Event Manual

The Aerospace Maintenance Council, a non-profit organization, promotes and supports the aerospace maintenance community. The council’s flagstone event, the Aerospace Maintenance Competition (AMC), recognizes and celebrates the aviation maintenance technician, and raises awareness of the knowledge and skill required to maintain safe, airworthy aircraft, worldwide. The competition is held annually in conjunction with Aviation Week’s MRO Americas.

The event will take place on April 8-11 at—

The Georgia World Congress Center, Building B | Halls 1-5
285 Andrew Young International Blvd NW
Atlanta, GA 30313
(404) 223-4000

The purpose of this manual is to provide participants information about the competition and its competitive events. It will be revised periodically while events are added and modified, please check back often to ensure you’re referencing the most current version.

Send comments and suggested revisions to team@aerospacecompetition.com.
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About

The AMC provides an opportunity for current and future maintenance professionals to showcase their abilities and see how they stack up against peers across the country. Five-member teams compete in maintenance events intended to test skill and knowledge required of an aviation maintenance technician. Teams may enter one of the following categories:

- Commercial Aviation
- General Aviation
- Space
- Education
- Military
- MRO/OEM

The competition is managed by the Aerospace Maintenance Council’s AMC committee. It is supported through the generous contributions of the aerospace community. Sponsors host events, provide prizes, and make monetary contributions.

MRO Americas

The competition is held on the exhibit floor of MRO Americas, an annual gathering of aviation maintenance professionals that incorporates informative conference sessions and a showcase of new and innovative products, technologies, offerings and services. More information about the location and logistics can be found on that event’s website.

The AMC will take place at MRO Americas Booth Number 3359. The exhibit hall layout is available at https://exhibitor.mroamericas.aviationweek.com/am19/Public/eventmap.aspx?shavailable=1&shexhlist=1.

Hotel Accommodation

Aviation Week has reserved room blocks at a discounted rate for all MRO Americas participants. Reserve accommodation at https://mroamericas.aviationweek.com/en/plan-your-visit/hotel.html.

Floor Access

To access the competition area, all AMC competitors, instructors/coaches, sponsors, visitors and volunteers must register for a floor pass at https://www.eiseverywhere.com/ereg/index.php?eventid=359056&categoryid=2715282.

If completed in advance, registration is free. Individuals must be 16 years and older to register.

Only AMC competitors, instructors/coaches, sponsors, and volunteers will have early access to the show floor. AMC visitors and guests will only have access when the show floor is open to the public.
Registration Hours
Badges may be picked up on site at the MRO Americas Registration Area.

- Monday, April 8 from 8:00 am - 5:00 pm
- Tuesday, April 9 from 8:00 am - 5:30 pm
- Wednesday, April 10 from 8:00 am - 5:30 pm
- Thursday, April 11 from 8:00 am - 1:00 pm

Exhibit Hall Hours

- Tuesday, April 9 from 10:30am – 5:30pm
- Wednesday, April 10 from 9:30am – 5:30pm
- Thursday, April 11 from 9:30am – 1:00pm

AMC Schedule of Events
Monday, April 8

- 8:00 AM - 12:00 PM: Event Setup (sponsors and judges only)
- 2:00 PM - 3:00 PM: Judge Briefing (judges only)
- 3:00 PM - 4:30 PM: Competitor Orientation (competitors, coaches and judges only)

Tuesday, April 9

- 8:00 AM - 9:00 AM: Competitor Walk-Through
- 9:00 AM - 5:30 PM: Competition

Wednesday, April 10

- 8:00 AM - 5:30 PM: Competition

Thursday, April 11

- 8:00 AM – 11:00 AM: Competition Make-Up (time reserved as needed, no events scheduled)
- 1:00 PM - 4:00 PM: Award Ceremony (open to the public)
- 1:00 PM - 10:00 PM: Event Breakdown

Competition Rules

1) Each team consists of five team members.
2) Each team is allowed, but not required, to designate alternate(s) in the event a competitor is not able to participate the day of the competition. Alternates may not compet until approved by the chairman.
3) Competitors must be either certificated by a national aviation authority (e.g., hold an FAA mechanic certificate), enrolled in a certificated aviation maintenance technician school, employed by a certificated repair station or manufacturing facility, or a member of the armed forces.
4) School category teams are comprised of five currently-enrolled students. Individuals that graduated the institution in the last six months that are not currently employed by an aviation-related company are also eligible to compete. Instructors are not eligible to compete.

5) Each team member must sign a release of liability to participate, completed at orientation.

6) Teams have 15 minutes to complete their assigned competitive event. All teams compete in all events.

7) Each event has a designated number of team member(s) required to complete the task. For events that require less than five team members, the team will assign member(s) of their choice to compete.

8) There is a five-minute break between the end of one event and the beginning of the next event. Competitors present in the five minutes preceding the event start time may review task cards, materials, or prepare for the event, as permitted by the event judge. Time will not be credited for competitors arriving after the designated start time.

9) Scores are calculated based on the standard score sheet.

10) Event sponsors provide judges for each event. Judges may stop the clock to remedy problems or answer a question at their discretion.

11) Score grievances may be brought to the sergeant at arms during the competition and up to one half hour after its conclusion. The AMC chairman reserves the right to modify final scores up until the awards ceremony.

12) The three teams with the lowest score in each category will be recognized at the awards ceremony. The team with the lowest score across all categories will be awarded the William F. “Bill” O’Brien Award for Excellence in Aircraft Maintenance.

13) The AMC chairman reserves the right to remove any team member(s) from the competition for, but not limited to, unprofessional behavior, cheating, etc.

14) The AMC committee reserves the right to alter events and/or rules prior to or during the competition and will make best efforts to notify all team members of the change.

15) Participants are expected to observe personal protection equipment requirements throughout the competition. Failure to observe safety practices will result in penalties.

16) All required tooling and protection equipment is provided by event sponsors. Personal tools are not allowed.

Use of Alternates

Each team will consist of five team members. Each team is allowed, but not required, to designate alternate(s) in the event a member is not able to compete the day of the competition.

The five competing team members will receive identifying wristbands at orientation and are expected to wear them at all times during the competition. In the event a team member is not able to compete during the event, the alternate must obtain a wristband from AMC staff before taking the place of a competing member.
Goodie bags provided at orientation for competing team members only. Only five bags per team will be distributed. Goodie bags may be offered to alternates upon availability.

**Scoring**

Judges will utilize the standard **AMC score sheet** to calculate team scores for each event. Event scores are calculated by adding the total amount of time expended to complete the event, plus penalties assessed. Standard penalties are assessed for—

- Failure to follow procedures
- Improper use of tools
- Unprofessionalism
- Failure to properly store tools and/or equipment
- Improper use of safety equipment
- Incomplete or incorrect recordkeeping
- Other, and provided for by the specific event or at the judge’s discretion

Any additional penalties that will be considered for a particular event are detailed in the event criteria.

**Sponsor and Event Setup**

Sponsors will setup event and exhibit tables on Monday, April 8 from 8:00 AM to noon.

Event breakdown will take place when the exhibit floor closes, Thursday, April 11 from 1:00 PM to 10:00 PM. While tabletop materials can be broken down at the conclusion of the competition, freight items will not be picked up until Thursday afternoon. Those that plan to attend the awards ceremony taking place at 1:00 PM, may break down after its conclusion, at 4:00 PM.

All event spaces with electric needs will be pre-set with a 120V 5 Amp (500w) Single Outlet, two standard six-foot tables and two chairs. Sponsors are responsible for costs associated with any additional freight or facility needs (i.e., furniture, wireless internet, carpet, etc.). Contact team@aerospacecompetition.com to coordinate these additional requirements.


**Shipping information**

To ensure proper delivery, shipments should identify the AMC Booth #3359, and the AMC-designated event number (for example, 3359-01, 3359-02, etc.), as provided for in this manual.

Warehouse Shipping (for materials weighing under 5000 lbs per piece and arriving after March 7 and before March 29)—

*Aerospace Maintenance Competition / Booth #3359-[Enter Event Number]*  
MRO AMERICAS 2019
**Competition Layout**

The competition floor layout will be published in subsequent versions of this manual.

**Team and Sponsor Recognition**

Sponsor and team logos will be displayed on event signage and in the event program. Signage will be created and displayed at the AMC committee’s discretion. Event sponsors and those in the exhibit areas may bring company-branded table skirts. Separate team and sponsor banners or flags are prohibited.

**Competitor Orientation**

The briefing takes place the day before the competition begins, Monday April 8 at 3:00 PM, and is mandatory for all team members and judges. Guests are not permitted. Different from years past, the orientation will take place in the general assembly area, not on the competition floor. The room number will be announced on the website and in subsequent versions of this manual when confirmed.

One hour before the competition begins on Tuesday, April 9, competitors will have the opportunity to walk around the competition floor to get a close-up look at each event and ask further questions. If practical and as time allows, that event’s judge may offer tutorials to ensure all competitors understand the event criteria and requirements.

**Teams**

Each team is assigned a team number that will be used as identifiers on the team schedule and to facilitate scoring. Team numbers will be assigned in a subsequent version of this manual.

The AMC is able to accommodate 90 teams. Spots are available on a first come, first served basis. As of the revision date of this manual, the following teams are confirmed to participate in the 2019 event.

