

SUMMARY SHEET
Airworthiness Directive Implementation Aviation Rulemaking Committee
AD Implementation Working Group

Primary Report and Recommendation	Each air carrier, OEM/DAH, and repair facility should— (1) Implement training on the AD process and AD implementation (T1- R4-B1). (2) Implement training to reinforce best wiring practices (for example, EAPAS AD installation and EWIS training). (T1- R4-B2) AD Installation and EWIS Training
Secondary Report and Recommendation	None
Assigned Members	Bill Williams (FX) Bill Tsai (Boeing) Joe DiPalmo (FAA) Carlos Valadares (EM) Craig Fabian (ARSA) Adam Troeger (AA)
Links to Other Working Groups	None
Date Sent to ARC	12/07/2010
Date of ARC Approval	02/16/2011

WORKING GROUP REVIEW OF ISSUE/PROBLEM

The working group believes there is enough correlation between T1- R4- B1, and T1- R4- B2 to combine them into the same Summary sheet. The background information below addresses the issues:

With respect to T1-R4-B1, any certificate holder that is responsible for performing maintenance, preventive maintenance, or alterations required by an airworthiness directive (AD) should have processes in place that consider the training of aviation maintenance technicians (AMTs) before accomplishment of work. There should be a basic AD compliance training course that establishes an awareness of the AD processes and why it is essential to properly perform the work required by an AD and to maintain those requirements. Training of AMTs will ensure the proper emphasis on the critical nature of potential failure modes leading to the defined unsafe condition. In addition, AD initial compliance may be impacted by a previously installed modification, by a supplemental type certificate (STC), or by other work in the area. AD-specific training should include an assessment of the AMT’s knowledge and capability and the awareness of the details necessary for conformity to the requirements mandated by the AD.

For complex ADs, the certificate holders training program should provide a risk assessment of the training needs as well as "site-specific" restrictions for accomplishment of particular actions. These considerations can be used to limit the variability introduced by accomplishment across a system and/or leverage the use of maintenance locations where knowledgeable personnel,

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appropriate tooling, and other capabilities are available. Further, prior to airworthiness directive (AD) implementation, the certificate holder should have a program in place to determine, based upon a risk assessment, whether specific maintenance training is needed. In some cases, the AD will require specific training for personnel and in those cases the training must be accomplished and documented prior to AD implementation. Complex ADs as well as those involving new wiring practices or avionics may require specific training that is not generally available to the AMT. It is incumbent upon the certificate holders to consider the technician's qualifications and training before assigning tasks that have such safety implications as AD accomplishment.

With regards to T1-R4-B2, the EAPAS effort developed extensive training in the new lessons learned for the design, certification, installation, maintenance, and inspection of wire systems. The working group believes that this is another opportunity to stress the need for AMTs, including those working for air carriers, repair stations and design/production approval holders to receive wiring training that is guided by advisory circular (AC) 120-94.

REGULATIONS AND GUIDANCE IDENTIFIED FOR REVIEW

- (1) FAA Order 8900.1 (ATOS data Collection Tools - as applicable)
- (2) AC 25-27A (EWIS ICA)
- (3) AC 120-94 (EWIS Training)
- (4) AC 120-102 (Incorporation of EWIS ICA into Operator's Maintenance Program)
- (5) 14 CFR 121.375 (Maintenance and Preventative Maintenance Programs)
- (6) 14 CFR 121.1109 (Supplemental Inspections)
- (7) 14 CFR 121.1111 (EWIS Maintenance Program)
- (8) 14 CFR 121.1113 (Fuel Tank System Maintenance Program)
- (9) SFAR 88 (Fuel Tank System Fault Tolerance Evaluation Requirements)

WORKING GROUP PROPOSAL TO ADDRESS THE RECOMMENDATION(S)/FINDING(S)

The Working Group believes that AFS-300 should add the following recommendations to draft advisory circular 39.xxxx, which would be dedicated to the AD management process.

With respect to T1-R4-B1, the air carrier's processes should consider the training of maintenance technicians and inspectors before accomplishment of complex ADs. For complex ADs, consideration should also be given as to "site-specific" restrictions for accomplishment. These considerations would either limit the variability introduced by accomplishment across a system and/or leverage the use of available maintenance locations where correctly trained personnel, adequate tooling, and other adequate capabilities are available. AD training should include awareness and detail conformity to the specifics required by the AD. Training of newly hired mechanics for the air carrier and repair stations should include processes for complying with ADs; and more specific training should be accomplished for special federal aviation regulations

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(SFAR 88), § 121.1109 (Supplemental Inspections), §121.1111 (EWIS Maintenance Program), and §121.1113 (Fuel Tank Systems Maintenance Program) type ADs.

With respect to T1-R4-B2, air carriers should have a wiring training program in place that is consistent with the 2007 EAPAS rule, and is guided by AC 120-94. Wiring training should also be required for the air carrier's vendors (repair stations and design/production approval holders). Although not specifically required by §121.1111 or the EAPAS Rule, existing §121.375 (and similar rules in part 135 and 145) require that certificate holders or anyone performing maintenance for a certificate holder have a training program. This requirement ensures that anyone determining the adequacy of maintenance work (including inspectors) is fully informed about the procedures and techniques involved, and is competent to perform them.

