

9/30/05

**SUBJ: HOW TO EVALUATE AND ACCEPT PROCESSES FOR AERONAUTICAL DATABASE SUPPLIERS**

**1. PURPOSE.** This order explains how Federal Aviation Administration (FAA) aircraft certification service staff can evaluate and accept the aeronautical data processes of a data supplier who claims to meet the criteria of Advisory Circular (AC) 20-153, Acceptance of Data Processes and Associated Navigation Databases. Further, we give aircraft certification service staff a way to show that acceptance through an FAA Letter Of Acceptance (LOA). Finally, we describe procedures for issuing an LOA to aeronautical data suppliers.

**2. DISTRIBUTION.** Distribute this order to the Washington Headquarters branch levels of the Aircraft Certification Service, to the branch level of the Regional Aircraft Certification Directorates, to all Aircraft Certification Offices, the Brussels Aircraft Certification Branch, and to all Designated Engineering Representatives.

**3. DEFINITIONS.**

- Aeronautical Database: Any data stored electronically in a system supporting airborne aeronautical applications. An aeronautical database may be updated regularly. *In this order, aeronautical databases refer to aeronautical data only as defined below.*
- Aeronautical Data: Navigation and terrain obstacle information, used for navigation, flight planning, flight simulators, terrain awareness and other purposes.
- Aeronautical data chain: A conceptual representation of the path that aeronautical data takes from its creation to its end use. Data service providers, avionics manufacturers, end users and operators may all be data suppliers in the aeronautical data chain.
- Data Supplier: Organizations, not including the States, or entities acting on behalf of the States, which collect, process, or originate aeronautical data.
- FAA Letter Of Acceptance (LOA): A document we issue the data supplier that records the Aircraft Certification Office (ACO) acceptance of the data process and quality management system. AC 20-153, Paragraph 8 describes two types of LOAs.

**4. WHO RECEIVES AN LOA.** We grant an LOA to a data supplier in support of an operator who complies with:

- Aircraft/Rotorcraft Flight Manual (A/RFM)(S) limitations or continuing airworthiness instructions for navigation systems requiring the use of valid and current data (see Title 14 of the Code of Federal Regulations (14 CFR) §91.9(a)).
- 14 CFR §§ 91.123 and 91.181 on airways navigation and compliance with ATC instructions on navigation.
- 14 CFR § 91.503 on required aeronautical charts and data in current and correct form.
- 14 CFR § 91.511 on giving pilots the information necessary to navigate the airplane in the airspace assigned by air traffic control.
- 14 CFR § 91.703 on compliance with the regulations of a foreign country (where valid and current aeronautical data is required).

**5. ESTABLISHING AN FAA LOA FOR NAVIGATION DATA SUPPLIERS.** An ACO has the following responsibilities toward LOA applications:

**a.** The ACO in the geographic area of the applicant's manufacturing facility should accept the LOA application from a data supplier.

**b.** If the data supplier is outside the United States, we will not issue an LOA until the ACO and headquarters staffs determine the data supplier's geographic location puts no undue burden on the FAA.

**c.** Non-U.S. data suppliers may show their responsible national authority that their data processes meet RTCA/DO-200A, Standards for Processing Aeronautical Data (or the direct equivalent EUROCAE ED-76). Their authority's approval of these processes may be considered acceptable and equivalent to the LOAs in AC 20-153. Data suppliers should identify the relevant authority and approval method (for example, a European Aviation Safety Agency (EASA) LOA) to their data customers. A Type 2 LOA application may involve a Type 1 foreign data supplier. In this case, we at the FAA verify that the foreign supplier's approval is legitimate, and we endorse that legitimacy in the LOA. (See AC 20-153, Appendix 2, Paragraph 7).

**d.** Review the applicant's compliance plan (with supporting data) described in RTCA/DO-200A, section 2.2 to verify whether the data quality requirements and processing standards meet AC 20-153. Make sure to verify the scope of the data that will be covered by the LOA with the applicant.

**e.** Ensure the applicant submitted a statement certifying that they set up a Quality Management System (QMS) as required by AC 20-153. Evaluate the data submitted as evidence of compliance.

**f.** Evaluate and audit the applicant's facility before issuing an LOA. If necessary, this audit could include any of the applicant's facilities (that do not hold a Type 1 LOA), to ensure the applicant meets the criteria of AC 20-153.

## 6. STEPS FOR AUDITING THE FACILITY.

**a.** Base the audits on how the applicant demonstrates compliance with AC 20-153 and RTCA/DO-200A. See Section 3 of RTCA/DO-200A, which focuses on audit as the means of demonstrating compliance.

**b.** Compose the Audit team. For a first-time LOA, the audit team may include, but is not limited to, ACO engineers, manufacturing inspectors, plus directorate and headquarters staff. The audit team should include at least one member familiar with navigation systems and one additional member familiar with RTCA/DO-178B software review methods.

**c.** Send a letter to the applicant notifying them of a facility audit, no less than 15 working days before the audit. The letter should explain the audit's expectations and objectives, and inform the applicant what appropriate staff he must have on site during the audit.

