



AEROSPACE RECOMMENDED PRACTICE

ARP5602™

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A Guideline for Aerospace Platform Fiber Optic Training and Awareness Education

RATIONALE

The Aerospace industry has always required the highest standards of workmanship to be maintained. To ensure that the Aerospace fiber optics industry adopts these same high standards, it's essential that minimum training and certification requirements be established. This document outlines the minimum training requirements for all personnel working or associated with fiber optic components or systems in accordance with aerospace industry best practices.

ARP5602 has been reaffirmed to comply with the SAE Five-Year Review policy.

1. SCOPE

This document establishes training guidelines applicable to fiber optic safety training, technical training and fiber awareness for individuals involved in the manufacturing, installation, support, integration and testing of fiber optic systems. Applicable personnel include:

Managers

Engineers

Technicians

Logisticians

Trainers/Instructors

Third Party Maintenance Agencies

Quality Assurance

Shipping

Receiving

Production

Purchasing

1.1 Purpose

Whilst it is vital for individuals involved in the preparation, assembly, installation, testing and day-to-day support and supervision of fiber optic installations to receive effective safety and technical training, all other personnel employed in, or entering a fiber optic environment also have considerable responsibilities to ensure the maintained integrity of the fiber optic installation achievable through awareness training.

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This document establishes guidelines applicable to fiber optic safety training, technical training and fiber awareness for individuals involved in the manufacturing, installation, and support of fiber optic systems.

This document is not intended to impose specific training requirements on individual employers or organizations. Rather, it is intended to provide core competencies to enable implementation of effective fiber optic training programs. It is not perceived that this document will create or impose conflict with other organizations or existing training plans. Where there is difference between this document and the vehicle specification or contract, the specific vehicle specification or contract shall take precedence. Where the design is such that the methods herein cannot be implemented, users will submit relevant information or modifications to existing methods to the specified sponsor of this document for review.

The training guidelines contained within this document are intended for, but not limited to, managers, technicians, logisticians, trainers, instructors, third party maintenance agencies, quality assurance and procurement.

A "Fiber Optic Awareness" certification should also be required for all personnel employed in a fiber optic environment but NOT directly employed on fiber optic installations. This certification should attest to the successful completion of the detailed requirements at a qualified training facility/at place of employment.

This information should not be seen as a "one-off" information briefing provided during induction training but more of an annual awareness program where personnel are reminded of their responsibilities with respect to working in the vicinity of fiber optic installations. In addition, individuals should also be made aware of any new fiber optic issues within the workplace.

2. APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

ARP5061	Guidelines for Testing and Support of Aerospace, Fiber Optic, Inter-Connect Systems
AS50881	Wiring Aerospace Vehicle
ARP5602/1	A Guideline for Aerospace Platform Fiber Optic Training and Awareness Education Introduction to Aerospace Fiber Optics Knowledge Competencies
ARP5602/2	A Guideline for Aerospace Platform Fiber Optic Training and Awareness Education Introduction to Aerospace Fiber Optics Hands-on Competencies
ARP5602/3	A Guideline for Aerospace Platform Fiber Optic Training and Awareness Education Aerospace Fiber Optics Fabricator Knowledge Competencies
ARP5602/4	A Guideline for Aerospace Platform Fiber Optic Training and Awareness Education Aerospace Fiber Optics Fabricator Hands-on Competencies
ARP5602/5	A Guideline for Aerospace Platform Fiber Optic Training and Awareness Education Aerospace Fiber Optics Installer Knowledge Competencies
ARP5602/6	A Guideline for Aerospace Platform Fiber Optic Training and Awareness Education Aerospace Fiber Optics Installer Hands-on Competencies

ARP5602/7	A Guideline for Aerospace Platform Fiber Optic Training and Awareness Education Aerospace Fiber Optics Technician Knowledge Competencies
ARP5602/8	A Guideline for Aerospace Platform Fiber Optic Training and Awareness Education Aerospace Fiber Optics Technician, Quality Assurance Inspector, or Engineer Hands-on Competencies
ARP5602/9	A Guideline for Aerospace Platform Fiber Optic Training and Awareness Education Aerospace Fiber Optics Quality Assurance Knowledge Competencies
ARP5602/10	A Guideline for Aerospace Platform Fiber Optic Training and Awareness Education Aerospace Fiber Optics Engineer Knowledge Competencies

2.2 ANSI Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ANSI Z136.1-2007	American National Standard for Safe Use of Lasers
ANSI Z136.2-1997	American National Standard for the Safe Use of Optical Fiber Communication Systems Utilizing Laser Diode and LED Sources
ANSI/TIA-440-B-2004	Fiber Optic Terminology

2.3 IEC Publications

Available from International Electrotechnical Commission, 3, rue de Varembe, P.O. Box 131, 1211 Geneva 20, Switzerland, Tel: +44-22-919-02-11, www.iec.ch.

