NOTICE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

National Policy

N 8110.110

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January 27, 2010

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January 27, 2011

SUBJ: Software Approval Guidelines, Continued

1. Purpose of This Notice.

a. We've written this notice to supplement RTCA/DO-178B, *Software Considerations in Airborne Systems and Equipment Certification*, to give you assistance in approving airborne software, and to help you ensure that an applicant establishes appropriate processes and procedures that result in compliance to RTCA/DO-178B objectives.

b. This guidance applies to your approving the software aspects of airborne systems and equipment related to type certificates (TC), supplemental type certificates (STC), amended type certificates (ATC), amended supplemental type certificates (ASTC), and technical standard order authorizations (TSOA). This notice takes precedence whenever there is conflict with any other directives.

2. Audience. Managers and staff of the FAA Aircraft Certification Service, including any persons designated by the Administrator, and organizations associated with the certification process required by 14 CFR.

3. Where You Can Find This Notice. You can find this notice on the Directives Management website at https://employees.faa.gov/tools_resources/orders_notices/.

4. Related References and Software Topics Covered in This Notice.

a. On June 3, 2003, we published Order 8110.49, *Software Approval Guidelines,* to help you evaluate and approve airborne software and changes to approved airborne software. This notice supplements, but doesn't replace, Order 8110.49.

b. Applicants may use Advisory Circular (AC) 20-115B, RTCA, *Inc., Document RTCA/DO-178B,* to demonstrate compliance to regulations for the software aspects of airborne systems and equipment certification and TSOA. AC 20-115B offers RTCA/DO178B as an acceptable means to gain FAA approval of software used in airborne systems and equipment installed on civil aircraft. In this notice, we likewise assume that applicants will propose RTCA/DO-178B as their means of compliance. If an applicant has proposed a means of compliance other than RTCA/DO-178B, we may need to develop additional FAA guidance, like an issue paper, on a project-by-project basis.

c. The degree to which you use this policy may depend on the size and complexity of a particular certification project. Confer with FAA system and software specialists as required. You may elect to use designees to perform oversight, after assessing their qualifications and your level of involvement according to Order 8110.49, *Software Approval Guidelines*, Chapter 3. Because it's impractical to cover all situations or conditions that may arise, supplement this policy with good judgment in handling the situation or condition.

d. In this notice, we supplemented RTCA/DO-178B, explaining how you can ensure--

(1) The applicant is properly overseeing their suppliers (Chapter 1);

(2) The applicant is properly implementing the use of software problem reports (Chapter 2);

(3) That databases and data items the applicant is using are appropriately assured (Chapter 3); and

(4) That software development and verification environments are adequately managed (Chapter 4).

Chapter 1. Properly Overseeing Suppliers

1. **When to Apply This Chapter.** You must apply the policy contained in this chapter when an applicant uses suppliers and sub-tier suppliers to perform system and software development, verification, and certification activities.

2. **Contemporary Issues.**

   a. Many TC/STC/TSOA applicants have shifted system and software development, verification, and certification activities onto their aircraft system suppliers and sub-tier suppliers. In the past, these suppliers participated in compliance activities only at their respective system, subsystem, or component levels. With airborne systems becoming increasingly more complex and integrated, and suppliers and sub-tier suppliers accepting these new responsibilities, we are concerned that their lack of expertise could result in incomplete or deficient certification activities.

   b. Each responsibility that the applicant delegates to a supplier creates an interface with that supplier that needs to be validated and verified to ensure that the transition from the supplier's processes to the applicant's processes (or vice-versa) is accomplished correctly and accurately. Lack of proper validation and verification of life cycle data at the transition point has resulted in issues with regard to requirements, problem reporting, changes, etc.

