



ASTM INTERNATIONAL
Helping our world work better

F46 Aerospace Personnel

Chair: William Tramper

First Vice-Chair: Rick Ochs

Second Vice-Chair: Tomaso DiPaolo

Recording Secretary: Nicholas Brown

Membership Secretary: Anthony Johansen

www.astm.org

Committee Scope



Scope

- Development of standards and guidance materials for aerospace personnel education, qualification, testing, certification requirements, and continued education concurrent with technological advancement.

What is it?

- Aerospace Industry Workforce Development!
- Focuses on the Knowledge, Skills, and Abilities (KSA's) for aerospace personnel

Why is it important?

- Civil Aviation Authorities personnel credentialing standards struggle to maintain pace with technological changes
- Development of industry-driven, consensus-based standards are becoming more acceptable

Subcommittees



F46.01 Aerospace Engineers and Technicians

F46.02 Avionics and Information Technology

F46.03 Airframe and Systems Endorsements

F46.04 Powerplant and Systems Endorsements

F46.05 Cabin Equipment and Furnishings

F46.06 Autonomous and Electric Aircraft Maintenance Personnel

F46.07 Cabin Crew Personnel

Subcommittee Updates



F46.01 Aerospace Engineers and Technicians

Subcommittee Chair – Rick Ochs, CEO-Spirit Aeronautics

Published Standards:

- F3376-19 Standard Guide for Core Competencies for Aviation Maintenance Personnel
- F3457-20 Standard Guide for Aircraft Certification Education Standards for Engineers and Professionals in Aerospace Industry

Current Activity:

- WK74509 NCATT FOE Revalidation – Update to the NCATT Foreign Object Elimination (FOE) Standard & Certification
- WK51566 Soft Skills of Aerospace Personnel – Develop new standard identifying non-technical skills for aerospace professionals

Roadmap:

- New standard for Aircraft Detailers
- New standard for Aircraft Ground Handlers

Subcommittee Updates



F46.02 Avionics and Information Technology

Subcommittee Chair – William Tramper, President-Azimuth Aerospace/Tramper Avionics/CES Trainers

Published Standards:

- [F3245-19](#) Standard Guide for Aircraft Electronics Technician Certification – Revised
- [F3362-18](#) Standard Guide for Onboard Communication & Safety Systems Technician Certification
- [F3425-20](#) Standard Guide for Aircraft Electronics Installation Technician Certification
- [F3450-20](#) Standard Guide for Flight Hazard and Surveillance Systems Technician Certification
- [F3526-21](#) Standard Guide for Aircraft Instrument Systems Technician Certification

Current Activity:

- [WK74397](#) Aircraft Instrument Systems Technician – new standard approved
- [WK64987](#) Autopilot & Flight Control Systems (AFCS) – new standard in-development
- [WK76222](#) Software, Configuration, & Database Management – new standard in-development
- [AC562](#) Aircraft Electronics Installation Technician Certification – written exam development in-progress

Roadmap:

- Update written exams for Radio Communication Systems (RCS), Dependent Navigation Systems (DNS), & Autonomous Navigation Systems (ANS) endorsements
- Create written exams for FHSS & AIS endorsements
- Numerous new standards for endorsements to AET

Subcommittee Updates



F46.03 Airframe & Systems Endorsements

Subcommittee Chair – Paul Lewandowski, Chief Inspector-Duncan Aviation

Published Standards:

- F3476-21 Standard Guide for Airframe and Systems Aviation Maintenance Personnel

Current Activity:

- WK55185 Airframe Technician – new standard approved and published

Roadmap:

- New standard for Rotorcraft technician
- Future endorsements for airframe technicians

Subcommittee Updates



F46.04 Powerplant & Systems Endorsements

Subcommittee Chair – Anthony Johansen, Director of Product Support & Programs-Astronics Aerosat

Current Activity:

- WK59806 Powerplant Technician – new standard in-progress

Roadmap:

- Future endorsements for powerplant technicians

Subcommittee Updates



F46.05 Cabin Equipment & Furnishings

Subcommittee Chair – Rick Ochs, CEO-Spirit Aeronautics

Current Activity:

- Developing new standard covering foundational skills for cabinetry work incl. removal and installation of interiors

Roadmap:

- Develop standards to add seat foams, leather work, sewing, fabrication of interior components, etc.