IEC 60825-1	Laser Safety Equipment Classification (Safety of laser products)
IEC 60825-2	Safety of Optical Fibre Communication Systems
IEC 60825-4	Laser Guards

2.4 NASA Publications

Available from NASA, Documentation, Marshall Space Flight Center, AL 35812, www.nas.nasa.gov.

NASA-STD-8739.5	Fiber Optic Terminations, Cable Assemblies, and Installation
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2.5 NAVAIR Publications

Commanding Officer, Naval Air technical Data and Engineering Service Command, Naval Air Station, North Island, P. O. Box 357031, Building 90, Distribution, San Diego, CA 92135-7031

NAVAIR 01-1A-505.4	INSTALLATION AND TESTING PRACTICES AIRCRAFT FIBER OPTIC CABLING
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2.6 U.S. Government Publications

Available from the Document Automation and Production Service (DAPS), Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6257, <http://assist.daps.dla.mil/quicksearch/>.

FED-STD-1037C	Glossary of Telecommunications Terms
MIL-PRF-29504B	TERMINI, FIBER OPTIC CONNECTOR, REMOVABLE, GENERAL SPECIFICATION FOR

MIL-PRF-29504/4D	TERMINI, FIBER OPTIC, CONNECTOR, REMOVABLE, ENVIRONMENTAL RESISTING, PIN TERMINUS, SIZE 16, REAR RELEASE, MIL-DTL-38999, SERIES III
MIL-PRF-29504/5D	TERMINI, FIBER OPTIC, CONNECTOR, REMOVABLE, ENVIRONMENTAL RESISTING, SOCKET TERMINUS, SIZE 16, REAR RELEASE, MIL-DTL-38999, SERIES III
MIL-DTL-38999K	CONNECTORS, ELECTRICAL, CIRCULAR, MINIATURE, HIGH DENSITY, QUICK DISCONNECT (BAYONET, THREADED, AND BREECH COUPLING), ENVIRONMENTAL RESISTANT, REMOVABLE CRIMP AND HERMETIC SOLDER CONTACTS GENERAL SPECIFICATION FOR
MIL-PRF-49291C	FIBER, OPTICAL, (METRIC) GENERAL SPECIFICATION FOR
MIL-PRF-85045F	CABLES, FIBER OPTICS, (METRIC), GENERAL SPECIFICATION FOR

2.7 Aeronautical Radio, Inc. (ARINC) Publications

Available from Aeronautical Radio, Inc., 2551 Riva Road, Annapolis, Maryland 24101-7435, www.arinc.com

ARINC Report 805-1 Fiber Optic Test Procedures

ARINC Report 806 Fiber Optic Installation and Maintenance

2.8 Other Applicable References

Understanding Fiber Optics, Jeff Hecht, ISBN 0-13-956145-5

Fiber Optics Installer and Technician Guide, Bill Woodward, ISBN 0-7821-4390-3

3. HOW TO USE THIS DOCUMENT

This document is intended to be used as a guideline for all persons conducting aerospace fiber optic training. This training document is broken into 10 slash sheets. Each slash sheet contains detailed training competencies. The detailed training competencies describe the level of knowledge each student should have about that particular item.

4. SAFETY

It is the responsibility of every employer to preserve, so far as is reasonably practicable, the health, safety and welfare of all employees. Common hazards often include chemical, optical power, fiber fragments, environmental, explosive and personnel.

Employers should ensure that material safety data sheets (MSDS), first aid kits and eye wash stations are available in all areas where fiber optic work is being conducted. Fume hoods should be utilized where applicable.

General awareness of working around aircraft and other potentially explosive environments is a consideration when utilizing any arc fusion splicers, curing ovens, ultrasonic cleaners or other electrical or electronic devices.

In addition, all employees have a duty of care to their work colleagues. It is the responsibility of every employee while at work to take reasonable care for his/her own health and safety and of other persons who may be affected by his acts or omissions at work with regard to: