper presented by Aldo Escobar)

Summary

This working paper contains a proposal of amendment to Advisory Circular AC 6.425, section J, Training for conducting operations in RVSM airspace, item f, Training for maintenance personnel. The purpose of this amendment is to extend the scope of the original programme to cover specific RVSM aspects, orienting the training programme to maintenance technicians with average knowledge, training and experience.

References

- FAA 91-RVSM
- JAA TGL N°6
- FAA Order 8300.10 Vol II, Chap. 5. Evaluate Operator's Application To Conduct Flight In Airspace Where Reduced Vertical Separation Minima Are Applied

1 Introduction

1.1. During the seminar on the RVSM approval process for aircraft and operators, held in November 2004, the author of the working paper made a presentation on RVSM training for maintenance personnel. When preparing this presentation, it was noted that the content of AC 6.425 regarding this

topic was too generic, allowing for improvements to its content so as to make the certification process more efficient at the time of meeting the requirements, and when monitoring their compliance.

1.2. Many of the considerations taken into account when preparing this proposal were based on experience; consequently, much is expected of the contributions to be made on the basis of different experiences.

2 Analysis

2.1 In order to develop the content of the RVSM maintenance training curriculum, the following should be taken into account:

a) The starting point is the concept of training, for which there must be a curriculum (minimum content of the course) that should be prepared on the basis of an analysis, *inter alia*, of the characteristics of the group to be trained, and the subsequent application of the knowledge acquired in the course.

b) In the analysis of the subsequent application of the knowledge acquired, consideration must be given to the work, function, or position of the individuals being trained. This is important when assessing the depth at which certain issues are to be discussed; for instance, when the course is for maintenance and/or dispatch personnel, the emphasis should be placed on changes to the MEL, policies and procedures, skin distortion tolerances in critical areas (for conducting visual inspections), etc. On the other hand, if the course is addressed to personnel responsible for aircraft and operator certification processes (generally, avionics engineering personnel), the tolerances for the RVSM equipment to be installed, the interpretation of SBs and SLs, the details of the STCs applied to meet RVSM requirements, etc., should be discussed more in detail.

c) In the analysis of the group to be trained, consideration should be given to the knowledge, previous training, on-the-job experience, and skills. The minimum content included in this proposal has been prepared in the understanding that the group receiving training will be required, at least, to have an average aeronautical technician level, with knowledge on the inspection of aircraft, aircraft systems, maintenance programs, use and application of maintenance data, record keeping, use of test equipment, etc.

2.2 AC 6.425 section J, item b, deals with the general aspects to be covered. In addition to this, when preparing the national regulatory requirements, a more thorough description should be made of RVSM definitions, the equipment required and its tolerances, and aircraft and operator approval aspects.

2.3 Chapter 5 of volume II of FAA Order 8300.10 contains the detailed RVSM maintenance programme requirements to be met by the operator, be it through the establishment of policies or through the development of procedures. All these new policies and procedures (which are generally reflected in the MGM) must be covered in the training course. This is especially important for the personnel working in aircraft dispatch.

2.4 In the case of general aviation, many of the regulations for these aircraft do not require the development of maintenance programmes, but when requesting RVSM approval, they must all submit an RVSM maintenance programme. That is why the maintenance personnel for this type of aircraft generally lacks aeronautical experience in the application of continued airworthiness maintenance programmes. Consequently, continued airworthiness instructions should be discussed in detail. It is also advisable to cover test equipment calibration aspects (ramp-testers).

2.5 Training on geometric inspection techniques, using special tools (for example, skin smoothness measurement tool), should only be included if the operator is planning to repair dents and bulges in RVSM critical areas that exceed SRM tolerances, also taking into account the assessment of structural repairs made in these critical areas. However, irrespective of all this, the concept of skin waviness should be clearly explained.

2.6 For all passenger transport aircraft operating in RVSM levels, there are service bulletins/letters or other documentation issued by the manufacturer, which detail all the aspects to be considered when certifying these aircraft. The content of this documentation must be covered in this course.

2.7 Sometimes, when modifications are made, all the new information in the manuals involved is included in the form of appendices. Therefore, the changes made should be explained in these courses, so that the amended/additional maintenance data can be properly used.

2.8 If there are restrictions at the time of certifying the aircraft, these must be described in the training course.

2.9 Many manufacturers present dent or bulge size tolerances in the form of graphics (in function of dent/bulge size and distance to the static head), which sometimes are not well interpreted by the technicians. Therefore, this topic should be included in the course study programme (if applicable).

