U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
National Policy

ORDER
8110.117

09/12/2012

SUBJ: Service Bulletins Related to Airworthiness Directives

1. Purpose of this Order. This order provides information and guidance to aviation safety engineers (ASE) for reviewing service bulletins (SB) that incorporate drafting concepts in Federal Aviation Administration (FAA) Advisory Circular (AC) 20-176, *Design Approval Holder Best Practices for Service Bulletins Related to Airworthiness Directives*.

2. Audience. All FAA employees who review and approve SBs associated with an AD.

3. Where to Find this Order? You can find this order on the Directives Management System (DMS) website at https://employees.faa.gov/tools_resources/orders_notices/ or http://www.faa.gov/regulations_policies/orders_notices/ and on the FAA's Regulatory and Guidance Library (RGL) website at http://rgl.faa.gov.

4. Effective Date. This order is effective October 12, 2012.

5. Background.

a. In early 2008, the FAA established an AD Compliance Review Team (AD CRT) to review compliance issues related to AD 2006-15-15, *McDonnell Douglas Model DC-9-81 (MD-81), DC-9-82 (MD-82), DC-9-83 (MD-83), DC-9-87 (MD-87), and MD-88 Airplanes* (Task 1), and the general process for developing and implementing ADs for commercial airplanes (Task 2).

b. The AD CRT documented its findings and recommendations from the Task 2 review in a report, *Process Review Technical Report – A review of the Title 14, Code of Federal Regulations, Part 39 Airworthiness Directives Process for Commercial Airplanes*, dated July 8, 2009. The report focused on the process of developing and implementing ADs, as well as ensuring compliance by owners/operators.

c. FAA AC 20-176, *Design Approval Holder Best Practices for Service Bulletins Related to Airworthiness Directives*, issued on December 19, 2011, presents best practices for drafting SBs related to ADs, avoiding overlapping and conflicting actions in SBs, requesting and sharing alternative methods of compliance (AMOC), and maintaining airworthiness of AD-mandated design changes. This AC also introduces a new concept – critical task differentiation – for distinguishing which steps in an SB will have a direct effect on detecting, preventing, resolving, or eliminating the unsafe condition identified in an AD. This AC was developed in response to some of the recommendations from the AD CRT Task 2 reports.

6. Related Publications.

a. FAA AC 20-176, *Design Approval Holder Best Practices for Service Bulletins Related to*

Airworthiness Directives.

b. FAA Manual FAA-IR-M-8040.1, *Airworthiness Directives Manual.*

c. FAA Order 8110.103, *Alternative Methods of Compliance (AMOC).*

7. Definitions. For the purpose of this order, the following definitions apply:

a. Incorporation by reference. A method of referring to material already published elsewhere instead of publishing it directly into an AD. Documents incorporated by reference (IBR'd) in an AD become part of the AD. The FAA must obtain approval from the Office of the Federal Register (OFR) to IBR material, including a SB or portion of a SB, in an AD.

b. Required for Compliance (RC). A method of notating which steps in an SB must be done for compliance with an AD. Steps with the RC notation have a direct effect on detecting, preventing, resolving, or eliminating the unsafe condition identified in an AD.

8. SBs Related to ADs. AC 20-176 provides guidance for writing SBs that are used as an additional source of information about an unsafe condition, or as a document that will be IBR'd in an AD. Although there is no mandatory requirement for a DAH to incorporate any of the SB improvements identified in AC 20-176, doing so will help expedite drafting of an AD action. This order provides guidance to the FAA ASE for reviewing and approving SBs in which the DAH has incorporated any or all of the following concepts:

a. Reference to other documents within an SB;

b. Safety intent and configuration description;

c. Notes;

d. Logic-based diagrams;

e. Mandatory versus flexible language;

f. Critical task differentiation; and

g. "Later approved parts" language.

