

Aging Transport Systems Rulemaking Advisory Committee

Task 9

DRAFT INTERIM REPORT

April 19, 2002

Randy M. Boren
Northwest Airlines
Task 9 Harmonized Working Group Chairman

Executive Summary

This Report is provided to ATSRAC by the Task 9 Harmonized Working Group (T9HWG) as a **DRAFT INTERIM REPORT** on the work requested of them in March, 2001. Actual due date for the Final Report is July, 2002.

The T9HWG was made up of sixteen (16) American, Canadian, and European engineers representing Operators, OEMs, Regulators, wire testing specialist companies. The group met seven (7) times between May 2001 and July 2002. Meeting duration was from two (2) to eight (8) days, and attendance was sufficient to ensure the desired harmonization between US and European regulatory systems.

During these meetings, the T9HWG determined the most appropriate means to address the subtasks and worked on harmonized approaches to the different issues. While some elements were worked by individuals and presented to the WG via email and during the scheduled meetings, most of the work was produced by the members working together during actual meetings.

The T9HWG addressed tasks which were substantially based on work previously completed by ATSRAC's Task 3 Working Group and detailed in their *Task 3 Final Report* (March 2001) that contained specific recommendations for the improvement of wiring system maintenance.

Specifically, T9HWG was tasked to execute the primary recommendations from the *Task 3 Final Report*. These were:

1. Develop Guidance for Enhanced Maintenance Criteria for Systems
2. Assist in Development of a Special Federal Aviation Regulation (SFAR) for Performance of the Enhanced Zonal Analysis Procedure (EZAP)
3. Recommend Wire System Instructions for Continued Airworthiness

Appendices A and B of this report contain the information developed by T9HWG in response to this tasking.

Table of Contents

EXC	Executive Summary	2
TOC	Table of Contents	3
ROR	Record of Revision	4
1	Background	5
2	Task 9 - Overview	6
3	Task 9.1 - Establish a Harmonization Working Group (HWG).....	7
4	Task 9.2 - Coordination with Other ATSRAC Harmonization Working Groups.....	9
5	Task 9.3 - Develop Guidance for Enhanced Maintenance Criteria for Systems.....	10
6	Task 9.4 - Assist in Development of a Special Federal Aviation Regulation for Performance of the Enhanced Zonal Analysis Procedure (EZAP).....	11
7	Task 9.5 - Recommend Wire System Instructions for Continued Airworthiness.....	12
8	Additional Recommendations to FAA.....	13
	Appendix A - Draft AC 120XX Program to Enhance Aircraft Wiring System Maintenance.....	14
	Appendix B - Draft SFAR (and related Rules) - Program to Enhance Aircraft Wiring System Maintenance.....	15

Record of Revisions

Date	Revision
19 APR 2002	Original issue - Draft only - for ATSRAC review

Chapter 1

Background

Content for this section will be largely extracted from the *Background* section in the notice of additional ATSRAC activity posted in the *Federal Register* dated May 29, 2001.

Chapter 2

Task 9 - Overview

As identified in the FAA's *Aging Transport Non-Structural Systems Plan*, maintenance procedures currently in use in the air transport industry may not adequately or proactively address aging non-structural systems. There is a need to define general criteria for maintenance and inspection activities that maintenance programs should exhibit to address aging systems issues. To ensure that aging systems issues are adequately addressed, enhancements are needed to:

- Maintenance planning procedures
- Maintenance procedures
- Inspection procedures
- Inspection criteria
- Procedures for protection of systems during maintenance
- Maintenance training programs.

These enhancements, when applied to a specific airplane type, should lead to the development of an airplane model-specific maintenance program that adequately addresses aging systems issues.