2.10 In the event an operator has an approved training programme, the inclusion of RVSM training should be considered as an amendment to this programme. The request for amendment should, at least, include the content of the course, documentation accrediting the instructor (depending on State regulations, a license may or may not be required), the duly substantiated frequency to maintain the validity of the license (the duration of the recurrent course can be reduced), and a tentative date to conduct the initial training (it is suggested that the CAA participate so as to assess the depth at which each item described in the course content is discussed, and the possibility of covering all issues in the time proposed).

2.11 For the dispatch of maintenance flights, the use of the MEL is common practice. That is why RVSM-related amendments in this document must be discussed during the training course.

2.12 A course including different aircraft models may be given, provided the differences between the various types of aircraft are clearly defined so as to avoid confusion in the attending personnel.

2.13 For the assessment of CBT (computer-based training) and OJT (on-the-job training) courses, the procedures already established by each CAA should be used.

3 Suggested action

3.1 The panel meeting is invited to:

a) Take note of the information provided in this working paper (the full proposal is included in Appendix A); and

b) Assess the proposal and make the comments it may deem advisable regarding the content of the working paper.

- END -

APPENDIX A

Proposal of amendment to Section J, item f, of AC 6.425

f. Initial theoretical training – Maintenance personnel - In addition to that specified in item b of this section, training must take into account the analysis of the use of the knowledge acquired in the course, and the analysis of the group to be trained.

1. In the analysis of the use of the knowledge acquired, note should be taken of the work, function or position of the individuals receiving the training. This will be important at the time of assessing the depth at which certain issues must be discussed.

   i. When the course is addressed to maintenance and/or dispatch personnel, emphasis should be placed on the changes made to the MEL, policies and procedures, allowable skin distortion in critical areas (for conducting visual inspections), etc.

   ii. If the course is addressed to aircraft and operator certification personnel (generally avionics engineering personnel), it should include more detailed discussions on RVSM equipment tolerances, SB and SL interpretation, STC details applied to meet RVSM requirements, etc.

2. In the analysis of the group to be trained, consideration should be given to instruction and training received, on-the-job experience, and acquired skills. The minimum content included in this proposal has been prepared in the understanding that the group receiving training is required to have the knowledge of an average aeronautical technician, with knowledge on aircraft inspection, its systems, maintenance programs, use and application of maintenance data, record keeping, use of test equipment, etc.

3. Section J, item b, deals with the general aspects to be covered. In addition to this, when defining the national regulatory requirements, there should be a more in-depth discussion of RVSM definitions, the details of the required equipment and its tolerances, and aircraft and operator approval aspects.

4. The policies and procedures developed by the operator (generally included in the MGM) must be part of the training material.

5. In the case of private aviation, many countries have regulations that exempt these aircraft from the development of maintenance programs, but at the time of RVSM certification, they must all present an RVSM maintenance program. That is why the maintenance personnel of these private aircraft generally do not know how to apply continued airworthiness maintenance programmes. Consequently, the issue of continued airworthiness training should be discussed in depth. It is also advisable to have a thorough discussion on the aspects related to test equipment calibration (ramp-testers).

6. The instruction should include geometric inspection techniques and the use of special tools (for instance, skin smoothness measurement tool), only if the operator is thinking of repairing dents or bulges in RVSM critical areas which exceed SRM tolerances, also taking into account the assessment of structural repairs made in these critical areas. However, irrespective of this, the concept of skin waviness must be clearly explained.

7. For all passenger transport aircraft operating in RVSM levels, there are service bulletins/letters or other documentation issued by the manufacturer which detail all aspects to be considered when certifying these aircraft. The content of this documentation must be explained in this course.

8. Frequently, when modifications are made, all the new information incorporated into the manuals is included in the form of appendices. The changes made should be explained in these courses, so that the maintenance data that has been amended/added can be used in the appropriate manner.

9. If there are restrictions at the time of certifying the aircraft, these should be explained in the training course.

10. Many manufacturers present dent or bulge size allowances in the form of graphs (in function of dent/bulge size and distance to the static head), and, sometimes, they are not well interpreted by the technicians. Therefore, this issue should be included in the curriculum (if applicable).

11. In the event the operator has an approved training program, the inclusion of RVSM training courses should be considered as an amendment to said program. The request for amendment should include, at least, the content of the course, documentation accrediting the instructor (depending on the licensing regulations applicable in the country), duly substantiated frequency (the duration of recurrent courses may be reduced), and a tentative date for initial training (the attendance of the CAA is recommended in order to assess the depth at which each curriculum item is discussed, and the possibility of covering all the items in the time proposed).

12. For the dispatch of maintenance flights, the MEL is commonly used. For that reason, RVSM-related amendments to this document must be covered in the training courses.

13. A course can be given that includes different aircraft models, provided the differences between the various types of aircraft are clearly explained in order to avoid confusion among the personnel attending the course.

14. For assessing computer-based training (CBT) or on-the-job training (OJT) courses, the procedures already established by each CAA must be applied.