**d.** Evaluate the interfaces between data originators, type design holders, airline operators, and any end-user. Audit the means by which recipients tell the originator that they received erroneous or inconsistent data. Evaluate the applicant's procedures for rapid and effective corrective action.

**(1)** Where questionable data cannot be resolved, audit the way the applicant deals with it. Make sure they have effective controls to prevent the release of an unsafe product, and that they communicate the entire situation to end-users.

**(2)** For interfaces with type design holders, audit the communication procedures to make sure the equipment type design holders talk to applicants about compatibility issues and constraints between equipment and their databases.

**(3)** For airline operators and end users, audit the procedures to learn how they handle tailored data, and whether they have procedures for confirming the data comes from a technically competent and valid source.

**e.** Audit the objectives, procedures, and reports. The applicant should prepare a compliance matrix to help auditors determine what AC 20-153 and RTCA/DO-200A objectives they met. At the end of each day, the lead auditor should meet with the facility managers, report and discuss any issues, and set the agenda for the next day's assessment. The final audit report should list non-conformities as follows in descending order of severity:

- Non-Compliances (must be fixed prior to issuance of an LOA),
- Deficiencies (require agreed upon timeline for correction prior to issuance of LOA), and
- Observations,

The final audit report should also list or discuss:

- Special emphasis items,
- Corrective actions, and
- Recommendations for FAA acceptance, or conditions required for acceptance.

**f.** The FAA auditor and facility leader sign the report, and the auditor files it in the project folder.

## **7. RECORDING AND DISTRIBUTING THE LOA.**

**a.** If you hadn't previously assigned an LOA number to the applicant, then assign one to all original LOAs according to the numbering convention for existing projects. The number should be unique for each LOA holder, and carried on all subsequent supplements to it. Compose the number with the prefix "LOA," followed by a format similar to that used for Supplemental Type Certificates, a four-digit number (unique to each LOA), and add two alpha digits to identify the project ACO (see FAA Order 8110.4B, Type Certification, Appendix 1, Figure 5). To illustrate, "LOA0018LA" represents the 18<sup>th</sup> LOA issued by the Los Angeles Aircraft Certification Office. After reviewing the applicant's aeronautical data process and QMS, an ACO representative will sign the LOA affirming FAA acceptance of the aeronautical data process. See AC 20-153, Appendix 2 for samples of Types 1 and 2 LOAs.

**b.** Prepare the acceptance letter for all initial LOAs, and transmittal letter for all subsequent LOAs, in triplicate. Give the original to the applicant. Keep one copy at the issuing office. Send one copy to the Aircraft Engineering Division, Avionic Systems Branch (AIR-130).

## **8. POST LOA ACTIVITY.**

**a.** An ACO may have to reevaluate an applicant's QMS when an LOA holder transfers their data production facilities, including supplier facilities delegated with major inspection functions, or when an LOA holder expands operations to include more production facilities at other locations.

**b.** An LOA is not transferable to another person, company, or location.

**c.** The ACO project manager should inspect the LOA holder's facilities periodically, and include supplier's facilities (as appropriate) to ensure the holder continues to meet the criteria of AC 20-153 and RTCA/DO-200A.

**d.** You can revoke the LOA if the applicant does not comply with the conditions specified in it.

## **9. DESIGNATED ENGINEERING REPRESENTATIVES (DER).**

**a.** DERs do not have authority to issue LOAs for the aeronautical data process, or to alter the issued LOA.

**b.** On a TC or STC project, authorized DERs may determine database identity between two projects, and may document this as compliance with XX.1301 on FAA form 8110-3. The DER may select "approve these data" on the form when specifically authorized; otherwise they may only recommend approval. This determination can be used to make a minor change to a Type 2 LOA to include the product with the identical database under the LOA.

**c.** Systems and equipment DERs may determine added compatible avionics (for Type 2 LOAs) only as identified in the LOA. The DER determination will be documented on FAA Form 8110-3, Statement of Compliance with the Federal Aviation Regulations, as compliance with XX.1301.

**10. SUGGESTIONS FOR IMPROVEMENT.** If you find deficiencies, need clarification or want to suggest improvements to this order, send FAA Form 1320-19, Directive Feedback

Information, (written or electronically) to the Aircraft Certification Service, Planning and Financial Resources Management Branch, AIR-530, Attention: Directives Management Officer. You can also send a copy to the Aircraft Engineering Division, AIR-130, Attention: Comments to Order 8110.55. If you urgently need an interpretation, contact AIR-130 at 202-385-4630. Always use Form 1320-19 to follow up each verbal conversation.

**11. RECORDS MANAGEMENT.** See FAA Order 0000.1, FAA Standard Subject Classification System, Order 1350.14, Records Management; and Order 1350.15, Records, Organization, Transfer, and Destruction Standards, or see your office Records Management Officer/Directives Management Officer for guidance on retaining or disposing of records.

/s/

David W. Hempe  
Manager, Aircraft Engineering Division  
Aircraft Certification Service