To implement the required enhancements, ATSRAC defined Task 9 as five (5) individual sub-tasks assigned to T9HWG as follows:

- | | |
|----------|---|
| Task 9.1 | Establish a Harmonization Working Group (HWG) |
| Task 9.2 | Coordinate with Other ATSRAC HWGs |
| Task 9.3 | Develop Guidance for Enhanced Maintenance Criteria for Systems |
| Task 9.4 | Assist in Development of a Special Federal Aviation Regulation (SFAR) for Performance of the Enhanced Zonal Analysis Procedure (EZAP) |
| Task 9.5 | Recommend Wire System Instructions for Continued Airworthiness |

Detailed discussion of the sub-tasks follow in the next five (5) Chapters of this report

Chapter 3

Task 9.1 - Establish a Harmonization Working Group (HWG)

To assist the FAA in formulating appropriate rulemaking and guidance pertaining to the enhancement of transport airplane maintenance program for systems, ATSRAC was tasked to identify and appoint an *Enhanced Maintenance Practices HWG*. This HWG was tasked to assist the FAA in the development of a draft advisory circular (AC) and possible rulemaking actions.

Members of the group were selected for their experience and knowledge of electrical wiring design and installation, on-aircraft maintenance, maintenance program development and/or regulatory oversight of maintenance activities. A balance was achieved between OEMs, operators, regulators and wiring specialists. In accordance with ATSRAC Operating Procedures, an outline of each member's work history was assessed with representatives from ATSRAC in order to confirm the individual's suitability for inclusion in the group.

Task 9 Harmonization Working Group

<u>Name</u>	<u>Organization</u>
Blades, Les *	Goodrich
Boren, Randy	Northwest Airlines (US Co-Chair)
Bruning, Armin	Lectromec
Brytak, Alex	Bombardier
Cheshire, Martin **	Virgin Atlantic Airlines (European Co-Chair)
Drivas, Nick	Airtran Airways
Harbottle, Tony	Airbus
Heather, Tony	CAA/JAA
Herndon, Tim	Delta Airlines
Heutmann, Stefan	Lufthansa Technik
Laxar, Thomas #	Austrian Airlines
Neudorf, Cliff ***	Transport Canada
Palafox, Gil	Boeing
Patzke, Roy	FAA
Sobeck, Fred	FAA
Zuberer, Hank #	United Airlines

* Les Blades served as alternate for Rollin Brown.

** Martin Cheshire withdrew as Co-Chair due to travel restrictions following 9/11/02

*** Cliff Neudorf served as alternate for Henry Dyck.

Thomas Laxar and Hank Zuberer were unable to attend any WG meetings and no alternates were assigned.

Meeting Schedule

Post 9/11/2001 travel restrictions forced cancellation of a meeting scheduled for October 2001, and meeting attendance fell to 50-60% for Meetings 3, 4, and 5. Normal attendance level (80%) was regained by Meeting 6.

Because of the delays incurred by the events of 9/11 and an extraordinary amount of time spent on developing the guidance material required by Task 9.3, several meetings were extended by 2-5 days, and two additional meetings (5 and 6) were added to the schedule.

Meetings held

1	Atlanta, GA	May 22-23, 2001
2	London, England	June 26-27, 2001
3	Atlanta, GA	Nov 13-14, 2001
4	Toulouse, France	Jan 7-11, 2001
5	Atlanta, GA	Mar 5-7, 2002
6	Orlando, FL	April 3-12, 2002
7	Frankfurt, Germany	June 17-21, 2002 (Scheduled)

Chapter 4

Task 9.2 - Coordination with Other ATSRAC Harmonization Working Groups

ATSRAC was tasked to develop a process for coordination between the HWGs assigned to ATSRAC tasking to ensure that each HWG remained cognizant of other HWG status and progress, and to ensure prompt sharing of information that may be pertinent to tasks being addressed by other groups.

The required coordination was achieved via assignment of former Boeing employee, Michael Nancarrow, to serve as the ATSRAC Working Group Coordinator, reporting to Kent Hollinger, ATSRAC Chair. Mr. Nancarrow assured full coordination between the Working Groups by hosting weekly teleconferences that were attended by all HWG Chairs where issues of common concern, current task status, roadblocks, new questions, etc., were communicated and discussed.