Subcommittee Updates



F46.06 Autonomous and Electric Aircraft Maintenance Personnel Subcommittee Chair – Brad Hayden, CEO-Robotic Skies

Current Activity:

- WK71061 Lightweight UAS Maintenance Technician Qualification

Roadmap:

Subcommittee Updates



F46.07 Cabin Crew Personnel

Subcommittee Chair – Shannon Weidekamp, Chief Strategy & Innovations Officer-Crew Aviation

Current Activity:

- AC571 Business Aviation Cabin Crew

Roadmap:

- Develop endorsement standards to include upset training and cabin connectivity

FAA Acceptance as an Alternate Means of Compliance to F46 Standards



AET +1 – Aircraft Electronics Technician (AET) Certification + 1 endorsement

- Accepted (Dec. 7, 2018) by FAA as AMOC to 14 CFR section 65.101(a)(5)(ii) for issuance of a Repairman certificate
 - 65.101 Eligibility requirements: General
 - (a) To be eligible for a repairman certificate a person must –
 - (5) Have either –
 - (i) At least 18 months of practical experience in the procedures, practices, inspection methods, materials, tools, machine tools, and equipment generally used in the maintenance duties of the specific job for which the person is to be employed and certificated; or
 - (ii) Completed formal training that is acceptable to the Administrator and is specifically designed to qualify the applicant for the job on which the applicant is to be employed;

FAA Acceptance as an Alternate Means of Compliance to F46 Standards



Aircraft Electronics Association's *Avionics Apprenticeship Program*

- AEA also petitioned the FAA to accept their Avionics Apprenticeship in a similar manner as the AET +1
- ASTM F46 standards support the development of Related Technical Instruction (RTI) for use in the DOL-approved Avionics Apprenticeship program
- FAA accepted (June 16, 2021) the program as AMOC for 65.101(a)(5)(ii)



Industry & DOD Acceptance/Use of F46 Standards

Aircraft Electronics Association –

- Petitioner to FAA for utilizing AET as AMOC for issuance of repairman certificate
- Underwritten many NCATT AET & endorsement written exams for its members
- President Mike Adamson is founding member of F46 and NCATT

F46 standards used by **NBAA** in credentialing maintenance professionals

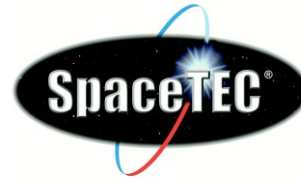
Aircraft Electronics Technician certification and endorsements used by many repair stations, MRO's and manufacturers as hiring requirement

Foreign Object Elimination (FOE) standard/certification used in many FAA approved training programs for repair stations

U.S. Department of Defense COOL Program assists transitioning veterans with time and resources to gain industry credentialing



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- **ASTM International/SPI Partnership:**

- “Work jointly to help certify aircraft maintenance technicians and other aerospace workers.”
- All ASTM Personnel Credentialing programs administered by SPI.
- SPI supports ASTM’s standards development with Committee F46 on Aerospace Personnel.
- SPI’s credentialing process is internationally accredited to ISO 17024 standards by the International Certification Accreditation Council (ICAC).
- All SPI credentials are recommended for college credit through ACE and NCCRS.
- SPI’s programs are under the auspices of the FAA Office of Commercial Space (FAA-AST).
- ASTM’s NCATT program is under the auspices of the FAA Safety Team (FAAST).



ASTM International/NCATT

- F46 Aerospace Personnel provide infrastructure to develop, update and maintain knowledge requirements in standards
- F46 will take SpaceTEC and CertTEC credentialing standards & convert to F46 consensus standards
- ASTM transferred management of all ASTM and NCATT credentialing to SPI; ASTM maintains program IP
- ASTM provides SPI access to emerging and updated standards for question bank validation and maintenance



SpaceTEC Partners, Inc. (SPI)

- Florida-based nonprofit offering SpaceTEC, CertTEC and Credential Testing Service credentials
- Administers NCATT program testing for ASTM International through Credential Testing Service
- Delivers ASTM NCATT certificates and wallet cards
- Assists with development of standards/scheme manuals
- Liaisons/serves on ASTM F46 and/or other related committees (*F38 UAS, F47 Spaceflight, etc.*)

F46 Aerospace Personnel Certification Standard Committees

- **Aerospace/Aircraft Assembler & Foreign Object Elimination**
 - Subcommittee F46.03 Airframe and Systems
 - AAA and FOE Certification Standards (in development)
- **Aircraft Electronics Technician**
 - Subcommittee F46.02 Avionics and Information Technology
 - F3245-19 Standard Guide for Aircraft Electronics Technician Personnel Certification
 - F3362-18 Standard Guide for Onboard Communication and Safety Systems Personnel Certification
 - F3425-20 Standard Guide for Aircraft Electronics Installation Technician Certification
 - F3450-20 Standard Guide for Flight Hazard and Surveillance Systems Personnel Certification
 - F3526-21 Standard Guide for Aircraft Instrument Systems Technician Certification
- **Business Aviation Cabin Crewmember**
 - Subcommittee F46.07 Cabin Crew Personnel
 - BACC Personnel Certification Standard (in development)
- **Unmanned Aircraft Systems**
 - Subcommittee F46.06 Autonomous and Electric Aircraft Maintenance Personnel
 - UAS/EVTOL Personnel Certification Standard (in development)