9. Reference to Other Documents Within an SB.

a. An SB should not duplicate (e.g., copy) certain types of procedures (refer to AC 20-176). Instead of repeating the procedure, the SB should refer to the other document(s) for that task.

b. If an SB references another document for completing a task that will be required for compliance to an AD, then the other document in the SB must be identified with a revision level and date. To prevent the need for an AMOC approval each time the revision level changes in the document referenced in the SB, the phrase "or later approved revision" may be added when specifying the revision level. "Later approved revision," on the other hand, cannot be used to

identify the SB in the AD because it violates 1 CFR 51.7 and OFR policies for approving materials that are IBR'd.

c. Remember that a reference to another document in an SB that is IBR'd in an AD does not constitute IBR'ing of the other document. The FAA must obtain approval from the OFR for each document that is IBR'd in an AD.

10. Safety Intent and Configuration Description. When an SB contains paragraphs entitled "Safety Intent" and "Configuration Description" to enhance and focus awareness of the safety issue during the development and approval of the SB as well as during implementation and subsequent maintenance, then:

a. The "Safety Intent" paragraph should explain what the SB is intended to do (i.e., detect, prevent, resolve, or eliminate the unsafe condition). The goal of this paragraph in an SB is to explain in technical terms what is the affected part and failure mode or malfunction, and how it will be prevented, resolved, or otherwise removed by accomplishing the SB. When reviewing the SB, evaluate whether the unsafe condition identified in the SB agrees with the unsafe condition that will be identified in the AD action.

b. If accomplishing the SB will change configuration, a "Configuration Description" paragraph should be included in the SB to provide a succinct, high-level description of the design change that will result from accomplishing the instructions. The "Configuration Description" is intended to be used as a guide, not as the final determinant of compliance with an AD.

11. Notes.

a. Notes in SBs generally provide information related to the accomplishment of instructions. However, notes are informational only, and since they are generally unenforceable, they should not contain any requirements. Review notes in an SB to ensure that they do not contain any critical step(s) for accomplishing or implementing the corrective action(s).

b. When technically possible, notes should provide an SB user with an acceptable level of flexibility to accomplish the tasks (e.g., specify alternative materials and allow the use of other approved methods, techniques and practices, etc.).

12. Logic-based Diagrams. An SB that specifies numerous compliance times, configurations, conditions, and alternative corrective actions can be difficult to follow. In these cases, a logic-based diagram (e.g., flowchart) is a useful tool to assist owners/operators in choosing the best corrective action path, such as repetitive inspections or a terminating modification, based on the discovered condition and compliance times. If used in an SB, a logic-based diagram must contain a note in both the logic-based diagram and the accomplishment instructions paragraph of the SB to be clear that the logic-based diagram only supplements the information in the accomplishment instructions (refer to AC 20-176).

13. Mandatory versus Flexible Language. The use of mandatory language in the accomplishment instructions of an SB depends on whether other procedures acceptable to the FAA are adequate to address the unsafe condition in an AD. If other procedures are acceptable to the FAA, flexible (e.g., non-mandatory) language should be used in the SB.

a. When a procedure/step or document *must* be followed to accomplish a task in an SB, the appropriate terminology to cite the procedure/step/document is "in accordance with."

b. When a procedure/step or document *may* be followed to accomplish an action (e.g., the DAH's procedure or document may be used, but an operator's FAA-accepted procedure could also be used), the appropriate terminology to cite the procedure/step or document is "refer to ... as an accepted procedure."

14. Critical Task Differentiation. The FAA, in conjunction with an industry working group, developed a new process in AC 20-176 for annotating which steps in an SB are required for compliance with an AD. Differentiating these steps from other tasks in an SB will improve an owner/operator's understanding of crucial AD requirements and help provide consistent judgment in AD compliance. Steps that have a direct effect on detecting, preventing, resolving, or eliminating the unsafe condition in an AD should be identified in an SB and labeled as "RC" (required for compliance). Refer to Appendix A to help determine which steps should be identified with the RC label.

> **Note:** AC 20-176 provides specific examples of what items would generally be considered "RC" or not "RC."

a. The RC label is only used:

(1) In SBs that are planned to be referenced (i.e., IBR'd) in an AD.

(2) For steps/tasks that have a direct effect on detecting, preventing, resolving, or eliminating the unsafe condition in the planned AD. When reviewing SBs, if the step that is labeled RC has substeps or tasks with no paragraph designation, then all of the substeps/tasks are also considered RC steps (i.e., must be completed).

(3) With "in accordance with" mandatory language in the SB.

b. If RC is used, the SB must contain a note to define RC. Additionally, if options in the accomplishment instructions exist for a task labeled with RC, the options must be preceded by the phrase "Do one of the following."

c. If a SB is published without tasks labeled with RC and the DAH wishes to revise the SB to include the RC label, depending where in the AD process the AD action is, you can:

(1) IBR the revised SB in the final rule AD as the appropriate source of information for compliance with the AD, or

(2) Issue a global AMOC to the AD if the final rule AD is already issued. Refer to the procedures in FAA Order 8110.103.

d. Once a SB using the RC concept is IBR'd in an AD:

(1) A revision to the SB by the DAH will require an AMOC request. Follow FAA Order 8110.103 for approving/denying AMOC requests.

(2) Any substitutions or changes made to the RC steps by owners/operators will require an AMOC (see FAA Order 8110.103, appendix A, paragraph 109). Follow FAA Order 8110.103 for approving/denying AMOC requests. Owner/operator substitutions or changes made to non-RC steps will not require an AMOC if the RC steps can be done and the aircraft can be put back in a serviceable condition.

15. "Later Approved Parts" Language.

a. One way to minimize the number of AMOC requests for ADs requiring part changes is for a DAH to use "later approved parts" language in the SB. This would allow—without an AMOC approval—installation of DAH parts that are approved after the release of the SB.

b. Allow such language on a case-by-case basis. Installation of parts produced by anyone other than the original DAH (e.g., owner/operator produced parts) will require an AMOC approval. Follow FAA Order 8110.103 for approving/denying AMOC requests.

c. Because owners/operators may not have easy access to information concerning the date that a part is approved, SBs that recommend installing the "later-approved parts" should include recognition that the part complies with the applicable AD. This will ensure that owners/operators know which parts are acceptable for installation per the AD.

d. If the SB uses "later approved parts" language, then the SB should contain the following definition:

> Later-approved parts are only those *[Insert name of DAH]* parts that are fully interchangeable with the part specified in this service bulletin and approved by the FAA or *[Insert name of DAH]* Organization Designation Authorization (ODA) after the issuance of this service bulletin.

e. In order for owners/operators to use later-approved parts without an AMOC approval, the DAH must provide a statement, in writing, that:

(1) The part was approved after *[select either* the Original Issue *or* Revision (X)*]* of the SB; and

(2) The part is fully interchangeable with the part(s) specified in the SB.

16. Distribution. Distribute this order to the Office of the Chief Counsel; the Flight Standards Service; regional flight standards divisions, and flight standards field facilities and Aircraft Evaluation Group; to all regional counsels in the regional offices; and to the branch levels in the Aircraft Certification Service, aircraft certification directorates, aircraft certification offices, and aircraft certification field offices.

17. Suggestions for Improvement. If you find any deficiencies, need clarification, or want to suggest improvements to this directive, send a written or electronic copy of FAA Form 1320-19, *Directives Feedback Information,* to the Aircraft Certification Service, Administrative Services Branch, AIR-510, Attention: Directives Management Officer or you can forward your request by using the new automated Directive Feedback System on the web at

http://avsdfs.avs.faa.gov/default.aspx. You may also send a copy to the Aircraft Engineering Division, AIR-100, Attention: Comments to Order 8110.117. If you urgently need an interpretation, contact the Engineering Procedures Office, AIR-110, at (405) 954-4103. Always use FAA Form 1320-19 to follow-up each verbal conversation.

18. Records Management. Refer to Orders 0000.1, *FAA Standard Subject Classification System*; 1350.14, *Records Management*; and 1350.15, *Records, Organization, Transfer and Destruction Standards*; or your Records Management Officer or Directives Management Officer for guidance regarding retention or disposition of records.

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FOR David W. Hempe
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Appendix A. Required for Compliance (RC) Determination

To help determine which steps in an SB should be identified as RC, consider the following:

1. The determination begins by defining the unsafe condition and the root cause of the unsafe condition in an objective and succinct manner.

a. What is the unsafe condition?

(1) The description must be factual and succinct.