Regular reports were provided by Mr. Nancarrow to the ATSRAC membership detailing the progress of each HWG on its respective tasks, and apprising of issues where the working groups needed additional input from the main ATSRAC committee. .

Chapter 5

Task 9.3 - Develop Guidance for Enhanced Maintenance Criteria for Systems

As a result of the initial ATSRAC tasking completed in 2000, the Maintenance Criteria Working Group (Task 3) identified enhancements to existing maintenance practices and logic methods that could be applied to in-service aircraft and new designs to ensure that adequate consideration is given to potential deterioration of system installations. The target was to develop a common process for old and new designs. The outcome was identification of improved maintenance practices and an enhanced zonal analysis procedure (EZAP).

These improvements covered the following items:

- Improved definitions of General Visual Inspection (GVI) and Detailed Inspection (DET)
- Identification of the expectations of a Zonal Inspection
- Proper assessment of single element dual load path (SEDLP) devices *
- Housekeeping culture issues ("Clean as you go" philosophy, coupled with protection of wiring from contamination and accidental damage)

** Based on concurrent FAA programs already underway that address SEDLP devices, ATSRAC voted at its January 2002 meeting to extend the deadline for SEDLP guidance to December 2002. Therefore, SEDLP is not addressed in this report. T9HWG will coordinate with the ATSRAC Chair to determine an appropriate means to conclude and report on this portion of the tasking by December, 2002.*

Utilizing elements of the previous recommendations in the ATSRAC TASK 3 Report along with recommendations contained in the Intrusive Inspection Report, T9HWG has developed a Draft Advisory Circular that meets the intent of this task. Draft Advisory Circular AC 120-XX in Appendix A of this report provides the guidance required per Task 9.3.

Chapter 6

Task 9.4 - Assist in Development of a Special Federal Aviation Regulation (SFAR) for Performance of the Enhanced Zonal Analysis Procedure (EZAP)

Performing the EZAP requires a thorough understanding of the wire system design and philosophy. The holders of type certificates (TC) and supplemental type certificates (STC) who install wiring are the technical experts that obtain this understanding. Their assistance in performing the EZAP is crucial.

In order to obtain this assistance, the FAA plans to issue an SFAR. The proposed SFAR will apply to TC holders and STC holders who install wire bundles or significantly affect the installation of existing wiring. Under the proposed SFAR, these TC and STC holders will be required to develop an enhanced maintenance and inspection program based on the EZAP logic. The TC and STC holders will likely be required to augment the Instructions for Continued Airworthiness or maintenance instructions based on the EZAP logic.

Therefore, ATSRAC was tasked first to review pertinent recommendations of the ATSRAC Maintenance Practices (TASK 3) working group, particularly the “zonal analysis procedure” methodology contained in the final report. After this review, ATSRAC was to recommend the proposed contents of an SFAR to require the enhancement of existing maintenance and inspection programs based on the EZAP logic. The recommendation should contain appropriate SFAR timelines for aircraft type design holders to complete their application for the EZAP logic for each aircraft.

NOTE: The EZAP logic can be used by type design holders or airplane operators to enhance the maintenance programs of in-service type designs. This includes type designs currently being produced and type designs that are no longer in production.

The EZAP logic can also:

- Be used during the development of maintenance programs for new aircraft type designs
- Be applied to previously installed STCs, either by the STC holder or the airplane owner or operator.

Draft SFAR XX and related Rule changes in Appendix B of this report provides the assistance required per Task 9.4.

Chapter 7

Task 9.5 - Recommend Wire System Instructions for Continued Airworthiness

Previous recommendations from ATSRAC have shown that improper maintenance, repair, and modifications often accelerate the “aging” of wire systems. To properly maintain, repair, and modify airplane wiring, certain data must be available to the designer, engineer, and installer. This data should be part of the Instructions for Continued Airworthiness as required by § 25.1529 (*Instructions for Continued Airworthiness*). Therefore, ATSRAC is tasked to provide comment and recommendation for inclusion of the following items in Appendix H to part 25, Instructions for Continued Airworthiness:

- Standard Wire Practices data, as improved under ATSRAC TASK 7;
- Wire Separation Design Guidelines;
- Special Identification Requirements;
- Electrical Load Analysis; and
- Enhanced Zonal Analysis Procedure (EZAP)

The Draft SFAR in Appendix B includes proposed changes to FAR 25.1529, Appendix H, *Instructions for Continued Airworthiness*, that address the requirements of Task 9.5.

Chapter 8

Additional Recommendations to FAA

In its work to produce the products required by its ATSRAC tasking, T9HWG also identified a number of issues that it believes warrant FAA attention. T9HWG asks that the FAA consider the following observations and recommendations:

1. FAR Part 25, Appendix H

Many problems were noted in the format and presentation of the existing rule language contained in Part 25, Appendix H. These include use of overly complex text, jumble of unrelated topics within same paragraphs, obsolete phraseology, and poor organization of the information.

While T9HWG is recommending new rule language that requires use of an analytical logic procedure to identify maintenance instructions for wiring systems, the balance of this section that addresses maintenance instructions on items/systems other than wiring makes no mention of using any logic procedure or process.

T9WG recommends that FAA update and simplify Part 25, Appendix H, particularly Sections H.3 and H.4.

2. Placeholder for additional recommendations from T9HWG

Appendix A

Draft AC 120-XX - Program to Enhance Aircraft Wiring System Maintenance

In the actual Final Report, the complete AC will appear in this Appendix. No copy of the AC is provided in this DRAFT INTERIM REPORT.

The Draft AC was distributed to ATSRAC members in March 2002 for review and comment. Most comments returned to T9HWG were helpful and will be incorporated into the AC as appropriate. A revised AC, with ATSRAC comments incorporated, will be distributed to ATSRAC members by May 31, 2002.

Also, during its last meeting, T9HWG determined that the current EZAP logic requires assessment of specific zone attributes that may vary from operator to operator of the same aircraft model, or assessment of environmental conditions that an STC Holder simply may not have knowledge of.

The next distribution of the Draft AC will also include a new section that provides a specially developed EZAP logic for STC Holders. Where the STC Holder is incapable of assessing the zone attributes required to derive EZAP tasking, the new logic will assign EZAP responsibility to the Operator.

Appendix B

Draft SFAR XX - Program to Enhance Aircraft Wiring System Maintenance

For the purpose of this DRAFT INTERIM REPORT, the core, rule language that has been drafted is included. There is much additional information that will appear in the Preamble section of the SFAR, but it is not yet ready for ATSRAC review.

Bracketed comments are used as markers to indicate items still under review by T9HWG.

DRAFT SFAR No. XX - PROGRAM TO ENHANCE AIRCRAFT WIRING SYSTEM MAINTENANCE

1. Applicability.

(a) This SFAR applies to:

(i) The holders of type certificates for turbine-powered transport category airplanes, provided the type certificate was issued after January 1, 1958, and the airplane has a maximum type certificated passenger capacity of 30 or more, or a maximum type certificated payload capacity of 7,500 pounds or more.

(ii) The holders of supplemental type certificates for airplanes described in paragraph (a)(i) of this section, where the STC may cause wiring to be installed, removed, altered, disturbed, subjected to contamination, [Preamble: explain what is meant by this statement] or may cause a change in the wiring system's operating environment.

(b) If the application was filed before [Insert date 30 days after date of publication in the Federal Register], the effective date of this SFAR, and the certificate was not issued before [Insert date 30 days after date of publication in the Federal Register] this SFAR also applies to:

(i) Applicants for new type certificates for turbine-powered transport category airplanes having a maximum type certificated passenger capacity of 30 or more, or a maximum type certificated payload capacity of 7,500 pounds or more.

(ii) Applicants for amendments to an existing type certificate for airplanes described in paragraph (a)(i) of this section.

(iii) Applicants for new supplemental type certificates for airplanes described in paragraph (a)(i) of this section, that may cause wiring to be installed, removed, altered, disturbed, subjected to contamination, or may cause a change in the wiring system's operating environment.

2. Compliance.

(a) No later than {insert date 24 months after the effective date of the final rule}, or within 18 months after the issuance of a certificate for which application was filed before {Insert date 30 days after date of publication of the final rule in the Federal Register}, whichever is later, each type certificate holder, or supplemental type certificate holder must accomplish the following:

(1) Provide instructions for the continued airworthiness of wiring systems that are developed using an analytical logic procedure that provides a means to identify applicable and effective tasks that minimize accumulation of combustible materials and address wiring discrepancies.

(2) Ensure that the standard practices section of the maintenance instructions include protection and caution information to minimize contamination and accidental damage to wiring systems.

(b) After {insert date 24 months after effective date of final rule}, each type certificate holder, or supplemental type certificate holder must include protection and caution information to minimize the contamination and accidental damage to wiring systems in all newly created maintenance instructions, including service bulletins.

[PREAMBLE- one way to comply with this proposed rule is the manufacturer maintenance manual Chapter 20]

PART 25 – AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES

Appendix H to Part 25 -- Instructions for Continued Airworthiness

* * * * *

H25.3 Content.

* * * * *

(b) Maintenance instructions.

(1) Scheduling information for each part of the airplane and its engines, auxiliary power units, propellers, accessories, instruments, **electrical wiring interconnection systems**, and equipment that provides the recommended periods at which they should be cleaned, inspected, adjusted, tested, and lubricated, and the degree of

inspection, the applicable wear tolerances, and work recommended at these periods. However, the applicant may refer to an accessory, instrument, or equipment manufacturer as the source of this information if the applicant shows that the item has an exceptionally high degree of complexity requiring specialized maintenance techniques, test equipment, or expertise. The recommended overhaul periods and necessary cross references to the Airworthiness Limitations section of the manual must also be included. In addition, the applicant must include an inspection program that includes the frequency and extent of the inspections necessary to provide for the continued airworthiness of the airplane.

The scheduled maintenance instructions for wiring systems shall be derived from an analytical logic procedure that provides a means to identify applicable and effective tasks that minimize accumulation of combustible materials and address wiring discrepancies. The application of an analytical logic procedure requires the assumption of particular inspection standards (i.e., definition of a GVI, DET). The implementation of the tasks derived from the analytical logic procedure requires that they are performed to the same standard.

[PREAMBLE – need to explain the intent that if one is going to use the analytical logic procedure the new definitions must be followed.]

(2) Troubleshooting information describing probable malfunctions, how to recognize those malfunctions, and the remedial action for those malfunctions.

(3) Information describing the order and method of removing and replacing products and parts with any necessary precautions to be taken.

(4) Other general procedural instructions including procedures for system testing during ground running, symmetry checks, weighing and determining the center of gravity, lifting and shoring, and storage limitations.]

(5) Instructions for maintenance, alteration, or repairs must include protection and caution information to minimize contamination and accidental damage to wiring systems.

*

*

*

*

*

(h) Electrical wire interconnection system (EWIS) practices in a standard format, which includes wire separation guidelines, special wiring identification requirements, and **[other requirements identified by WG 7, if any]** as follows:

(i) Electrical load data, and instructions for updating electrical load data. **[Space holder for WG7 input, if any]**

[PREAMBLE FAA intends the follow on service info should include this P & C info – service bulletins, letters, etc. It is the FAA’s intent that operators should include instructions for P&C when maintaining wire as identified in AC 120-XX.]

PART 91 - GENERAL OPERATING AND FLIGHT RULES

§ 91.410 Special maintenance program requirements.

* * * * *

(c) After [36 months after the effective date of the final rule] no certificate holder may operate a turbine-powered transport category airplanes, provided the type certificate was issued after January 1, 1958, and the airplane has a maximum type certificated passenger capacity of 30 or more, or a maximum type certificated payload capacity of 7,500 pounds or more, unless:

(1) The inspection program includes instructions for the continued airworthiness of wiring systems that are developed using an analytical logic procedure that provides a means to identify applicable and effective tasks that minimize accumulation of combustible materials and address wiring discrepancies.