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NATIONAL CENTER FOR AEROSPACE & TRANSPORTATION TECHNOLOGIES

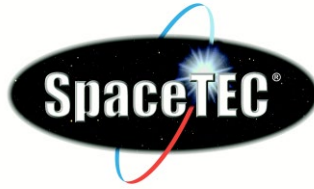
Personnel Certifications and Endorsements

- **Aerospace-Aircraft Assembler (AAA)**
 - AAA = one hundred (100) question exam; 70% passing score
- **Aircraft Electronics Technician (AET)**
 - AET = ninety (90) question exam; 73% passing score
 - Endorsements:
 - Dependent Navigation Systems (DNS) = Fifty (50) question exam; 70% passing score
 - Autonomous Navigation Systems (ANS) = Fifty (50) question exam; 70% passing score
 - Radio Communication Systems (RCS) = Fifty (50) question exam; 70% passing score
 - Onboard Communication and Safety Systems = Fifty (50) question exam; 70% passing score
 - Aircraft Electronics Installation Technician (AEIT) in development
- **Business Aviation Cabin Crewmember (BACC)**
 - BACC = One Hundred Seventy (170) question exam, 79% passing score
- **Foreign Object Elimination (FOE)**
 - FOE = Fifty (50) question exam; 80% passing score
- **Unmanned Aircraft Systems (UAS)**
 - UAS = One Hundred Fifty (150) question exam, 70% passing score



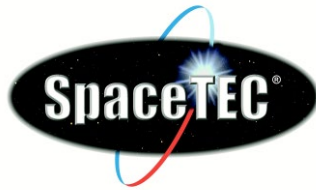
ASTM/NCATT-Approved Training Provider

- Application review/site survey process:
 - Curriculum (80% match to ASTM International/NCATT Personnel Certification Standards)
 - Instructor qualifications – appropriate experience for the curriculum
 - Facility – accept FAA 147 approval as means of compliance; otherwise, survey to generally accepted lighting, fire, health and safety codes
 - Initial approval – two years; if no changes – to five years.
- Wall plaque
- Listing on ASTM website providing program visibility



SpaceTEC Partners, Inc. Approved Testing Center

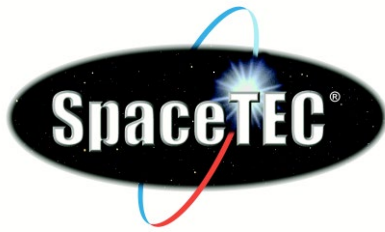
- Offer ASTM NCATT testing at your location become an authorized SPI Testing Center:
 - Request Application/Testing Center procedure
 - Fill it out, documenting:
 - Program Point of Contact (POC)
 - Testing facility overview
 - ❖ Security of examination materials
 - ❖ Images showing suitability of examination room and testing equipment/test site configuration/number of test-takers that can be accommodated
 - ❖ Documentation on control and security of testing information
 - Proctor identified
 - Completed Proctor Agreement(s) with testing supervisor(s)



Proctoring:

- Live Proctor relationship established through signed SPI Proctor Agreement
- Written Proctor Guide and Proctor orientation teleconference on test requirements:
 - Testing center responsibilities*
 - Test environment requirements
 - Hardware and Software requirements
 - Exam Log-in/Participant ID and Password process
 - What to do in the event of a loss of power/Internet connection
 - What to ensure/how to manage exam results
- Remote proctoring available 24/7/365 through a service agreement with ExamRoom.AI

*Practical testing sites require SPI testing center application and site visit to approve testing facilities



Examination Delivery:

- Testing through SPI's cloud-based Examination Management System (EMS) using live or remote proctoring.
- Test-takers register online; payment through PayPal or invoiced @ net 30 or through a pre-paid voucher system
- All exams are proctored, and test-takers receive immediate feedback upon completion.
- Blind Coaching Reports with topic scores for education program continuous improvement are available to instructors and test proctors upon request for a small fee.





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Thank you!

Questions?

*Please send through Webex Chat for our Moderated
Q&A*

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