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<thead>
<tr>
<th>Team Name</th>
<th>Category</th>
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<tbody>
<tr>
<td>Alaska Airlines - ANC</td>
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<tr>
<td>Alaska Airlines - SEA</td>
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<tr>
<td>Alitalia</td>
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<td>Team Name</td>
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<td>American Airlines - DFW</td>
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<tr>
<td>American Airlines - DWH</td>
<td>MRO/MFR</td>
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<tr>
<td>American Airlines - TUL</td>
<td>MRO/MFR</td>
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<tr>
<td>Australian Licenced Aircraft Engineers Association</td>
<td>MRO/MFR</td>
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<tr>
<td>AVIANCA</td>
<td>Commercial</td>
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<td>Aviation High School</td>
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<td>Aviation Institute of Maintenance - Atlanta</td>
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<tr>
<td>Aviation Institute of Maintenance - Houston</td>
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<tr>
<td>Boeing</td>
<td>MRO/MFR</td>
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<td>Broward College - Team 1</td>
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<tr>
<td>Broward College - Team 2</td>
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<td>Elevate Aviation</td>
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<td>JetBlue</td>
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<td>Jetstar - Team 1</td>
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<td>Jetstar - Team 2</td>
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<td>Mexicana MRO</td>
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<td>Middle Tennessee State University - Team 1</td>
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<td>Royal Canadian Air Force - All Female</td>
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<tr>
<td>Royal Canadian Air Force - Search &amp; Rescue Team</td>
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<td>Salt Lake Community College - Team 1</td>
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<td>Salt Lake Community College - Team 2</td>
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<tr>
<td>Southern Illinois University Carbondale - Detail Dawgs</td>
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<tr>
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<td>Tarrant County College - Team 2</td>
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<tr>
<td>TulsaTech Aerospace Academy</td>
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<td>MRO/MFR</td>
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<td>United States Air Force - 1 SOMXG</td>
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<td>United States Air Force - McChord</td>
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<td>United States Air Force Reserves - 446 Aircraft Maintenance Squadron</td>
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<td>United States Army - 128th Aviation Brigade</td>
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<td>United States Marine Corp - MAG 16</td>
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</table>
Events

Teams are responsible for assigning individual competitors to each event. The number of competitors required to complete each event is provided in the event grouping and in the event criteria. Description, instructions and judging criteria for each event are provided in subsequent pages of this manual. Competitors may contact judges directly with questions on a specific event.

Teams members will compete in simultaneous events according to the following event group schedule:

<table>
<thead>
<tr>
<th>Group</th>
<th>Event Description</th>
<th>Competitors</th>
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<tbody>
<tr>
<td>1</td>
<td>#9: Boeing Cable Rigging</td>
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<tr>
<td></td>
<td>#13: Michelin Tires Aircraft Tire Inspection</td>
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<tr>
<td></td>
<td>#22: American Airlines APU Burner Can</td>
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<td>2</td>
<td>#20: Nida Corp Power Troubleshooting</td>
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<td>#29: FedEx Turbine Engine</td>
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<td></td>
<td>#31: Aircraft Maintenance Technicians Association Charles Taylor Exam</td>
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<td>3</td>
<td>#11: Daniels Manufacturing Corporation Safe-T-Cable</td>
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<td>#17: Barfield Air Data Testing</td>
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<td>#18: Barfield Rf Antenna Testing</td>
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<td>4</td>
<td>#7: Eastern Florida State Space Vehicle - Vacuum Loading Operation</td>
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<td>#10: Daniels Manufacturing Corporation Electrical Troubleshooting</td>
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<td>#24: American Airlines Pedestal</td>
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<td>5</td>
<td>#2: Perfect Point E-Drill Fastener Removal</td>
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<td>#4: Alaska Airlines External Power Receptacle</td>
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<td>#12: Click Bond, Inc. Adhesive-Bonded Fastener Installations</td>
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<td>#28: PPG Aerospace Sealant</td>
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<td>7</td>
<td>#3: Aircraft Technology Group Sheet Metal Accuracy</td>
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<td>#5: U.S. Air Force Fluid Lines</td>
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<td>#14: Alberth Aviation Wheel and Brake Removal and Installation</td>
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<td>#1: 8Tree &amp; Alaska Airlines Sheet Metal Inspection</td>
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<td>#16: Barfield Thermal Imaging</td>
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<td>#21: W.L. Gore &amp; Associates, Inc. Dry Sealant Panel Installation</td>
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<tr>
<td>9</td>
<td>#26: Spectro Scientific Oil Test Analysis</td>
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<td>#27: ABARIS Composite Repair</td>
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<td>#30: Pratt &amp; Whitney Geared Turbo Fan Engine</td>
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<td>#8: ULTRAX Aerospace Condition Based Intelligence</td>
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<td>#15: Olympus &amp; PPG Aerospace Ultrasonic Testing</td>
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<td>#23: United Airlines Fuel Tank Entry Precautions</td>
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<td>#6: Aerospace Maintenance Council Safety Wiring</td>
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<td>#19: Boeing Fiber Optics</td>
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<tr>
<td></td>
<td>#25: JetBlue University ADS-B Troubleshooting</td>
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**Event Schedule**

The competition consists of 15-minute stages. Two teams will complete each event group simultaneously, as indicated in the schedule below (team numbers will be assigned in subsequent versions of this manual). Each team is responsible for assigning the number of individual competitors required for each event, as provided for in the event grouping, above.
### Tuesday, April 9 AM

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
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### Tuesday, April 9 PM

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**Aerospace Maintenance Competition**

**Event Manual**

### Wednesday April 10 AM

<table>
<thead>
<tr>
<th>Stage 23</th>
<th>Stage 24</th>
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- **Event Group 1**: 
  - Start Time: 18 & 63
  - End Time: 28 & 73

- **Event Group 2**: 
  - Start Time: 19 & 64
  - End Time: 28 & 73

- **Event Group 3**: 
  - Start Time: 20 & 65
  - End Time: 30 & 75

- **Event Group 4**: 
  - Start Time: 21 & 66
  - End Time: 31 & 76

- **Event Group 5**: 
  - Start Time: 22 & 67
  - End Time: 32 & 77

- **Event Group 6**: 
  - Start Time: 23 & 68
  - End Time: 33 & 78

- **Event Group 7**: 
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  - End Time: 34 & 80

- **Event Group 8**: 
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  - End Time: 35 & 80

- **Event Group 9**: 
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  - End Time: 35 & 80

- **Event Group 10**: 
  - Start Time: 27 & 72
  - End Time: 36 & 80

- **Event Group 11**: 
  - Start Time: 28 & 73
  - End Time: 38 & 83

### Wednesday April 10 PM

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- **Event Group 1**: 
  - Start Time: 15 & 60
  - End Time: 25 & 70

- **Event Group 2**: 
  - Start Time: 16 & 61
  - End Time: 26 & 71

- **Event Group 3**: 
  - Start Time: 17 & 62
  - End Time: 27 & 72

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  - End Time: 34 & 80

- **Event Group 11**: 
  - Start Time: 25 & 70
  - End Time: 35 & 80

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**Revision Number**: 02

**Original Issue Date**: 12/18/2018

**Revision Date**: 02/06/2019
Event #1 8Tree and Alaska Airlines Sheet Metal Inspection

Provided by

8tree
Alaska AIRLINES

revealing more dimensions

Contact(s)/Judge(s)  Arun Chhabra, arun@8-tree.com, 408-813-0969

Description  TBA

References  TBA

Equipment  TBA

Team members required  One

Instructions  TBA

Scoring  Scores will be calculated according to the AMC score sheet.
Event #2  Perfect Point and Ntegrity Aircraft Parts E-Drill Fastener Removal

Contacts/Judges

Jim Becker, Director-Business Development
Sam Derenne, Technical Director

Description

This event will test the technician’s ability and speed when removing titanium fasteners from an aircraft structure. This will require technicians to remove these fasteners using an E-drill and a standard twist drill. Each technician will remove 10 fasteners using the E-drill and 1 fastener using a standard drill. Fasteners will be of a blind-bolt configuration and exact part numbers will be presented at the competition.

References

Full E-drill User Guide
E-drill Training Videos
Vacuum Locator User Guide

Tools and equipment list

Eye protection required. The E-drill hand tool, locating devices, punches, hammers, and consumables will be provided. Perfect Point will also provide drills and bits to be used, although contestants are welcome to use their own.
## Event #2 Perfect Point and Ntegrity Aircraft Parts E-Drill Fastener Removal

### Team Members Required
One

### Instructions

**A) Conventional Drill Removal**
1) Using the competitor’s best practices, drill out Qty. (1) fastener identified in the work piece.
2) Using a punch, sever the stem of the fastener from the head.
3) Locate and remove all FOD and check the structure for damage to the structure

**B) E-drill Removal**
1) Using supplied reference data, remove Qty. (10) fasteners identified in the work piece.
2) Using a punch, sever the stem of the fastener from the head.
3) Locate and remove all FOD and check the structure for damage to the structure

### Scoring
Scores will be calculated according to the [AMC score sheet](#). Additional penalties may be assessed for mis-aligning the E-drill over the fastener which results in damage to the structure and mis-handling the tool during or locators.
Event #3  Aircraft Technologies Group Sheet Metal Accuracy

Provided by

Contact(s)/Judge(s)  Jay Logie  jay@myatg.aero
                      Steve Kane

Description  This event tests sheet metal/structures technician skills and accuracy for laying out, drilling, and dragging holes in an aluminum part.

References  FAA Advisory Circular 43.13

Equipment  Square
            6” Scale
            Sharpie pen
            Hand shear
            Cordless drill
            Clamp(s)
            Steam boat tool
            Die grinder and router taper bit
            Drill bits and reamer bits

Team members required  One

Instructions  A) Layout part for cutting and drilling – per drawing
              B) Cut piece to size and then drill hole per dwg
              C) Clamp piece in place and drag hole and upsize it per second drawing, by hand or with provided tools
<table>
<thead>
<tr>
<th>Event</th>
<th>#3 Aircraft Technologies Group Sheet Metal Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scoring</td>
<td>Scores will be calculated according to the <a href="#">AMC score sheet</a>. Penalties will be assessed for</td>
</tr>
</tbody>
</table>
### Event  #4  Alaska Airlines External Power Receptacle Event

**Provided by**

[Alaska Airlines]

**Contact(s)/Judge(s)**
- Robert A. Long, Line/Shop Aircraft Technician, boblong57@comcast.net
- Ernest Yeun, Senior Engineer/AOG Engineer, ernest.yeun@alaskaair.com
- Duane Bailey, Senior Technical Service Specialist
- Ken Pitt, Engineer

**Description**
Competitors will evaluate a discrepancy provided on a logbook sheet and determine steps for corrective action. Competitors will utilize tools to complete the task and complete appropriate paperwork.