With regards to instructions for continued airworthiness (ICA), advisory circular AC 120-102), section H25.5 (b) states, "...The EWIS ICA developed in accordance with the requirements of section H25.5 (a) (1) must be in the form of a document appropriate for the information to be provided, and must be easily recognizable as EWIS ICA." Further, "...The entire EWIS ICA can be in the source document, or the source document can point to a series of other documents, such as the MRBR, MPD, MID, AMM, or SWPM/ESPM, which contain the EWIS ICA." And finally, "The FAA Oversight Office will approve the source document, which the operators can use as a method of compliance. Operators should use the source document to identify the initial EWIS ICA and incorporate them in their maintenance program by 10 March 2011."

ALTERNATIVES CONSIDERED

The team considered greater reference to wiring training identified in ATA Specification 117, which provides valuable information about recommended electrical practices and procedures from various documents used by airlines, equipment manufacturers, professional organizations and the FAA. While the vast majority of the practices set forth in ATA Spec. 117 were contained in airline maintenance programs prior to its creation, ATA Spec.117 provided a basis for improved focus for many air carriers and repair stations. However, the team determined that AC 120-94 provides a more comprehensive EWIS training program that may be used by air carriers, repair stations, and original equipment manufacturers/design approval holders (OEM/DAH).

IMPLEMENTATION PLAN

Draft language for AC 39.xxxx will be submitted to the FAA by 10 December 2010 with a publishing date of 06/30/2011; and the affected (FAA Policy/Guidance) ATOS, EPIs and SAIs documents impacted by draft AC 39.xxxx, will be revised at the appropriate ATOS quarterly revision interval after final guidance is published. Although not specifically required under §121.375 (Maintenance and preventative Maintenance Program) or §121.1111 (EWIS

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Maintenance Programs), air carriers, repair stations, and OEMs should have a EWIS training program in place by 10 March 2011.

ASSUMPTIONS/CONSTRAINTS

An assumption is that air carriers and repair stations would already have an AD initial/basic awareness training program in place; and consistent with the 2007 EAPAS rule, air carriers, repair stations, and OEM/DAH would have a EWIS training program in place by 10 March 2011 that is guided by AC 120-94. Further, the air carrier's maintenance and inspection personnel (and by extension its repair station personnel), and other targeted groups (like the air carriers engineering department) as identified in AC 120-94, would receive EWIS training.

The assumption is that some air carriers and OEM/DAHs already have training programs for enhanced airworthiness program for airplane systems/fuel tank safety rule (EAPAS/FTS) type ADs; however, those pre electrical wiring interconnection systems EWIS training programs may not be consistent with the 2007 EAPAS (EWIS) rule, AC 120-102, or AC 120-94. The air carrier would further address wiring type AD concerns per its instructions for continued airworthiness (ICA) as related to §121.1111 (electrical wiring interconnection systems (EWIS] maintenance program, and in his continuous airworthiness maintenance program (CAMP programs). If the DAH references ICA revisions in its SB, the air carrier should evaluate whether revision to its manual are necessary to prevent the unintentional alteration of an AD.

A final assumption is in regards to the OEM/DAH; when the AD is issued the intent has already been captured in an airplane type design change. Here, OEM/DAH personnel work to OEM/DAH engineering drawings and OEM/DAH specifications; OEM/DAH personnel do not work according to ADs, which have limited new aircraft applicability and are usually directed at already delivered aircraft. AD training for OEM/DAH personnel would be ineffective because OEM/DAH personnel do not view or access ADs – OEM/DAH personnel perform work according to internal OEM/DAH instructions.

ISSUES FOR WORKING GROUP CONSIDERATION

None

ISSUES FOR ARC CONSIDERATION

See assumptions/constraints

FINDING NO. T1- R4- B1 AND T1- R4- B2

(1) With Respect to T1-R4-B1, there should be benchmark processes that include consideration of maintenance technician qualifications and training before AD accomplishment. This can include skill-specific training for particular ADs, for example, using avionics-qualified

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technicians for wiring-related ADs. Also there should be consideration for site-specific restriction of accomplishment. Further, these considerations would either limit the variability introduced by accomplishment across a system and/or leverage the use of available center-of-excellence capabilities.

(2) With respect to T1-R4-B2, in a relative sense, safety of wire systems was not deemed critical before the TWA and Swissair accidents, but the lessons learned in the accident investigation and the ATSRAC EAPAS work that followed has highlighted the critical nature of potential failure modes of wire systems leading to unsafe conditions. The training recommended by the ATSRAC and the NTSB is essential for all aviation personnel involved in aircraft maintenance. The ATSRAC and the FAA has developed materials to be used in conducting training of personnel throughout the aviation safety community, especially those persons involved with airplane wire systems.

RECOMMENDATION NO. T1- R4- B1 AND T1- R4- B2

With regards to T1-R4-B1, each air carrier, OEM, and repair facility should— Implement training on the AD process and AD implementation.

With regards to T1-R4-B2, each air carrier, OEM, and repair facility should - Implement training to reinforce best wiring practices (for example, EAPAS).