   c. Some certification tasks and activities may be performed in foreign countries. We can ask the certification authority of a country with which we have a bilateral agreement to make a determination of compliance to the applicable FAA regulations for us. We can't, however, request the certification authority of a country with which we lack a bilateral agreement to make a determination of compliance to the applicable FAA regulations. We would consider it an undue burden on us if we were required to oversee compliance activities at foreign supplier facilities in non-bilateral countries (including conducting on-site reviews).

   d. Finally, retention of substantiating data, such as software life cycle data and other certification and compliance data, is a critical part of the certification process. When this data is retained by a foreign supplier, it may not be readily available to us. This may also affect the continued operational safety of the aircraft and its systems, especially with regard to in-service problems (service difficulties), problem resolution (service bulletins), and mandatory corrections (airworthiness directives).

3. **Supplier Oversight Plans and Procedures.**

   a. The applicant should create oversight plans and procedures that will ensure all suppliers and sub-tier suppliers will comply with all regulations, policy, guidance, agreements, and standards that apply to the certification program. The applicable publications include, but are not limited to:

      (1) Title 14 of the Code of Federal Regulations (14 CFR);

      (2) Advisory circulars;

(3) FAA orders and notices;

(4) Issue papers;

(5) Special conditions;

(6) Applicant delegated organization authorization procedures, airworthiness representative procedures, designated engineering representative (DER) procedures, partnership for safety plans, memoranda of agreement;

(7) Applicant standards for system, hardware, and software development (including requirements, design, and coding standards);

(8) Applicant quality assurance plans, procedures, and processes;

(9) Applicant configuration management plans, procedures, and processes;

(10) System supplier standards, plans, procedures and processes; and

(11) Applicant process for software change impact analysis.

b. The applicant's planning documents, such as certification plans and plans for software aspects of certification (PSACs), should describe how the applicant will have visibility into their suppliers' and sub-tier suppliers' activities. This includes commercial off-the-shelf software component suppliers and vendors. The applicant should submit these plans for your review and approval, preferably early in the program. The applicant should avoid making changes to the plans late in the program. If late changes are unavoidable, the applicant must allow adequate time for your review and consideration.

4. Supplier Oversight: Review the Applicant's Plans.

a. The applicant should address the following concerns in a supplier management plan or other suitable planning documents. As a project engineer, you review the plan(s) and see that the following areas are addressed to your satisfaction:

(1) Visibility into compliance with regulations, policy, plans, standards, and agreements: The plan should address how the applicant will ensure that all applicable regulations, policy, plans, standards, issue papers, partnership for safety plans, and memoranda of agreement are conveyed to, coordinated with, and complied with by prime and sub-tier suppliers.

(2) Integration management: The plan should address how the system components will be integrated, and who will be responsible for validating and verifying the software and the integrated system. The plan should address:

(a) How requirements will be implemented, managed, and validated; including safety requirements, derived requirements, and changes to requirements;

(b) How the design will be controlled and approved;

(c) How the integration test environment will be controlled;

(d) How the software build and release process will be controlled (reconcile any differences between the supplier's and the applicant's release strategies);

(e) What product assurance activities that support the certification requirements will be conducted and who will be conducting them; and

(f) The applicant's strategy for integrating and verifying the system, including requirements-based testing and structural coverage analysis.

(3) Designee tasks and responsibilities: The plan should identify who the designees are and what their responsibilities are, who the focal points are, and how their activities will be coordinated and communicated. It should identify who will approve or recommend approval of software life cycle data.

(4) Problem reporting and resolution: The plan should establish a system to track problem reports. It should describe how problems will be reported between the applicant and all levels of suppliers. The problem reporting system should ensure that problems are resolved, and that reports and the resulting changes are recorded in a configuration management system. The plan should describe how the designee(s) will oversee problem reporting.

(5) Integration verification activity: The plan should identify who will be responsible for ensuring that all integration verification activities between all levels of suppliers comply with applicable guidance. It should describe how the designee(s) will oversee the verification process.

(6) Configuration management: The plan should describe the procedures and tools to aid configuration management of all software life cycle data. It should describe how configuration control will be maintained across all sub-tier suppliers, including those in foreign locations, and how designees will oversee configuration management.

(7) Compliance substantiation and data retention: The plan should describe how the applicant will ensure that all supplier and sub-tier supplier compliance findings are substantiated and retained for the program. The plan should address, at minimum, the following certification data:

(a) Evidence that compliance has been demonstrated;

(b) Verification and validation data; and

(c) Software life cycle data.

b. The applicant's supplier management plan (or equivalent plans) should address the concern identified in paragraph 2.b. regarding the transition of life cycle data between the applicant's processes and the suppliers' processes. The plan should address the validation and verification of data with regard to all processes, including requirements management, problem reporting, use of standards, change impact, reviews, etc.

c. The plans should state that certification data will be retained at a facility in the United States, and that the data will be in English, since non-English certification data may create ambiguities when translated to English. Data located in a facility outside the United States may present an undue burden on us.

Chapter 2. Software Problem Reporting

1. **When to Apply This Chapter.** You must apply the policy contained in this chapter when an applicant's suppliers and sub-tier suppliers will be responsible for managing problems detected during the development of aircraft systems implemented with software. This chapter also discusses your involvement with assessing unresolved problems before certification.

2. **Supplier Involvement in Problem Reporting.**

    a. The software development and verification phases of complex and highly integrated systems are likely to result in a large number of problem reports produced by the applicant and their suppliers. This brings about the following concerns:

        (1) The applicant's suppliers and sub-tier suppliers may not have the expertise to determine whether problems with their component(s) will have safety, functional, or operational impacts on the aircraft or airborne system in which they are used;

        (2) The applicant may not have adequate visibility into supplier and sub-tier supplier problem reporting processes; and

        (3) There may be a large number of open problem reports, indicating a lack of software maturity and assurance at type inspection authorization (TIA) or certification.

    b. Due to these concerns, the applicant will need to actively participate in the oversight of problem reporting processes to ensure that problems are properly identified, reported, and resolved.

    c. RTCA/DO-178B, sections 7.2.3 through 7.2.7 and Table 7-1, provide guidance on problem reporting and resolution. Additionally, section 11.20 (j) states that the Software Accomplishment Summary should contain a summary of problem reports unresolved at the time of certification, including a statement of functional limitations.

3. **Oversight of Problem Reporting.**

    a. In order to ensure that software problems are consistently reported and resolved, and that software development assurance is accomplished before certification, the applicant should discuss in their Software Configuration Management Plan, or other appropriate planning documents, how they will oversee their supplier's and sub-tier supplier's software problem reporting process. As a project engineer, you review the plans and verify that they address the following to your satisfaction:

        (1) The plans should describe each of the applicant's supplier's and sub-tier supplier's problem reporting processes that will ensure problems are reported, assessed, resolved, implemented, re-verified (regression testing and analysis), closed, and controlled. The plans should consider all problems related to software, databases, data items, and electronic files used in any systems and equipment installed on the aircraft.

(2) The plans should establish how problem reports will be categorized so that each problem report can be classified accordingly--

(a) Categories should identify problems with a potential impact on safety, functionality, performance, operation, or design assurance;

(b) Categories should identify problems that should be resolved before certification, and problems that could be deferred beyond certification; and

(c) Each category should define the criteria for which deferring the problem is acceptable.

(3) The plans should describe how the applicant's suppliers and sub-tier suppliers will notify the applicant of any problems that could impact safety, performance, functional or operational characteristics, software assurance, or compliance.

(a) The applicant may enter such problems into their own problem reporting and tracking system. If so, the plan needs to describe how this is accomplished. If the supplier's problem reporting system is not directly compatible with the applicant's system, the plan needs to describe a process for verifying the translation between problem reporting systems.