**References**
- Task Summary
- Simulator Aircraft Maintenance Manual

**Equipment**
- Inspection flashlight, screw driver, wrench – hex 1/8 inch and 3/16 inch, wear gage, safety tags

**Team members required**
Two

**Instructions**
A) Identify the aircraft and aircraft type you are tasked to work on
B) Understand the discrepancy provided on the logbook sheet and determine planned action for corrective action
Event #4 Alaska Airlines External Power Receptacle Event

C) Identify the appropriate sections of the Simulated Aircraft Structure (SAS) Maintenance Manual to accomplish corrective maintenance action and associated Task Cards
D) Identify components, determine effectivities, utilize tools, hardware, technical data and standard aircraft maintenance practices to complete tasks
E) Complete logbook entry filling in required areas with appropriate information
F) Consider completed task on SAS Simulator same as completed task on live aircraft
G) Tool collection and accountability
H) Foreign object debris (FOD) survey within work location
I) Document completion and task card completion

Scoring
Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed as provided for in the Alaska Skills Time Sheet.
Event #5  U.S. Air Force Flex Fluid Lines

Provided by

Contact(s)/Judge(s) Warren Hessler, warren.hessler@us.af.mil

Description Overall hose assembly requirement is 12 inches. Cutoff factor for hose end fittings is .90 inches

References None

Tools and equipment list TBA

Team members required Two

Instructions A) Medium pressure PTFE hose buildup
1) Measure hose to required length
2) Wrap circumference of hose with masking tape at cutoff to prevent flare out of braid
   **CAUTION** Do not overwrap tape
3) Cut off hose square using hack saw
4) Clamp sockets in vise.
   **CAUTION** Do not overtighten vice on thin walled fittings
5) Insert neck-down end of hose into sockets using a twisting, pushing motion until hose is through the sockets, ensuring the ends are skirt to skirt. (Figure 1). Remove tape from hose and assembly from vise
6) Separate wire braid from tube. Seal pick is provided to aide in separation.
7) Insert sleeve between braid and outer diameter of the inner tube **CAUTION** Do not allow wire braid to be caught between sleeve and inner tube. Do not pinch inner tube with sleeve.
8) Complete positioning of sleeve by pushing sleeve against a flat surface until tube bottoms against inside sleeve diameter (Figure 3).
9) Check tube end to make sure it is bottomed against sleeve and wires are not trapped under sleeve. Trim excess wires as needed.
Event Manual

Event #5  U.S. Air Force Flex Fluid Lines

10) Clamp Nipple in vise (Note: Do not lubricate hose or nipple before insertion. Fitting components are dryfilm lubricated at time of manufacture.)
11) Size tube to sleeve by pushing hose over nipple until sleeve bottoms against nipple chamfer.
12) Check end to make sure sleeve is positioned properly.
13) Slide socket forward and thread onto nipple by hand.

14) Reposition assembly by placing socket flats in vise.

15) Tighten assembly by using a wrench on the nipple hex until gap between socket hex and nipple hex is 1/32 inch. Gap may vary from .023 to .046 inch.
16) Repeat steps 6 through 15 for fitting on the other end.
17) Inspect hose.

B) Medium pressure PTFE hose install
1) Place hose into fixture assembly, threading coupling nuts on by hand.
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<tr>
<th>Event</th>
<th>#5  U.S. Air Force Flex Fluid Lines</th>
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2) Torque coupling nuts 190-215 in lbs. utilizing a backup wrench.

**Scoring**

Scores will be calculated according to the [AMC score sheet](#).
## Event

### #6  Aerospace Maintenance Council Safety Wiring

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<td><a href="https://www.amcouncil.org">AMC</a></td>
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### Contact(s)/Judge(s)

- TBD

### Description

This event will test each participant's skill and speed while accomplishing a series of safety wire patterns.

### References

- None

### Tools and equipment list

- Safety wire pliers, wire cutters, needle nose/duck bill pliers, and 32/1000 safety wire

### Team members required

- One

### Instructions

Competitors will complete as many patterns as they can in the allotted time.

### Scoring

Scores will be calculated according to the [AMC score sheet](https://www.amcouncil.org). Additional penalties may be assessed related to tautness of the safety wire, closeness and tightness of the pigtail to the securing hardware, and negative safety.
Event #7 Eastern Florida State Space Vehicle - Vacuum Loading Operation

Provided by

Contact(s)/Judge(s) Bill Fletcher, fletcherw@easternflorida.edu

Description This event simulates the loading of a small quantity of a hazardous commodity from a holding tank into a space vehicle flight tank. The individual performing the procedure will be required to don the proper PPE, assemble a mobile fluid transfer station per a detailed procedure and a schematic and transfer 200 grams of a commodity (colored water) from a holding tank to a flight tank using a vacuum loading operation. A command/response protocol (see definition below) must be followed when completing the operation. Upon completion of the fluid transfer all system lines will be evacuated using compressed air (60 seconds) and disassembled from the station. (Note: The Flight Tank does not drain during line evacuation).

The QDs we are using are a push/pull type connector (explain inserting and pushing until it bottoms out and then how they have to push on the collar to get it to release the tubing). One will be available at the event table prior to the event for the technician to look at and operate to familiarize themselves on how it works.

All steps must be completed. There are no provisions for NOT PERFORMING a step or series of steps.

Definition of Command/Response Protocol- a method of communication in such a manner that the command or work instruction is read by one individual (command) and then it is repeated (response) by the person performing that work step as they complete the instruction.

References None
Tools and equipment list

- PE provided for the individual performing the procedure
  - Tyvek suit (simulates SCAPE Suit) – one per team – Sara
    Gloves (Disposable Polypropylene Coveralls with Hood and
    Booties) 2X #13-PPW-CHB-2X-C2, X Large #13-PPW-CHB-XL-
    C2, Large #13-PPW-CHB-2X-LG-C2
  - Neoprene gloves – 1 pair per team – Home Depot (Large
    #202188317, X-Large #202288319 Large and XL Nitrile Gloves
    I Box each
  - Face shields - 4
  - Disposable Respirator- one per team
  - Painters Tape – 3 rolls

- Equipment provided
  - Control Box - 2 (plus 3 AC to DC adapters)
  - Vacuum Pump w/gauge - 2 plus a spare
  - Power Cords for Vacuum Pumps – 2 (with switches label
    Vacuum pump)
  - Air compressor (shared between two stations) plus one 3 way
    adapter and 2 hoses
  - Power cord and 3 way plug
  - Multiple electrical strip - 2
  - Air Compressor cover
  - Compressed air-pressure regulator - Spare
  - Supply tank - 2
  - Flight tank - 4 plus one spare
  - Vacuum & Fluid Lines (6 Tygon tubes cut to 4 foot lengths
    each) 3 sets plus spare tubing
  - Digital Scale - 2
  - Timer – 2
  - Stop Watches - 2
  - Clip Boards – 4
  - Pens and Markers – Multiple
  - Alcohol Wipes (For cleaning face shields)
  - Banner Stand (To hold banners between competition tables)
    plus banners
  - SpaceTEC Banner for bleacher area (Needs to be shipped to
    AMC early so it can be placed on the bleachers).
  - Large and Small Tie Wraps
  - SpaceTEC tablecloths with clear plastic to cover them for
    water spots - 2
Event #7 Eastern Florida State Space Vehicle - Vacuum Loading Operation

- Shop Towel Rolls - 4
- Poly-Temp PTFE Thread Tape
- Spare Seal Kit for Vacuum Pump
- Large Trash Bags
- Green Food Coloring
- Batteries (AA and AAA)
- Mounting Tape
- Double Stick Tape
- Duct Tape
- Sealer (for possible leaks in tanks)
- Spare air gauge
- Spare Water Separator
- Spare Desiccant Dryer/filter
- Electrical tape
- Rubber bands (Medium and Large)
- Velcro

- Tool Bag and Tools
  - Vehicle Processing Kit
    - Tube Bender
    - Tube Cutter
    - 37 Degree Flaring Tool
    - Fitting Box
    - Spare Tubing
  - Box Cutter
  - Needle Nose Pliers
  - Tape Measure
  - Phillips and Flathead Screwdrivers
  - 2 Adjustable Wrenches
  - Wire Cutters
  - Slip Joint Pliers
  - Scissors

Team members required Two

Instructions
A) Preparation and protocol
1) The operator (team member 1) will dress out in appropriate PPE to simulate the protective equipment used during such an operation.
2) Team member 2 will read out the procedure while team member 1 performs the operation. The “call and response” protocol referenced above must be used. That is, team member 2 will read out the step, and team member 1 gives an appropriate response to verify the step is complete. For example, if team member 2 reads off “close valve 1”, team member 1 would respond with “valve 1 closed” after completing the step.

B) Setup
1) Turn on power to Control Box
2) Cycle electrical valves to ensure operation (red light indicator)
3) Verify all valves (manual and electrical) are closed
4) Turn off power to the Control Box
5) Connect Vacuum and Fluid lines as shown in schematic. Note: all fittings are push lock type. Ensure lines are pushed in all the way. The compressed air line to pressure valve will already be connected.
6) Verify all Vacuum and Fluid lines are connected as shown in schematic.
7) Verify Flight Tank is on digital scale.

C) Evacuate Tank
1) Turn on power to Control Box
2) Start Vacuum Pump
3) Open Vacuum Valve
4) Open Flight Valve
5) Open MV2
6) Evacuate system until vacuum gage reads at least 22 Hg +/- 5
7) Close Vacuum Valve
8) Close Flight Valve
9) Turn off Vacuum pump

D) Flight Tank Load-Vacuum
1) Turn on digital scale and tare
2) Open Atmospheric Vent Valve
3) Open Supply Valve
4) Open Flight Valve and cycle valve as necessary to meter 200 grams of fluid into Flight Tank - NOTIFY JUDGE WHEN COMPLETE
5) Close all valves (manual and electric)
## Event #7 Eastern Florida State Space Vehicle - Vacuum Loading Operation

Note: If Vacuum load was unsuccessful, step 4-System Drain must be completed before restarting step 2-Evacuate Tank

### E) System Drain
1) Verify all valves closed (manual and electric)
2) Verify compressed air regulator set at 20+/−5 psi
3) Open MV3
4) Open MV1
5) Open Atmospheric Vent Valve
6) Open Flight Valve
7) Open Supply Valve
8) Open Pressure Valve
9) Purge all water from system for 60 seconds (use timer provided) Note: FLIGHT TANK DOES NOT DRAIN
10) Close Pressure Valve
11) Close Supply Valve
12) Close Flight Valve
13) Close Atmospheric Vent Valve
14) Close MV1
15) Reduce compressed air regulator to zero
16) Close MV3
17) Open MV2 to vent Flight Tank
18) Open MV1 to vent Supply Tank
19) Close all valves (manual and electric)
20) Turn Power off to Control Box

### F) System Clean up
1) Verify power to vacuum pump and control box is turned off
2) Verify all valves closed
3) Disconnect all hoses between control panel and tanks (both ends of all 6 hoses must be disconnected)

**END OF EVENT**

Participants should remove PPE and return it to the PPE staging table

### Scoring
Scores will be calculated according to the [AMC score sheet](#). Additional penalties may be assessed for each step not completed and for each gram over/under flight tank load target
<table>
<thead>
<tr>
<th>Event</th>
<th>#8 ULTRAX Condition-Based Intelligence (CBI™)</th>
</tr>
</thead>
</table>

**Provided by**

![ULTRAX AEROSPACE](image)

**Contact(s)/Judge(s)**

- Travis Fisher – Corporate Development, 816-595-4472
  tfisher@ultraxinc.com
- Matt Nimmo – Senior Technical Lead, 816-595-4448
  mnimmo@ultraxinc.com

**Description**

Engine Borescope Inspection

Competitors will complete an incoming engine borescope first stage compressor blade inspection to document the condition of the asset as received. They will use a borescope and a web app to provide immediate and distributed situational awareness to all stakeholders via software alerts.

**References**

- [www.ultraxinc.com](http://www.ultraxinc.com)
- [https://ultraxinc.com/amc2019/](https://ultraxinc.com/amc2019/)

**Tools and equipment list**

- All required equipment and tools will be provided by ULTRAX and available in the competition booth.
  1. iPad with CBI™ Web App
  2. Borescope (Brand, Model – TBD)

**Team members required**

Two

**Instructions**


**Scoring**

Scores will be calculated according to the [AMC score sheet](#).
Event #9  Boeing Cable Rigging

Contact(s)/Judge(s) George Thompson, Boeing Seattle Flight Test, George.c.thompson2@boeing.com
Todd Warnstadt, Todd.T.Warnstadt@boeing.com

Description After first flight the aileron cable rig was found to be out of tolerance. Re-rigging is required. Use the following instructions to rig the cables. Team members must complete re-rigging of cables AA & AB.

References Table 1-3 Cable Rigging Tension (lbs)
Tensitron ACX-1 Series Digital Aircraft Cable Tension Meter Operating Instructions
Safety Turnbuckle Diagram

Tools and equipment list Tensitron Cable Tension Meter
Cable diameter gauge

Team members required Two

Instructions Warning: Check and clear aircraft and flight controls before turning on hydraulics.

A) Turn on both A&B system hydraulic switches, cycle ailerons check and install the rig pins in the captain’s wheel and the aileron control quadrant.

B) Turn off and deactivate both A&B systems hydraulics by pulling the circuit breaker for A&B system and installing the lock out collars.

Warning: Hydraulics systems must be deactivated prior to the start of any rigging operations.

C) Use the Cable diameter gauge included to easily and accurately measure cable size.
Event #9 Boeing Cable Rigging

D) Record the size cable being rigged
E) Set up Tensitron Meter
   1) Power unit on by pressing ON button. Main display will indicate tension, material, five stored tension readings and their average, and other information.
   2) Select a screen
      a) Move between screens by using the up (↑) and down (↓) buttons
      b) Make or enter a selection by pressing the Enter/Zero button
      c) Exit a setting by pressing the Escape (ESC) button.
   3) Select Tension Units
      a) Using the up or down arrows, scroll to TENSION UNITS, then press ENTER
      b) Next, select from Kilograms, DecaNewtons, or LBS, and then press ENTER
   4) Select Material
      a) Using either the up or down arrows, scroll to SELECT MATERIAL, then press ENTER
      b) Next scroll through the cable descriptions until the correct cable size is highlighted, then press ENTER. Your main display will indicate the cable size selected.
F) Use the tension values in Table 1-3 Cable Rigging Tension for cables AA&AB, the Tensitron meter and cable clamps adjust the cable tension to the correct value +5 / -15 lbs. for 64 F outside ambient temperature.
G) Record the required tension in lbs. per Table 1-3
H) Remove rig pins and cable clamps
I) Reset Circuit breakers for the A&B system hydraulics

Warning: Check and clear aircraft and flight controls before turning on hydraulics.
J) Turn on A&B system hydraulic switches cycle the captain’s wheel, 5 times.

Note: Operate captain’s wheel gently and smoothly when cycling and returning to neutral.
K) Install Rig pins, Recheck rig load (table 1-3) of each cable and free movement of appropriate rig pins.
L) If good turn off hydraulics go to next step, if not return to step B
<table>
<thead>
<tr>
<th>Event</th>
<th>#9 Boeing Cable Rigging</th>
</tr>
</thead>
<tbody>
<tr>
<td>M)</td>
<td>Using the push/pull rod adjust the aileron to align with the mark, after adjustments are complete, hand tighten jam nuts remove rig pins.</td>
</tr>
<tr>
<td>N)</td>
<td>Safety turnbuckles per Safety Turnbuckle Diagram</td>
</tr>
<tr>
<td>O)</td>
<td>Return all tools</td>
</tr>
</tbody>
</table>

**Notes:**

No more than 3 threads may show beyond turnbuckle body. Align the slit in the barrel with the slot in the cable terminal, insert the straight end of the lock clip into the aperture formed by the aligned slots. Bring hook end of the lock clip over the hole in the center of the turnbuckle barrel and seat the hook loop into the hole by applying pressure to the hook shoulder. Repeat these steps to lock the opposite end of the turnbuckle. Both locking clips may be inserted in the same turnbuckle barrel hole, or they may be inserted in the opposite holes.

Examine both locking clips for proper engagement of the hook lip by a slight pull in the disengaging direction without the use of any tools and by visual examination to make certain that the hook lip has engaged the interior of the turnbuckle body.

Lock clips shall not be reused. The paint on the clips provides a means for determining that the clips have not been previously used.

**Scoring**

Scores will be calculated according to the AMC score sheet.
Event #10 Daniels Manufacturing Corporation Electrical Troubleshooting

Provided by Daniels Manufacturing Corporation

Contact(s)/Judge(s) Matthew Bohannon, Product Manager, matthewb@dmctools.com

Description Competitors will be required to find the multiple faults in a MIL-DTL-26500 connector consisting of 30 size 16 contacts using a Snap-on multi-meter. Competitors will remove the faulty wires, properly terminate contacts to a new wire, insert the new wire into both sides of the connector, check contact retention using a retention tester and continuity using a multi-meter.

References
- Photo 1
- Photo 2
- Photo 3
- DMC wiring diagram
- Video Tutorial

Tools and equipment list
- AF8 Crimp Tool
- TH1A: Turret Head
- DAK16B: Insertion Tool
- DRK16B: Removal Tool
- HT250-2: Retention Tester
- 67-016-01: Retention Tester Tip (socket)
- 68-016-01: Retention Tester Tip (pin)
- Digital Multimeter: Snap-on, part number EEDM504D
- 22″ pre-stripped wire
### Event #10 Daniels Manufacturing Corporation Electrical Troubleshooting

**Contacts:** M39029/31-229 (PIN), M39029/32-248 (SOCKET)

26500 Connectors: MS24264-R-24-T-30P, MS24264-R-24-T-30S

Multiple wires improperly terminated to simulate a faulty wire

Note: Competitors will be provided with a multi-meter and leads. They may not use their own equipment for this competition

**Team members required**

Two

**Instructions**

A) Competitors will be presented with mounted 26500 receptacles on a mock panel

B) The connector will have 30 contact cavities with size 16 contacts

C) Competitors must check continuity of ALL contact cavities and find the faulty wires using a multi-meter

D) Remove the faulty wires using the proper tooling

E) Competitors must assemble the crimp tools provided with the corresponding accessory (turret head or positioner)

F) The competitors must set the crimp tools to the proper crimp settings based upon the contact part number and wire gauge

G) Once properly set, the competitors will crimp a pin and socket on the opposite ends of a 22” piece of pre-stripped wire (provided)

H) Completed wire must then be inserted into the proper cavities of the 26500 connector

I) Once the new wire is inserted, the competitors must test contact retention using a 5lb or less retention test tool

J) Finally, competitors MUST test the continuity of the new wires using a multi-meter

**Scoring**

Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for improper use of tooling and incorrect repair of faulty wire.
Event #11 Daniels Manufacturing Corporation Safe-T-Cable

Provided by

![ Daniels Manufacturing Corporation Logo ]

Contact(s)/Judge(s) Bill Randall, Strategic Accounts Manager, matthewb@dmctools.com

Description
This event will test each participant's skill and speed while accomplishing a series of patterns using Safe-T-Cable. The application of the safe-t-cable must maintain positive tension on the fasteners and meet the criteria for flex limits.

References
- Installation Instructions
- Verification Equipment
- Elongated Ferrules

Tools and equipment list
- Safety (Safe-T-Cable) Cable Gun SCTR327 (7 inch nose for .32 cable)
- C10-218 Cable qty 100 .032” x 18” safety cables
- F10-04 Elongated Ferrules (use where low profile bolts are present)
- SCT-TB1 Torque Verification Block
- 3/8” drive torque wrench

Team members required One

Instructions
Competitors must first verify proper function and tensioning settings of the tool by using the SCT-TB1 and a 3/8 inch drive torque wrench. Safe-T-Cable should remain in place on SCT-TB1 test block during application of the measured force.

Once verification is complete, competitors will complete as many 2 or 3 bolt patterns as they can in the allotted time. Competitors must properly thread the Safe-T-Cable through the fasteners in a manner...
## Event #11 Daniels Manufacturing Corporation Safe-T-Cable

that maintains positive tension. Competitors will properly tension the Safe-T-Cable and crimp a ferrule on the end of the cable using the DMC SCTR327 rotary tool. Any excess cable/FOD must be properly disposed of after application is complete.

### Scoring

Scores will be calculated according to the [AMC score sheet](#). Additional penalties may be assessed related to tautness of the safety cable and negative safety.
## Event

#12 Click Bond Adhesive-Bonded Fastener Installations

### Provided by

![Click Bond logo]

### Contact(s)/Judge(s)

Amy Arnold, Director Marketing & Communications (Contact) 1-775-885-8000 x1141, Amy.Arnold@clickbond.com  
Rick Angell, Technical Training Manager (Judge)  
Moisés Valle, Applications Engineer (Judge)

### Description

This is a skill event using adhesive-bonded fasteners to repair wing inspection cover plates, fuel leakage cracks, and oversize bolt holes.

### References

Installation videos are posted to the Click Bond YouTube channel:

- Surface Prep: [https://www.youtube.com/watch?v=M_4b2mgMcDo](https://www.youtube.com/watch?v=M_4b2mgMcDo)
- Adhesive Prep: [https://www.youtube.com/watch?v=B3VjfKV0ero](https://www.youtube.com/watch?v=B3VjfKV0ero)
- Nutplate Installation: [https://www.youtube.com/watch?v=Xl_zYF7l-1g](https://www.youtube.com/watch?v=Xl_zYF7l-1g)
- Externally Fixtured Fastener Installation: [https://www.youtube.com/watch?v=mTKAsNgogNw](https://www.youtube.com/watch?v=mTKAsNgogNw)
- Internally Fixtured Fastener Installation: [https://www.youtube.com/watch?v=BtQQxUfnYHg](https://www.youtube.com/watch?v=BtQQxUfnYHg)

Printed instructions will be provided for the competition.

### Tools and equipment list

- Safety glasses
- Gloves
- Scotch Brite abrasive pads
<table>
<thead>
<tr>
<th>Event</th>
<th>#12 Click Bond Adhesive-Bonded Fastener Installations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Solvent wipes</td>
</tr>
<tr>
<td></td>
<td>Adhesive</td>
</tr>
<tr>
<td></td>
<td>Adhesive dispensers</td>
</tr>
<tr>
<td></td>
<td>Mixing tips</td>
</tr>
<tr>
<td></td>
<td>Fasteners (nutplates, sleeves, patches)</td>
</tr>
</tbody>
</table>

**Team members required**

Two

**Instructions**

Team members will complete adhesive-bonded fastener installations:

A) Read all instructions provided before starting  
B) Use provided personal protection equipment  
C) Install adhesive-bonded fasteners as detailed in provided instructions

**Scoring**

Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for application of too little or too much adhesive, and/or adequate adhesive squeeze-out around fastener base.
Event Manual

Event #13 Michelin Aircraft Tires Inspection

Provided by

Jim Boyle, Aviation Technical Director – Americas, jim.boyle@michelin.com

Description

Competitors will be required to answer inspection requirement questions, and perform airworthiness inspection of an aircraft tire including visual inspection, tire pressure reading, inspection record, and required maintenance actions.

References

Applicable AMM (Supplied on site)
Applicable CMM (Supplied on site)
Michelin Aircraft Tire Care & Service Manual (Available at https://aircraft.michelin.com/michelin-aircraft-tyre)

Tools and equipment list

Proper Tire Pressure Gauge
Tread Depth Gauge
Tire Inspection Form
Appropriate PSE
Flashlight

Team members required

One

Instructions

Competitors will be presented with a mounted and inflated aircraft tire with visible worn conditions and damages. Tire is assumed to be on-wing and stationary for 4 hours.

A) Answer the following questions:
   1) How often should on-wing aircraft tires be inspected?
   2) How often should on-wing aircraft tire pressures be verified?
   3) How much pressure is an aircraft wheel/tire assembly allowed to decrease in 24 hours?
   4) What is the cause of Chevron Cutting?
   5) What is the purpose of the Sidewall Vents?

B) Record the following:
   1) Tire Part Number and Size including Ply, Load and Speed Rating
<table>
<thead>
<tr>
<th>Event</th>
<th>#13 Michelin Aircraft Tires Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>2)</td>
<td>Tire Serial Number</td>
</tr>
<tr>
<td>3)</td>
<td>Retread Level</td>
</tr>
<tr>
<td>4)</td>
<td>Unused Tire Skid Depth</td>
</tr>
<tr>
<td>C)</td>
<td>Perform visual inspection of wheel/tire assembly per job card including tread depth.</td>
</tr>
<tr>
<td>D)</td>
<td>Record any noted conditions and damages on inspection form. Determine tire disposition and required actions.</td>
</tr>
<tr>
<td>E)</td>
<td>Perform Tire Pressure Check and record readings. Determine tire disposition and required actions. Determine what corrective actions may be required and make appropriate maintenance log entries.</td>
</tr>
</tbody>
</table>

**Scoring**

Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for unsafe actions, improper tool usage, and incorrect answers/log entries.
Event #14 Alberth Aviation Wheel and Brake Removal and Installation

Provided by

![Alberth Aviation Logo](image)

Contact(s)/Judge(s) Ken MacTiernan, jetdoctor69@gmail.com

Description This event will task the technician’s ability to remove and reinstall a mock G-IV wheel and brake assembly.

References G-IV Maintenance Manual, Chapter 32, Main Wheel Removal/Installation, Sections: 32-10-10, 32-20-10, 32-30-10 and 32-40-10

Maintenance Manual Placard FAA Form 8130-3

Tools and equipment list None

Team members required Two

Instructions A) Main Wheel Removal
1) Ensure that Maintenance Manual Placard is on display in cockpit before removing main wheel assembly.
2) Ensure brakes are set and Parking Brake Handle is set.
3) Ensure that nose wheels are chocked.
4) Ensure that landing gear opposite of the main gear which main wheel assembly is to be removed from is chocked. NOTE: ONLY ONE MAIN GEAR MAY BE JACKED AT ONE TIME.
5) Install Down-Lock Pins in both main gear assemblies. Jack main gear which main wheel assembly is to be removed from. Ensure there is sufficient clearance between main wheel assembly and ramp for removal of main wheel assembly being removed. NOTE: TAKE PROPER PRECAUTIONS THAT
### Event #14: Alberth Aviation Wheel and Brake Removal and Installation

**EQUIPMENT IS CLEAR OF AIRCRAFT WHILE JACKING. DAMAGE TO EQUIPMENT MAY OCCUR IF PRECAUTIONS ARE NOT TAKEN.**

6) Remove hub cap bolts and hub cap. Loosen main wheel main nut to finger tight. Do not remove main nut.

7) Place tire/brake dolly under main wheel assembly and raise dolly to sufficiently hold main wheel assembly. Remove main wheel nut. Slowly pull dolly away from main gear till main wheel is completely off axle.

8) Inspect axle and visible main gear assembly for any obvious damage or defects.

9) Remove main wheel assembly from dolly and fill out appropriate 8130 Tag if main wheel is to be replaced.

**B) Main Wheel Installation**

1) Place main wheel assembly securely on main wheel/brake dolly and position in front of axle.

2) Slowly position main wheel assembly onto axle. Install main wheel nut finger tight.

3) Release brakes and ensure Parking Brake Handle is not set.

4) While rotating main wheel assembly tighten main wheel nut to a torque value of 200 In./Lbs. (+/- 10 In./Lbs.).

5) Loosen main wheel nut finger tight. Then while slowly rotating main wheel assembly re-torque main wheel nut to a final torque of 130 In./Lbs. (+/- 10In./Lbs.). Remove main wheel/brake dolly away from aircraft. Install hub cap and torque hub cap bolts to 10 In./Lbs (+/- 0) and safety hub cap bolts.

6) Set brakes and ensure Parking Brake Handle is set.

7) Lower main gear jack. Remove and stow Down-Lock Pins from both main gear assemblies. Chock main gear. NOTE: TAKE PROPER PRECAUTIONS THAT EQUIPMENT IS CLEAR OF AIRCRAFT WHILE LOWERING AIRCRAFT. DAMAGE TO EQUIPMENT MAY OCCUR IF PRECAUTIONS ARE NOT TAKEN.


**C) Brake Assembly Removal**

1) Remove main wheel assembly from brake position to be removed. Reference G-IV Maintenance Manual Chapter 32 Section 32-10-10.

2) Release brakes and ensure Parking Brake Handle is not set.

3) Disconnect hydraulic lines from brake assembly.
Event #14 Alberth Aviation Wheel and Brake Removal and Installation

4) Place main wheel/brake dolly underneath brake assembly and jack till dolly firmly supports brake assembly. Remove brake support bolts.

5) Slowly pull brake assembly away from main gear till brake assembly is completely off axle.

6) Inspect axle and visible main gear assembly for any obvious damage or defects.

7) Remove brake assembly from dolly and fill out appropriate 8130 Tag if brake assembly is to be replaced.

D) Brake Assembly Installation

1) Place brake assembly onto main wheel/brake dolly and jack till brake assembly is at sufficient height to slide onto axle.

2) Slowly slide brake assembly till seated properly on axle. Install brake support bolts and torque to 30 In./Lbs. (+/- 5 In./Lbs.) Lower main wheel/brake dolly till clear of brake assembly and remove dolly from aircraft.

3) Connect hydraulic lines and safety.

4) Operate hydraulics and leak check brake assembly. Ensure there are no leaks.


E) Complete an 8130 tag with the following information:

1) Part Removed:
2) Part Number Removed:
3) Part Number Installed:
4) Serial Number Removed:
5) Serial Number Installed:
6) Aircraft Tail Number Removed From:
7) Aircraft Tail Number Installed On:
8) Date Removed:
9) Removed By:
10) Installed By:
11) Station:
12) Reason for Removal:

Scoring

Scores will be calculated according to the AMC score sheet.
## Event #15 Olympus and PPG Ultrasonic Thickness Testing

### Provided by

![Olympus](image)

![PPG](image)

### Contact(s)/Judge(s)

Connie Griesemer, Product Support Engineer, PPG, cgriesemer@ppg.com

### Description

The competitor will be required to verify various acrylic thicknesses and state whether it is within specification or not via an ultrasonic thickness gauge.

### References

- White Paper: Introduction to Thickness Gaging
- Brochure: 45MG Ultrasonic Thickness Gage
- Guide: Getting Started with 45MG
- Tutorial: Thickness Gage Tutorial

### Tools and equipment list

TBA

### Team members required

One

### Instructions

TBA

### Scoring

Scores will be calculated according to the [AMC score sheet](#). Additional penalties may be assessed for any process errors and/or quality concerns.
<table>
<thead>
<tr>
<th>Event</th>
<th>#16 Barfield Thermal Imaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provided by</td>
<td>![Barfield Logo]</td>
</tr>
<tr>
<td>Contact(s)/Judge(s)</td>
<td>Victor Bontorno, <a href="mailto:Victor.Bontorno@barfieldinc.com">Victor.Bontorno@barfieldinc.com</a></td>
</tr>
<tr>
<td>Description</td>
<td>TBA</td>
</tr>
<tr>
<td>References</td>
<td>TBA</td>
</tr>
<tr>
<td>Tools and equipment list</td>
<td>TBA</td>
</tr>
<tr>
<td>Team members required</td>
<td>Two</td>
</tr>
<tr>
<td>Instructions</td>
<td>TBA</td>
</tr>
<tr>
<td>Scoring</td>
<td>Scores will be calculated according to the AMC score sheet.</td>
</tr>
</tbody>
</table>
Event #17 Barfield Air Data Testing

Provided by

Contact(s)/Judge(s) Victor Bontorno, Victor.Bontorno@barfieldinc.com

Description This competition is designed to test the skills of each participating team in their understanding of and ability to troubleshoot an aircraft Pitot-Static system. Barfield recommends participants fully understand a basic aircraft Pitot-Static system and potential issues that could be found. The faults found during this procedure will test this knowledge.

References DPS 1000 User Instruction Manual

Tools and equipment list See procedure, linked below

Team members required Two

Instructions See procedures (84-611-00052-150412-5)

Scoring Scores will be calculated according to the AMC score sheet.
Event #18 Barfield Rf Antenna Testing

Provided by

[Barfield logo]

Contact(s)/Judge(s) Victor Bontorno, Victor.Bontorno@barfieldinc.com

Description TBA

References TBA

Tools and equipment list TBA

Team members required Two

Instructions TBA

Scoring Scores will be calculated according to the AMC score sheet.
Event #19 Boeing Fiber Optics

Provided by

Contact(s)/Judge(s) Greg Steele, 737 Renton Preflight, gregory.l.steele@boeing.com
Donald M. Rogerson

Description The MULTIMODE FIBER OPTIC LIGHT LOSS EVENT has two parts: 1) complete a practical light loss test on a fiber optic bundle and 2) answer test questions.

References 570XL 850/1300nm LED Source Brochure
560XL Fiber Optic Power Meter Datasheet

Tools and equipment list None

Team members required Two

Instructions A) PART 1: On your board you will have two reference cables that need to be mated to the light source and power meter. The ends with the ST connectors are to be mated to the meters. The other end of these cables are the LC connectors which is a push-pull connector that utilizes a retaining tab latch mechanism. There will be a fiber optic duplex bundle (cable under test) with LC connector adaptors as well as a dust cap container. Channel A can be identified with its RED heat shrink. Channel B can be identified by its BLUE heat shrink. All measurements for this event will be required to be performed at the 850nm wavelength only.
Event Manual

Event #19 Boeing Fiber Optics

Whenever link loss tests are performed on fiber optic networks or cables under test, the results will be displayed on the meter with a readout in “db”. The following picture shows the initial setup that you will find on you table for this fiber optic light loss event.

1) Turn on power to both the 570XL LED source and the 560XL power meter and remove dust caps. Ensure the 570XL LED light source and the 560XL power meter are both set to 850nm wavelength. On the 560XL power meter, verify dbm is displayed. Remove dust caps from one end of each of the (2) reference cables. Place the caps in the cap storage container. Clean and mate the (2) reference cables to the 570XL LED source (850nm interface) and the 560XL power meter.

2) Take one of your LC duplex adapters, remove all of the dust caps and place them in the dust cap storage container. Remove the dust cap from one of the reference cables and place it in the storage container. Next clean the reference cable LC connector with the green cartridge cleaner and immediately insert it into one half of the LC duplex adapter until you hear an audible click.

3) Remove dust caps from the second reference cable and place it in the cap storage container. Clean this LC connector and then insert it into the LC duplex adaptor
so that the LC connectors are mated end face to end face.

4) **Record the displayed output power of the 560XL optic power meter:** ___________ dbm

5) Now that you have recorded the power received in step 4, the reference cable loss can now be recorded as a reference measurement (optional) or it may be “zeroed out” (preffered). To zero out the meter, press and hold the (db/dbm) key on the 560XL power meter for approximately 3 seconds until the small ”r” annunciator appears in the bottom R/H corner and the display reads **0.00db**.

6) Remove all the dust caps from the second LC duplex adapter and place them in the dust cap container. Now you are ready to perform optical measurements on the “cable under test”. With power still applied to the 560XL power meter and the 570XL LED light source, remove one of the reference cable LC connectors from the LC duplex adaptor and clean with the green cartridge cleaner. Once clean, insert it into the LC duplex adaptor until you hear an audible click.

7) Remove both dust caps off of the channel A (RED) LC connectors of the cable under test and place them in the dust cap container. Clean both the LC connectors and then insert them into the LC duplex adaptors so that both LC connectors of the reference cables and the cable under test are mated end face to end face.

8) Repeat the above procedure for channel B (BLUE) of the cable under test by cleaning the LC connectors and inserting them next to channel A (RED) in the same half of the duplex adaptors. Use the cap container and clean when necessary to avoid any penalties.

**METER PASS/FAIL CRITERIA:**
-2db OR LESS FOR A PASS/ACCEPTABLE
GREATER than -2db IS A FAIL/REJECT
## Event #19 Boeing Fiber Optics

### Scoring

Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for damaging a fiber optic cable or connector, for each time a fiber optic connector is not cleaned on the green reel cleaner after a dust cap is removed or when an LC connector is removed from the test adapter, when a judge provides assistance, or for incorrect answers.

<table>
<thead>
<tr>
<th>Event</th>
<th>#19 Boeing Fiber Optics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For example, a reading of -1.95db would be a pass/accept and a reading of -2.1db would be a fail/reject.</strong></td>
<td></td>
</tr>
<tr>
<td>9) Read and record the optical performance/light loss of channel A (RED) _______db. ACCEPT _______ REJECT _______</td>
<td></td>
</tr>
<tr>
<td>10) Remove both reference cable LC connectors from the test adaptors, clean, and mate them with channel B (BLUE) in both test adaptors.</td>
<td></td>
</tr>
<tr>
<td>11) Read and record the optical performance/light loss of channel b (BLUE) _______db. ACCEPT _______ REJECT _______</td>
<td></td>
</tr>
<tr>
<td>12) MUST BE COMPLETED: Remove ALL LC connectors from test adaptors and clean them, place ALL dust caps back on ALL connections. Put ALL dust caps back in both your test adaptors and place them neatly in there storage area. Turn off both meters, then clean and cap ALL cables and cap the meters also.</td>
<td></td>
</tr>
<tr>
<td>13) Once finished with step 12, <strong>tell your judge “I AM FINISHED” to stop the clock.</strong></td>
<td></td>
</tr>
<tr>
<td>B) When you are complete with the PART 1 PRACTICAL you may now begin the PART 2 QUESTIONS that will be provided at the competition.</td>
<td></td>
</tr>
</tbody>
</table>
Event #20 Nida Corporation Power Troubleshooting

Provided by

Nida Corporation
Excellence in Technical Training
EST. 1972
www.nida.com

Contact(s)/Judge(s) Robin Asplund, robina@nida.com

Description This event challenges the aircraft maintenance technician’s ability to troubleshoot basic aircraft power distribution systems. Contestants will be provided schematics, system descriptions and operational procedures to troubleshoot generic single engine and multi-engine power distribution systems. Scores will be based on the speed and accuracy of finding the system faults.

References Detailed contest material will be available March 1 at www.nida.com/amc and will also be provided at the orientation.

Tools and equipment list Multi-meters will be provided; however, personal multi-meters are authorized for use during the event.

Team members required Two

Instructions A) Single Engine Power Distribution System Troubleshooting
1) System will be operationally ready with no faults.
2) Review the pilot “write up” on the discrepancy sheet.
3) Request the first fault insertion from the judge.
4) Determine the most probable cause of the fault and the recommended repair.
5) Sign off the pilot “write up” with your conclusion.
6) Repeat Steps 2 through 5 until all single engine aircraft faults are completed. Only one fault will be inserted at a time.

B) Multi-Engine Aircraft Power Distribution System Troubleshooting
<table>
<thead>
<tr>
<th>Event</th>
<th>#20 Nida Corporation Power Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1) Move to the multi-engine training panel</td>
</tr>
<tr>
<td></td>
<td>2) Repeat Steps 2 – 6 above until all multi-engine aircraft faults are completed</td>
</tr>
<tr>
<td></td>
<td>3) Finish your paperwork and tell the judge to stop the clock.</td>
</tr>
</tbody>
</table>

**Scoring**

Scores will be calculated according to the [AMC score sheet](#). Additional penalties may be assessed for incorrect answers or unfinished scenarios.
<table>
<thead>
<tr>
<th>Event</th>
<th>#21 W.L. Gore &amp; Associates, Inc. Leading Edge &amp; Panel Sealing</th>
</tr>
</thead>
</table>

**Provided by**

![Gore Logo](Image)

**Contact(s)/Judge(s)**

GORE™ SKYFLEX™ Aerospace Materials Team:
- Jack Penick, Application Engineer [jpenick@wlgor.com](mailto:jpenick@wlgor.com)
- Jon Jacobs, Application Engineer [jjacobs@wlgor.com](mailto:jjacobs@wlgor.com)
- Gerhard Burmann, Application Engineer [gburmann@wlgor.com](mailto:gburmann@wlgor.com)

**Description**

D-Nose Leading Edge and Access Panel installation using GORE™ SKYFLEX™ Aerospace Materials

**References**

- Installation Guide and Link to video for Installing Flat Tapes on D-Nose:
  - Installation Guide Tapes
  - Video Surface Protection - D-Nose
- Installation Guide and Link to video for Installing Gaskets on Access Panel:
  - Installation Guide Gaskets
  - Video Environmental Sealant - Gasket

**Tools and equipment list**

- Scissors – [Link to Scissors](#)
- Nylon Awl for punching holes – [Link to Awl](#)
- Torque Wrench – One per team
- Speed Handle – Two per team
- Screwdriver and bits – Two per team
- Rags

**Team members required**

Two

**Instructions**

A) **D-Nose LEADING EDGE:**

1) Find 700 Series GORE™ SKYFLEX™ Aerospace Tapes- Part Number GSC-21-95159-024 and ensure within shelf life.
2) Ensure Spar and D-Nose clean and free of debris – use provided rags to wipe faying surfaces down.
3) Apply GORE™ SKYFLEX™ Aerospace Tapes on Leading Edge Spar using 4 pieces of tape cut to length with scissors. The First piece should be applied along the top and the second along the bottom. Finally apply two shorter pieces to the radius and ensure 3-5mm overlap on top and bottom pieces – Figure 1.
4) See Installation Guide for Tapes and watch video in References.
5) Poke holes for each fastener in tape material with Nylon or Wood Hole Awl
6) Install Leading Edge Profile over Spar
7) Use provided speed handle / screwdriver to seat each of the 18 fasteners using a staggered pattern.
8) Use provided torque wrench to tighten each fastener to 30 in·lbs using a staggered pattern.

Figure 1: Rig - D-Nose Installation Areas in Blue

B) ACCESS PANEL
1) Find 720 Series GORETM SKYFLEXTM Aerospace Gaskets Part Number GSC-21-96704-027 and ensure within shelf life.
2) Ensure Access Panel and Frame clean and free of debris – use provided rag to wipe faying surfaces.
3) Apply GORETM SKYFLEXTM Aerospace Gasket on Polycarbonate Panel shown in Figure 2 – Carefully Align fastener holes in gasket with those on the panel. Ensure
gasket is placed on the correct side of the access panel. It should be applied to bottom of the panel. The fastener countersink is considered the top of the panel.

4) See Installation Guide for Gaskets and watch video link in References.

5) Install Panel in Opening – Gasket between frame and panel.

6) Use provided speed handle / screwdriver to seat each of the 20 fasteners using a staggered pattern.

7) Use provided torque wrench to tighten each fastener to 30 in·lbs using a staggered pattern.

---

Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for:

- Not following work instructions – example – faying surfaces are clean, using correct part number, checking expiration date, tightening all fasteners in staggered pattern.
- Incorrect application of tapes and overlaps at D-Nose and misalignment of gasket to access panel
- Using incorrect tools

---

Figure 2 - Shows Gasket installed on Lexan Access panel
## Event #22 American Airlines APU Burner Can

**Provided by**

![American Airlines Logo](image)

<table>
<thead>
<tr>
<th>Contact(s)/Judge(s)</th>
<th>Description</th>
<th>Tools and equipment list</th>
<th>Team members required</th>
<th>Instructions</th>
</tr>
</thead>
</table>
| Jim Gentry, B-737 Supervisor Aircraft Maintenance, American Airlines, jim.gentry@aa.com | Remove and Replace MD80 APU Combustion Chamber – Packing. Competitors will show inspector torques and return to zero after usage. | None | Two | A) General  
1) The combustion chamber liner is located inside the combustion chamber cap on the APU right side. Access is through the APU right access door.  
B) Remove Combustion Chamber assembly and replace packing  
1) Cut safety wire on igniter plug lead and igniter plug.  
2) Disconnect igniter plug lead from igniter plug. (Figure 201)  
3) Disconnect fuel line from atomizer. (Figure 201)  
4) Disconnect combustion chamber drain line from fitting in combustion chamber cap. (Figure 201)  
5) Remove safety wire from clamp on combustion chamber cap.  
6) Remove clamp that attaches combustion chamber cap to combustion chamber. |

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Revision Number: 02  
Original Issue Date: 12/18/2018  
Revision Date: 02/06/2019
<table>
<thead>
<tr>
<th>Event</th>
<th>#22 American Airlines APU Burner Can</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7) Remove combustion chamber assembly.</td>
</tr>
<tr>
<td></td>
<td>8) Remove and replace combustion chamber cap packing and use supplied lube.</td>
</tr>
<tr>
<td>C)</td>
<td>Reinstall Combustion Chamber assembly</td>
</tr>
<tr>
<td></td>
<td>1) Carefully install combustion chamber assembly into the combustion chamber.</td>
</tr>
<tr>
<td></td>
<td>2) Rotate combustion chamber liner and cap until igniter plug is on top vertical centerline of combustion chamber, drain fitting is on bottom vertical centerline of combustion chamber (Electrical connector and combustion chamber drain line must line up with mating connections).</td>
</tr>
<tr>
<td></td>
<td>3) Install combustion chamber coupling clamp but do not tighten.</td>
</tr>
<tr>
<td></td>
<td>4) Connect igniter plug lead to igniter plug. (Figure 201)</td>
</tr>
<tr>
<td></td>
<td>5) Connect fuel line to atomizer. Torque fuel line to 135 to 150 inch-pounds</td>
</tr>
<tr>
<td></td>
<td>6) Install combustion chamber drain line and securely tighten.</td>
</tr>
<tr>
<td></td>
<td>7) Tighten combustion chamber coupling clamp to 50 to 70 inch-pounds and safety wire.</td>
</tr>
<tr>
<td></td>
<td>8) Safety wire igniter lead cap and igniter bolts.</td>
</tr>
</tbody>
</table>

**Scoring**

Scores will be calculated according to the [AMC score sheet](#).
Event: #23 United Fuel Tank Entry Precautions

Provided by

UNITED

Contact(s)/Judge(s)
Fred Glau, Supervisor, Fred.Glau@united.com
Paul Davis, Lead Technician
Scotty Cole, Avionics Technician
Jorge Tamayo, Lead Technician

Description
Competitors will ensure that the airplane is correctly grounded to an approved ground before you defuel the airplane or open any fuel tanks. The main, and APU batteries must be disconnected. Placards which state not to connect the batteries until the fuel tanks are closed should be attached to all disconnected battery locations. All safety, support and maintenance equipment must be in place before you open the fuel tank access doors. Movement of equipment can cause sparks which can cause fuel vapors to ignite.

References
Fuel Tank Precautions Manual

Tools and equipment list
None

Team members required
Two

Instructions
A) Run through the following checklist to ensure:
B) Airplane and adjacent equipment properly grounded. (Verbal)
C) Area secured and warning signs positioned. (Verbal)
D) A/C Grounded (Verbal)
E) Parking brake set (Verbal).
F) Verify NGS system operable (Green Light On).
G) Deactivate NGS system: Turn NGS switch to off, pull NGS C/B attach and loto
H) Turn off Ext power
I) Turn off Battery switch
J) Disconnect Battery
K) Ensure requirements listed on Aircraft Confined Space Entry Permit are complied with
L) Open Fuel plate
M) Meter Readings
<table>
<thead>
<tr>
<th>Event</th>
<th>#23 United Fuel Tank Entry Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>N)</td>
<td>Oxygen reading (%): Safe level</td>
</tr>
<tr>
<td>O)</td>
<td>Fuel vapor level reading (ppm)</td>
</tr>
<tr>
<td>P)</td>
<td>Combustible gas meter (LEL) reading</td>
</tr>
<tr>
<td>Q)</td>
<td>I confirm that all entry requirements were met prior to any entry</td>
</tr>
<tr>
<td>R)</td>
<td>Signature of Tech</td>
</tr>
<tr>
<td>S)</td>
<td>Remove obstruction if any</td>
</tr>
<tr>
<td>T)</td>
<td>Ok to close tank</td>
</tr>
<tr>
<td>U)</td>
<td>Torque fuel plate</td>
</tr>
<tr>
<td>V)</td>
<td>Connect Aircraft battery</td>
</tr>
<tr>
<td>W)</td>
<td>Connect Ext Power</td>
</tr>
<tr>
<td>X)</td>
<td>Turn on Battery switch</td>
</tr>
<tr>
<td>Y)</td>
<td>Turn on EXT power</td>
</tr>
<tr>
<td>Z)</td>
<td>Activate NGS System: Remove Loto tags, Reset C/B, turn on NGS Switch</td>
</tr>
<tr>
<td>AA)</td>
<td>Verify NGS light is Green and on</td>
</tr>
</tbody>
</table>

**Scoring**

Scores will be calculated according to the [AMC score sheet](#).
Event #24 American Airlines Pedestal

Provided by American Airlines

Contact(s)/Judge(s) TBD

Description Execute removal/replacement of MD-80 pedestal floor light.