(2) Maintenance instructions include protection and caution information designed to minimize contamination and accidental damage to wiring systems.

PART 121 - OPERATING REQUIREMENTS: DOMESTIC, FLAG, AND SUPPLEMENTAL OPERATIONS

§ 121.370 Special maintenance program requirements.

* * * * *

(c) No certificate holder may operate a turbine-powered transport category airplanes, provided the type certificate was issued after January 1, 1958, and the airplane has a maximum type certificated passenger capacity of 30 or more, or a maximum type certificated payload capacity of 7,500 pounds or more, unless:

(1) After [Insert date 6 months after the effective date of the final rule], the certificate holder’s manual (as required in § 121.133(b)) includes protection and caution information designed to minimize contamination and accidental damage to wiring systems.

(2) After [Insert date 36 months after the effective date of the final rule], the maintenance instructions include protection and caution information developed in compliance with part 25, Appendix H, § H25.3(b)(5).

(d) After [Insert date 36 months after the effective date of the final rule], no certificate holder may operate a turbine-powered transport category airplanes, provided the type certificate was issued after January 1, 1958, and the airplane has a maximum type certificated passenger capacity of 30 or more, or a maximum type certificated payload

capacity of 7,500 pounds or more, for which the TC was issued after January 1, 1958, unless the maintenance program includes instructions for the continued airworthiness of wiring systems that are developed using an analytical logic procedure that provides a means to identify applicable and effective tasks that minimize accumulation of combustible materials and address wiring discrepancies. [these tasks shall be uniquely identified in the program for future development consideration...]

§ 121.376 Training program for wiring systems.

(a) After {Insert date 12 months after the effective date of the final rule}, each certificate holder or person performing maintenance, preventive maintenance, or alteration functions for it must have a training program for wiring systems that accomplishes the following:

[Need to explain who this person is to clarify that it does not refer to the mechanics employed by the air carrier. Also should “for wiring systems” be added here?]

(1) Ensure acceptable level of awareness of wiring as a system that requires adherence to proper procedures, methods, techniques, and practices.

(2) Ensure an acceptable knowledge of precautions and housekeeping practices to be followed during the performance of all aircraft maintenance, preventive maintenance, inspection, alteration, and cleaning in support of these activities to minimize contamination and accidental damage to wiring systems (protection of wire bundles from drilling debris, etc.).

[PREAMBLE - explain use of terms “housekeeping” and “preventive maintenance”]

(3) Ensure acceptable knowledge of procedures, methods, techniques, and practices to be used when performing maintenance, preventive maintenance, inspection, alteration, and cleaning of wiring systems.

(b) The training program required in paragraph (a)(1) and (2) of this section must be provided to all individuals performing maintenance, preventive maintenance, inspection, alteration, and cleaning of aircraft in support of these activities.

(c) The training program required in paragraph (a)(3) must be provided to all individuals performing maintenance, preventive maintenance, inspection, alteration, and cleaning of aircraft wiring systems. The training topics should be specific to individuals and the tasks they perform.

[PREAMBLE - explain what is meant by “cleaning in support of maintenance and alteration” Differentiate between overnight cleaning, exterior cleaning. Intent-{No person may perform maintenance, preventive maintenance, and alteration (including inspection and cleaning of aircraft in support of maintenance or alteration) unless they have completed a training program for wiring systems.}]

(d) Based on the objectives stated in paragraph (a) the training program must, at a minimum, address the following topics, as applicable to individuals and the specific task(s) they perform:

- (1) Awareness of wiring as a system.
- (2) Maintenance practices for wiring systems.
- (3) Inspection of wiring systems.
- (4) Housekeeping practices to protect wiring systems from contamination and accidental damage.