(2) While it may include information that helped determine the nature and extent of the unsafe condition, it should be phrased in a manner that enables a person to determine when the unsafe condition is addressed.

b. What was the cause of the unsafe condition?

(1) Design deficiency.

(a) Did the unsafe condition occur because the original design standard (e.g., Title 14 of the Code of Regulation (14 CFR) parts 23, 25, 27, etc.) was insufficient?

(b) Did the unsafe condition occur because the original design standard was not appropriately addressed in the type design (e.g., the operating environment placed more stress on the design than anticipated)?

(2) Manufacturing error.

(a) Did the unsafe condition occur due to an error during production (i.e., the design met the required standard, but the article was not produced to ensure compliance with the design)?

(b) Did the unsafe condition occur due to an error that was cleared through the Material Review Board (MRB) process?

(3) Maintenance error. Did the unsafe condition occur due to a systemic error in a maintenance practice that could not be controlled by enforcement actions under 14 CFR part 43?

(4) Other. Did the unsafe condition occur due to a systemic operational error that cannot be controlled by pilot training, ground handling training or other measures?

2. After ensuring the unsafe condition and the root cause are defined, for each step in the SB ask: Does the step directly detect, remove, prevent or correct the design deficiency, manufacturing error, maintenance error or other error that caused the unsafe condition? If the answer is yes, then the step(s) should be identified with RC. To help determine which specific steps should be identified with RC, ask yourself the following questions:

a. For an inspection that is necessary to detect the unsafe condition:

(1) What is the inspection looking for?

(2) What type of inspection is required?

(3) Must an owner/operator use that exact inspection procedure, or can an alternative inspection procedure be used?

(4) Is a repeat inspection required?

(5) Is terminating action required?

b. For a design deficiency that is directly related to the unsafe condition:

(1) What design deficiency led to the unsafe condition (e.g., which design requirement was not met)?

(2) What details of the design requirement were not met (e.g., material, dimensions, methods, processes)?

(3) What final configuration must be met?

(4) What design change was made to the product to correct the unsafe condition (e.g., what drawing, specification, materials, dimensions or processes changed)?

(5) What steps are required to directly accomplish the design change on products in service?

c. For a manufacturing error that is directly related to the unsafe condition:

(1) What manufacturing error led to the unsafe condition?

(2) What manufacturing requirements were not met (e.g., design data versus production specifications, information on parts, material, dimensions, methods, processes)?

(3) What final configuration must be met?

(4) What change was made to the airplane or component to correct the consequence of the manufacturing error (e.g., what change to the configuration, parts, material, dimensions, methods, and processes were accomplished to ensure the article met the design requirements)?

(5) What steps are required to directly accomplish the change to the product to bring it to the design requirements?

d. For a systemic maintenance error that is directly related to the unsafe condition:

(1) What maintenance error led to the unsafe condition?

(2) What maintenance processes were not met?

(a) What specific methods, techniques or practices caused the product to become out of its approved condition?

(b) How was the method, technique or practice misapplied?

(3) What final configuration must be met?

(4) What change was made to the product to prevent the effect of the maintenance error?

(5) What steps are required to directly accomplish the change on the product?

e. For any repairs required due to the inspection or modification, do the repairs directly affect the removal, prevention, or correction of the unsafe condition?

f. Is the owner/operator required to contact the DAH or FAA for modification, repair, testing instructions or approvals?

g. Is functional testing or operational testing required after the modification to confirm the unsafe condition has been corrected?

Appendix B. Directives Feedback Information

U.S. Department
of Transportation

**Federal Aviation
Administration**

Directive Feedback Information

Please submit any written comments or recommendation for improving this directive, or suggest new items or subjects to be added to it. Also, if you find an error, please tell us about it.

Subject: Order 8110.117

To: Directive Management Officer, AIR-510

(Please check all appropriate line items)

☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____ .

☐ Recommend paragraph _____ on page _____ be changed as follows: *(attached separate sheet if necessary)*

☐ In a future change to this order, please include coverage on the following subject *(briefly describe what you want added):*

☐ Other comments:

☐ I would like to discuss the above. Please contact me.

Submitted by: _____ Date: _____

Telephone Number: _____ Routing Symbol: _____

FAA Form 1320-19 (10-98)