(b) The applicant may allow their suppliers and sub-tier suppliers to have access to their own problem reporting system. Doing so may help the applicant ensure that they will properly receive and control their supplier's problem reports. If the applicant allows this, they should restrict who has such access in order to maintain proper configuration control, and their suppliers should be trained on the proper use of the reporting system.

(c) The plans should describe any tools that the applicant's suppliers or sub-tier suppliers plan to use for the purpose of recording action items or observations for the applicant to review and approve prior to entering them into the applicant's problem reporting system.

(d) The plans should state that suppliers will have only one problem reporting system in order to assure that the applicant will have visibility into all problems and that no problems are hidden from the applicant.

(e) Any problems that may influence other applications, or that may have system-wide influence should be made visible to the appropriate disciplines.

(4) The plans should describe how flight test, human factors, systems, software, and other engineers of the appropriate disciplines will be involved in reviewing each supplier's and sub-tier supplier's problem report resolution process. They should also describe how these engineers will participate in problem report review boards and change control boards.

(5) The plans should establish the criteria that problem report review boards and change control boards will use in determining the acceptability of any open problem reports that the applicant will propose to defer beyond certification.

(a) These boards should carefully consider the potential impacts of any open problem reports on safety, functionality, and operation.

(b) Since a significant number of unresolved problem reports indicate that the software may not be fully mature and its assurance questionable, the applicant should describe a process for establishing an upper boundary or target limit on the number of problem reports allowed to be deferred until after type certification.

(c) The plan should establish a means of determining a time limit that unresolved problem reports deferred beyond certification will be resolved. This applies to problem reports generated by the applicant, suppliers, and sub-tier suppliers.

b. As a project engineer, you should be involved in certain decisions related to open problem reports prior to TIA and certification. You should:

(1) Review, as appropriate, any problem reports that are proposed for deferral beyond certification. This review may require FAA flight test, systems, and other specialists. You may need to ask for more information to make your assessment. If you have concerns that safety might be impacted, you can disallow the deferral of specific problem reports.

(2) If the applicant is using previously developed software, ensure that the applicant has reassessed any open problem reports for their potential impact on the aircraft or system baseline to be certified.

(3) Ensure that the applicant has considered the inter-relationships of multiple open problem reports and assessed whether any open problem report has become more critical when considered in conjunction with another related problem report.

(4) Ensure that the applicant has reviewed any open problem reports related to airworthiness directives, service bulletins, or operating limitations and other mandatory corrections or conditions. The applicant may need your help to determine which problems to resolve before certification.

(5) Review any open problem reports with potential safety or operational impact to determine if operational limitations and procedures are required before FAA test pilots participate in test flights. You may need to involve technical experts in making your determination.

(6) Ensure that the applicant has complied with DO-178B, section 11.20 (j).

Chapter 3. Assuring Airborne System Databases and Aeronautical Databases

1. **When to Apply This Chapter.** You must apply the policy contained in this chapter when the applicant's airborne systems and equipment is utilizing aeronautical databases or airborne system databases.

2. **Databases and Their Design Assurance.** There are three distinct types of databases used in airborne systems and equipment:

    a. Aeronautical databases, which are used by an airborne system and whose development processes are typically approved using the guidance of RTCA DO-200A, *Standards for Processing Aeronautical Data*; AC 20-153, *Acceptance of Data Processes and Associated Navigation Databases*; and FAA Order 8110.55, *How to Evaluate and Accept Process for Aeronautical Database Suppliers*.

        (1) Aeronautical databases should be demonstrated to comply with RTCA/DO-200A or other acceptable means. RTCA/DO-200A defines requirements and an acceptable means of compliance for participants processing aeronautical databases. If followed, it provides assurance that the production of aeronautical databases meets the integrity requirements for intended function, based on design assurance levels or software levels. It addresses specifics of the aeronautical data process, and assumes that participating organizations have an acceptable quality management system.

        (2) AC 20-153 provides criteria for organizations to apply for a letter of acceptance (LOA) for their aeronautical data process. The LOA identifies organizations within the aeronautical data chain that demonstrate acceptable data processes, and formally documents that a supplier's databases are being produced according to RTCA/DO-200A.

        (3) Order 8110.55 explains how you can evaluate and accept aeronautical data processes of a database supplier who complies with AC 20-153 and issue them an LOA.

    b. Airborne system databases, which are used by an airborne system and approved as part of the type design of the aircraft or engine. These databases may influence paths executed through the executable object code, be used to activate or deactivate software components and functions, adapt the software computations to the aircraft configuration, or be used as computational data.

        (1) Airborne system databases may consist of script files, interpretive languages, data structures, or configuration files (including registries, software options, operating program configuration, aircraft configuration modules, and option-selectable software).

        (2) Assurance of these databases is typically achieved in the context of RTCA/DO-178B airborne system and equipment software processes.

    c. Other applications and databases, which are not part of the type design of the aircraft or engine, and which are operationally approved by Flight Standards. This includes applications and databases defined as Type A and Type B in AC 120-76A, *Guidelines for the Certification, Airworthiness, and Operational Approval of Electronic Flight Bag Computing Devices*; and electronic checklists addressed in AC 120-64, *Operational Use & Modification of Electronic Checklists*. User-

Modifiable Software is also in this category (refer to DO-178B, section 2.4 and FAA Order 8110.49, Chapter 7). These applications and databases have no design assurance requirements and therefore are not addressed in this notice.

3. Assuring Aeronautical Databases. To ensure that the applicant and their airborne system suppliers have complied with all applicable regulations and FAA guidance for aeronautical databases, you should:

   a. Ensure that the applicant has followed the guidance provided in AC 20-153, section 10, or other acceptable means for aeronautical databases that comply with the requirements of RTCA/DO-200A. A current Type 2 LOA (refer to AC 20-153) provides evidence that the aeronautical database complies with DO-200A in support of installation eligibility and operational authorization for use.

   b. Ensure that any aeronautical databases meet the appropriate assurance level requirements using RTCA/DO-200A (Appendix B), AC 20-153, or other acceptable means (refer to Order 8110.55).

4. Assuring Airborne System Databases. To ensure that the applicant and their airborne system suppliers have complied with all applicable regulations and FAA guidance for airborne system databases, you should:

   a. Review the applicant's aircraft and system safety assessment(s) and verify that for each airborne system database:

      (1) They have considered possible database errors and corruption for each system that will use each database;

      (2) They have assigned appropriate software levels to each database (refer to AC xx.1309, *System Safety Analysis and Assessment for Part XX Airplanes;* AC 33.28, *Guidance Material for 14 CFR 33.28, Reciprocating Engine, Electrical and Electronic Engine Control Systems*; SAE International's Aeronautical Recommended Practice (ARP) 4754, *Certification Considerations for Highly-Integrated Or Complex Aircraft Systems;* and ARP4761, *Guidelines and Methods for Conducting the Safety Assessment Process on Civil Airborne Systems and Equipment*);

      (3) They have based assigned database software levels on the worst-case potential hazard effect that errors or corruption could cause for the system and aircraft or engine; and

      (4) You concur with the identified hazards and assigned software levels.

   b. Ensure that each database is assured to the appropriate software level using RTCA/DO-178B or other acceptable means, and that they are verified in the context of the functional software, the system, and the overall aircraft use.

      (1) A level of verification coverage appropriate for the database software level should be achieved. This may be achieved by a combination of requirements-based testing, data coupling

analyses for data items that provide data only, and control coupling analyses for data items that influence software execution.

(2) Review the applicant's proposed verification coverage criteria for each database and either concur or provide rationale if you do not concur.

(3) Ensure that the applicant has applied robustness test conditions for databases, including those that influence software execution.

5. Actions Applicable to Aeronautical and Airborne System Databases.

a. Review any field-loadable software loading procedures for each database. Ensure that safeguards are established to detect database transmission and media errors, loading and content errors, mismatches between database part numbers and the aircraft systems or embedded software, and corruption of database contents or memory during use. Refer to FAA Order 8110.49, Chapters 5 and 6 for more guidance on approving field-loadable software.

b. Ensure that maintenance instructions and appropriate limitations are provided for database updates if the contents of the database are valid for use only within a specified time.

c. Ensure that the applicant has provided a process for updating each database. The process should include a means for obtaining airworthiness approval and/or operational authorization for use, such as STC, minor modification (mod level change), system part number roll, or software part number roll, as appropriate. The process should address databases with their own part number assigned, as well as databases considered part of the operational software.

Chapter 4. Managing the Software Development and Verification Environment

1. When to Apply This Chapter. You must apply the policy contained in this chapter when the applicant is using a software development or verification environment that may not be completely representative of the target computer. In this chapter, we show you how to ensure that the applicant establishes and maintains configuration control of the software development and verification environment, and implements a structured problem reporting system for the environment.

2. How Representative is the Environment? RTCA/DO-178B requires that the verification test activities take place on the target computer, a target emulator, or a host computer simulator. Software development and verification teams typically utilize an environment designed specifically to emulate the target computer to satisfy this requirement. Because the environment may go through several iterations during software development and verification, it may not be clear how representative the environment is of the actual production hardware at any point in time in the verification process. Additionally, the environment may not be identical to the final production version of the hardware to be installed in the aircraft. Therefore, the applicant should establish and maintain configuration control of the environment, and implement a structured problem reporting system for the environment available to users of the environment.

3. Controlling the Development and Verification Environment. The applicant should address the following aspects in their Software Verification Plan and Software Configuration Management Plan. The applicant should convey these aspects to all participating software suppliers, and ensure that they comply with them. As a project engineer, you review these plans and assess their adequacy.

    a. The Software Verification Plan should include:

        (1) A description of the software development and verification environment, and an explanation of the differences between it and the production version of the system hardware and software to be installed on the aircraft.

        (2) An explanation of how the software development and verification environment will be used by system software suppliers and what RTCA/DO-178B objectives it will be used to show compliance with.

        (3) An explanation of how the software development and verification environment will be used to show compliance with RTCA/DO-178B objectives that involve verification of the software executable object code. This should address the entire executable object code, not just individual functional software components. If development tools are being used in the integrated environment, then verification should also be performed in the integrated environment.

        (4) A process for analyzing completed verification activities and assessing the need to repeat any of those activities after changes are made to the software development and verification environment. The process should ensure that all affected verification activities will be repeated, or ensure that a documented analysis is conducted showing why retesting is not required.

b. The Software Configuration Management Plan should include:

(1) A description of the configuration control system to be used for the software development and verification environment. The plan should identify the person who is responsible for administering this system.

(2) A problem reporting and assessing system for the software development and verification environment that is available to all users of the environment (refer to Chapter 2 of this notice).

Chapter 5. Administrative Information

1. **Distribution.** Distribute this notice to the branch level in Washington headquarters Aircraft Certification Service, section level in all Aircraft Certification directorates, all chief scientific and technical advisors (CSTA), all aircraft certification offices (ACO), all manufacturing inspection offices (MIO), all manufacturing inspection district or satellite offices (MIDO/MISO), and all flight standards district offices (FSDO). Make additional limited distribution to delegated organization authorized representatives, designated engineering representatives, air carrier district offices, the aeronautical quality assurance field offices, and the FAA Academy.