[PREAMBLE - individuals would only need to receive training necessary for the specific tasks they will be performing]

PART 125 - CERTIFICATION AND OPERATIONS: AIRPLANES HAVING A SEATING CAPACITY OF 20 OR MORE PASSENGERS OR A MAXIMUM PAYLOAD CAPACITY OF 6,000 POUNDS OR MORE

§ 125.248 Special maintenance program requirements.

* * * * *

(c) After [36 months after the effective date of the final rule] no certificate holder may operate a turbine-powered airplanes with a maximum type certificated passenger capacity of 30 [shouldn't this be 20 since there are no 6 pax airplanes in 125?] or more, or a maximum type certificated payload capacity of 7,500 pounds or more, unless:

- (1) The inspection program includes instructions for the continued airworthiness of wiring systems that are developed using an analytical logic procedure that provides a means to identify applicable and effective tasks that minimize accumulation of combustible materials and address wiring discrepancies.
- (2) Maintenance instructions include protection and caution information designed to minimize contamination and accidental damage to wiring systems.

§ 125.253 Maintenance and preventive maintenance training program.

(a) After [Insert date 12 months after the effective date of the final rule], each certificate holder or person performing maintenance, preventive maintenance, or alteration functions for it must have a training program for wiring systems that accomplishes the following:

- (1) Ensure acceptable level of awareness of wiring as a system that requires adherence to proper procedures, methods, techniques, and practices.
- (2) Ensure an acceptable knowledge of precautions and housekeeping practices to be followed during the performance of all aircraft maintenance, preventive maintenance, inspection, alteration, and cleaning in support of these activities to

minimize contamination and accidental damage to wiring systems (protection of wire bundles from drilling debris, etc.).

(3) Ensure acceptable knowledge of procedures, methods, techniques, and practices to be used when performing maintenance, preventive maintenance, inspection, alteration, and cleaning of wiring systems.

(b) The training program required in paragraph (a)(1) and (2) of this section must be provided to all individuals performing maintenance, preventive maintenance, inspection, alteration, and cleaning of aircraft in support of these activities.

(c) The training program required in paragraph (a)(3) must be provided to all individuals performing maintenance, preventive maintenance, inspection, alteration, and cleaning of aircraft wiring systems. The training topics should be specific to individuals and the tasks they perform.

(d) Based on the objectives stated in paragraph (a) the training program must, at a minimum, address the following topics, as applicable to individuals and the specific task(s) they perform:

- (1) Awareness of wiring as a system.
- (2) Maintenance practices for wiring systems.
- (3) Inspection of wiring systems.
- (4) Housekeeping practices to protect wiring systems from contamination and accidental damage.

PART 129 - OPERATIONS: FOREIGN AIR CARRIERS AND FOREIGN OPERATORS OF U.S.-REGISTERED AIRPLANE ENGAGED IN COMMON CARRIAGE

§ 129.32 Special maintenance program requirements.

* * * * *

(c) After [36 months after the effective date of the final rule] no certificate holder may operate a turbine-powered airplanes with a maximum type certificated passenger capacity of 30 or more, or a maximum type certificated payload capacity of 7,500 pounds or more, for which the TC was issued after January 1, 1958, unless:

(1) The maintenance program includes instructions for the continued airworthiness of wiring systems that are developed using an analytical logic procedure that provides a means to identify applicable and effective tasks that minimize accumulation of combustible materials and address wiring discrepancies.

(2) Maintenance instructions include protection and caution information designed to minimize contamination and accidental damage to wiring systems.

§ 129.33 Maintenance and preventive maintenance training program.

(a) After [Insert date 12 months after the effective date of the final rule], each certificate holder [129 generally refers to “foreign air carrier”] or person performing maintenance, preventive maintenance, or alteration functions for it must have a training program for wiring systems that accomplishes the following:

(1) Ensure acceptable level of awareness of wiring as a system that requires adherence to proper procedures, methods, techniques, and practices.

(2) Ensure an acceptable knowledge of precautions and housekeeping practices to be followed during the performance of all aircraft maintenance, preventive maintenance, inspection, alteration, and cleaning in support of these activities to minimize contamination and accidental damage to wiring systems (protection of wire bundles from drilling debris, etc.).

(3) Ensure acceptable knowledge of procedures, methods, techniques, and practices to be used when performing maintenance, preventive maintenance, inspection, alteration, and cleaning of wiring systems.

(b) The training program required in paragraph (a)(1) and (2) of this section must be provided to all individuals performing maintenance, preventive maintenance, inspection, alteration, and cleaning of aircraft in support of these activities.

(c) The training program required in paragraph (a)(3) must be provided to all individuals performing maintenance, preventive maintenance, inspection, alteration, and cleaning of aircraft wiring systems. The training topics should be specific to individuals and the tasks they perform.

(d) Based on the objectives stated in paragraph (a) the training program must, at a minimum, address the following topics, as applicable to individuals and the specific task(s) they perform:

(1) Awareness of wiring as a system.

(2) Maintenance practices for wiring systems.

(3) Inspection of wiring systems.

(4) Housekeeping practices to protect wiring systems from contamination and accidental damage.

The following Part 135 section is a place holder at FAA request.

PART 135--OPERATING REQUIREMENTS: COMMUTER AND ON DEMAND OPERATIONS AND RULES GOVERNING PERSONS ON BOARD SUCH AIRCRAFT

§ 135.421 Additional maintenance requirements.

* * * * *

(f) After [18 months after the effective date of the final rule] no certificate holder may operate a turbine-powered airplane with a maximum type certificated passenger capacity of 6 or more, or a maximum type certificated payload capacity of less than 7,500 pounds, for which the TC was issued after January 1, 1958, unless: **[this is inconsistent with the SFAR]**

(1) The inspection program includes instructions for the continued airworthiness of wiring systems that are developed using an analytical logic procedure that provides a means to identify applicable and effective tasks that minimize accumulation of combustible materials and address wiring discrepancies.

(2) Maintenance instructions include protection and caution information designed to minimize contamination and accidental damage to wiring systems.

20. Amend § 135.433 to redesignate the existing text as paragraph (a) and add new paragraph (b) to read as follows:

§ 135.433 Maintenance and preventive maintenance training program.

(a) Each certificate holder or a person performing maintenance or preventive maintenance functions for it shall have a training program to ensure that each person (including inspection personnel) who determines the adequacy of work done is fully informed about procedures and techniques and new equipment in use and is competent to perform that person's duties.

PART 145--REPAIR STATIONS

§ 145.65 Maintenance and preventive maintenance training program.

(a) After [Insert date 12 months after the effective date of the final rule], each repair station or person performing maintenance, preventive maintenance, or alteration functions for it must have a training program that accomplishes the following:

(1) Ensure acceptable level of awareness of wiring as a system that requires adherence to proper procedures, methods, techniques, and practices.

(2) Ensure an acceptable knowledge of precautions and housekeeping practices to be followed during the performance of all aircraft maintenance, preventive maintenance, inspection, alteration, and cleaning in support of these activities to minimize contamination and accidental damage to wiring systems (protection of wire bundles from drilling debris, etc.).

(3) Ensure acceptable knowledge of procedures, methods, techniques, and practices to be used when performing maintenance, preventive maintenance, inspection, alteration, and cleaning of wiring systems.

(b) The training program required in paragraph (a)(1) and (2) of this section must be provided to all individuals performing maintenance, preventive maintenance, inspection, alteration, and cleaning of aircraft in support of these activities.

(c) The training program required in paragraph (a)(3) must be provided to all individuals performing maintenance, preventive maintenance, inspection, alteration, and cleaning of aircraft wiring systems. The training topics should be specific to individuals and the tasks they perform.

(d) Based on the objectives stated in paragraph (a) the training program must, at a minimum, address the following topics, as applicable to individuals and the specific task(s) they perform:

(1) Awareness of wiring as a system.

(2) Maintenance practices for wiring systems.

(3) Inspection of wiring systems.

(4) Housekeeping practices to protect wiring systems from contamination and accidental damage.

End of Draft SFAR-XX