2. **Suggestions for Improvement.** If you find deficiencies, need clarification, or want to suggest improvements on this notice, send a copy of Federal Aviation Administration (FAA) Form 1320-19, Directive Feedback Information (written or electronically), to the Aircraft Certification Service, Administrative Services Branch, AIR-510, Attention: Directives Management Officer, for consideration. If you urgently need an interpretation, you may contact the Aircraft Engineering Division, Software Specialist, AIR-120, for guidance. You should also use the FAA Form 1320-19 as a follow-up to verbal conversation. FAA Form 1320-19 may be found electronically at https://employees.faa.gov/tools_resources/forms/

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Appendix A. Related Publications

The latest amendments of the following publications are the primary reference materials for this notice:

    a. Code of Federal Regulations. Title 14 of the Code of Federal Regulations (14 CFR) part 21, *Certification Procedures for Products and Parts.*

    b. FAA Advisory Circulars (AC) and Orders. Copies of the following ACs and orders are available from the FAA website at http://www.airweb.faa.gov/rgl.

- Advisory Circular 20-145, *Guidance for Integrated Modular Avionics (IMA) that Implement TSO-C153 Authorized Hardware Elements;*

- Advisory Circular 20-148, *Reusable Software Components;*

- Advisory Circular 20-153, *Acceptance of Data Processes and Associated Navigation Databases;*

- Advisory Circular 21-23, *Airworthiness Certification of Civil Aircraft, Engine, Propellers, and Related Products Imported to the United States*

- Advisory Circular 21-33, *Quality Assurance of Software used in Aircraft or Related Products*;

- Advisory Circular 23.1309-1, *System Safety Analysis and Assessment for Part 23 Airplanes;*

- Advisory Circular 25.1309-1, *System Design and Analysis;*

- Advisory Circular 27-1 (AC 27.1309) *Certification of Normal Category Rotorcraft*;

- Advisory Circular 29-2 (AC 29.1309) *Certification of Transport Category Rotorcraft*;

- Advisory Circular 33.28-2, *Guidance Material for 14 CFR 33.28, Reciprocating Engine, Electrical and Electronic Engine Control Systems;*

- Advisory Circular 120-64, *Operational Use and Modification of Electronic Checklists*;

- Advisory Circular 120-76, *Guidelines for the Certification, Airworthiness, and Operational Approval of Electronic Flight Bag Computing Devices;*

- FAA Order 8110.4, *Type Certification;*

- FAA Order 8100.11, *Decision Paper Criteria for Undue Burden and No Undue Burden Determinations Under 14 CFR Part 21;*

- FAA Order 8110.42, Parts Manufacturer Approval Procedures;

- FAA Order 8110.49, *Software Approval Guidelines;*

- FAA Order 8110.55, *How to Evaluate and Accept Processes for Aeronautical Database Suppliers.*

c. **Other FAA Documents.**

- FAA Job Aid, Conducting Software Reviews Prior to Certification, dated January 16, 2004. A copy of this FAA Job Aid is available from the FAA website at: http://www.faa.gov/aircraft/air_cert/design_approvals/air_software/guide_jobaid/

- AIR-100 Policy Memorandum #2001-01, Use of Designated Engineering Representatives in the Technical Standard Order Authorization Process, dated July 15, 2005. A copy of this policy memorandum is available from the FAA website at http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgPolicy.nsf/

d. **RTCA, Inc. Documents.** You can obtain copies on-line at http://www.rtca.org. RTCA documents used in this notice are:

- RTCA/DO-178B, *Software Considerations in Airborne Systems and Equipment Certification;*

- RTCA/DO-200A, *Standards for Processing Aeronautical Data;*

- RTCA/DO-201A, *Standards for Aeronautical Information;*

- RTCA/DO-272, *User Requirements for Aerodrome Mapping Information;*

- RTCA/DO-276, *User Requirements for Terrain and Obstacle Data.*

e. **SAE, International Documents.** Order copies of SAE documents from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001 USA. You can obtain copies on-line at http://www.sae.org. SAE documents used in this notice are:

- SAE ARP-4754, *Certification Considerations for Highly-Integrated Or Complex Aircraft Systems;*

- SAE ARP-4761, *Guidelines and Methods for Conducting the Safety Assessment Process on Civil Airborne Systems and Equipment.*