References Removal and Replacement Instructions

Tools and equipment list See removal and replacement instructions, linked above.

Team members required One

Instructions See removal and replacement instructions, linked above.

Scoring Scores will be calculated according to the AMC score sheet.
Event #25 JetBlue University ADS-B Troubleshooting

Provided by JetBlue University

Contact(s)/Judge(s) Andy Kozak, Andrew.kozak@jetblue.com

Description Technicians will use modern test equipment, Aeroflex IFR 6000 to validate proper operation and reporting to comply with the upcoming 2020 regulations for all aircraft operating in regulated airspace. The technicians will set-up the mock aircraft to be tested and demonstrate proper testing procedures and document results for completion.

References Event overview

Tools and equipment list Electronic Flight Instrument panel set-up with GPS and Encoder simulators to represent a working modern flightdeck.

Team members required Two

Instructions The technician will fill out a task card with reported information from the IFR 6000. See linked event overview, above, for more information.

Scoring Scores will be calculated according to the AMC score sheet.
Event #26 Spectro Scientific Oil Test Analysis

Provided by Spectro Scientific

Contact(s)/Judge(s) Robert Wopperer, RWopperer@spectrosci.com

Description
This is a skill event to test the mechanics ability to successfully test an oil sample on the FieldLab 58 oil analyzer and produce a test report with automated maintenance recommendations.

References
- FieldLab 58 operators manual
- FieldLab 58 quick start guide
- FieldLab 58 (aka Q5800) Marine Corps case study
- How to run a sample video

Tools and equipment list
- FieldLab 58 Analyzer
- Consumables kit (bottle, syringe, pipette, wipes)
- Printer and paper

Team members required One

Instructions
A) Select the bottle of oil sample
B) Follow the instructions for running a sample through the four test phases on the FieldLab 58
C) Produce a printed report on the printer
D) Clock stops when the printer stops printing
### Event: #26 Spectro Scientific Oil Test Analysis

**Scoring**

Scores will be calculated according to the [AMC score sheet](#). Additional penalties may be assessed for imprecise test results and for each parameter that is more than two standard deviations from the known mean value for this sample on this analyzer.
Event: #27 Abaris Training Composite Repair

Provided by: Abaris Training

Contact(s)/Judge(s): Corrie Volinkaty, Technical Instructor, corrie@abaris.com

Description: This skills event is based on an elevated high temperature, vacuum bagged, composite repair scenario.


Tools and equipment list: Each team will be provided a work packet which includes the Job Card, Repair Ply Material and vacuum bag. All tools & equipment needed to perform this skills event will be provided and reused by all teams including the following items; Vacuum source/hoses/ports, Heatcon Single Zone Bonder/heat blanket/thermocouples, scissors, Stanley Knife, sharpie marker, volt ohm meter, 12-inch scale, circle template, tape dispenser and calculator.

Team members required: Two

Instructions:

A) Competitors may review the job card in the five minutes preceding the event’s official start time. Arriving at the Composite Skills Event early allows for more time to review Job Card & derive a plan of attack.

B) The Job Card can be accomplished in any order that is decided by the team, but all sign off blocks must be completed. Non-completed job cards are a frequently-cited penalty for this event so take care to sign off all blocks.

C) Repair ply material, a rectangle piece of paper, will be used for the repair plies. After drawing a 3”, 4” and 5” circle with the circle template provided, mark the warp direction by drawing a line within each circle. The short side of the repair material is the warp.
Event #27 Abaris Training Composite Repair

direction. Once cut out, follow Job Card for proper orientation of each repair ply...a cause of many deductions in the past, the Judge will be watching closely!!

D) Teams should be familiar with Ohm’s Law when given Voltage, Wattage & solving for Resistance (R = V² / W). This will be used to calculate, measure & document both results on the Job Card. They also need to solve & calculate a resin mix ratio word problem...Example; Based on a given amount of total mixed epoxy resin needed, say 50 grams with a mix ratio 100:35, how many grams of Part A? How many grams of Part B? Teams will clearly write their answers on the Job Card.

E) Teams should also be familiar with vacuum bag processing. Peel ply, Bleeder, solid film, Breather materials needed for this skills challenge will be pre-cut, clearly marked and reused for all other teams. Once their repair area is vacuumed down they can start the bonder.

F) After you are done, the judge will give your time to write on the Job Card. Take a breath... & please help clean up and put the table back the way you found it. All cleanup efforts are greatly appreciated.

G) All teams must understand that these instructions are a general overview of this skills challenge & that there is a lot of detail on the Job Card, that if not followed, can lead to problems and/or unexpected deductions.

Scoring Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for items missed or a block not signed off on a job card.
Event #28 PPG Transparencies, Paint and Wing Sealant

Provided by

Contact(s)/Judge(s) Connie Griesemer, Product Support Engineer, PPG, cgriesemer@ppg.com.

Description This is a four-part event, each consisting of 15 minutes (scored and timed separately). There is a transparencies section, a paint section and a sealant section. The transparencies section will require a framing assembly repair and a Surface Seal application. The paint section will require competitors to use a Virtual Reality (VR) paint booth to simulate painting. The sealant section will require operators to perform sealing on hi-lok fasteners, dome caps and fillet sealing, both by hand and by seal caps/ use of nozzles.

References Technical data sheet for Semco® 1088 Mixer, FlexPak cartridge, Semco® 1250 Battery Gun Instructions provided for repair/application procedures

Tools and equipment list TBA

Team members required Five

Instructions TBA

Scoring Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for any process errors and/or quality concerns.
Event #29 FedEx Express Turbine Engine PDU Removal and Installation

Provided by

Ronald Merkel, rdmerkel@fedex.com

Description This event will test the technician’s ability to remove and install the Thrust Reverser, Pneumatic Drive Unit (PDU) on a Pratt and Whitney JT9D-7R4 turbofan engine.

References None

Tools and equipment list
- QD2R200 TORQ WR 3/8 MECH 40-200IN (1)
- QD2R1000A TORQ WR 3/8 DR 200-1000IN LBS (1)
- 214SFY SOCKET SET (1)
- 211FY 3/8DR 11PC 12PT SHL SKTSET (1)
- F80 3/8DR 80T STD RAT (2)
- FL80 3/8DR 80T LNG RAT (2)
- FXXK6 3/8DR 6IN KNR FRIC BLL EXT (2)
- FXXK11 3/8DR 11IN KNR FRIC BLL EXT (2)
- FCO18A 3/8DR 9/16IN O/END C/FTWR (1)
- FCO20A 3/8DR 5/8IN O/END C/FTWR (1)
- FCO22A 3/8DR 11/16IN O/END C/FTWR (1)
- SSDMR4B 8-3/4IN RAT STD BLK SD (1)
- PWC52A JAW PLIERS (1)
- OEX710 10PC 12PT COMWRSET (1)
<table>
<thead>
<tr>
<th>Event</th>
<th>#29 FedEx Express Turbine Engine PDU Removal and Installation</th>
</tr>
</thead>
</table>

**Team members required**

Two

**Instructions**

See [JT9D Pneumatic Drive Unit – Removal/Installation](#).

**Scoring**

Scores will be calculated according to the [AMC score sheet](#). Additional penalties may be assessed for failure to complete the task, failure to place PDU on table and simulate packing change, failure to show judge torque on wrench before proceeding, failure to install or secure mount bolts, failure to install, secure or torque Lines and B Nuts, incorrect or sloppy safety wiring.
Event: #30(A) Pratt & Whitney PW1100 (NEO) ACC Valve Replacement

Provided by

Contact(s)/Judge(s): TBA

Description: TBA

References

Tools and equipment list: TBA

Team members required: Two

Instructions: TBA

Scoring: Scores will be calculated according to the AMC score sheet.
<table>
<thead>
<tr>
<th>Event</th>
<th>#30 (B) Pratt &amp; Whitney V2500</th>
</tr>
</thead>
</table>

**Provided by**

**Contact(s)/Judge(s)**
TBA

**Description**
TBA

**References**

**Tools and equipment list**
TBA

**Team members required**
Two

**Instructions**
TBA

**Scoring**
Scores will be calculated according to the AMC score sheet.
<table>
<thead>
<tr>
<th>Event</th>
<th>#31 Aircraft Maintenance Technicians Association Charles E. Taylor Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provided by</td>
<td>Aircraft Maintenance Technicians Association</td>
</tr>
<tr>
<td>Contact(s)/Judge(s)</td>
<td>Ken MacTiernan, <a href="mailto:jetdoctor69@gmail.com">jetdoctor69@gmail.com</a></td>
</tr>
<tr>
<td>Description</td>
<td>This event will consist of multiple choice questions relating to Charles E. Taylor’s life and pioneers of aviation maintenance.</td>
</tr>
<tr>
<td>Tools and equipment list</td>
<td>None</td>
</tr>
<tr>
<td>Team members required</td>
<td>One</td>
</tr>
<tr>
<td>Instructions</td>
<td>Each designated team member will sit for a timed, written exam.</td>
</tr>
<tr>
<td>Scoring</td>
<td>Scores will be calculated based on the number of incorrect answers and unanswered questions. The score is not dependent on the time it takes to complete the test.</td>
</tr>
</tbody>
</table>
## Record of Revisions

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<tr>
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<th>REVISION DATE</th>
<th>PAGE(S) AFFECTED</th>
<th>REVISION DESCRIPTION</th>
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<tr>
<td>00</td>
<td>12/18/2018</td>
<td>ALL</td>
<td>Original Issue</td>
</tr>
<tr>
<td>01</td>
<td>02/04/2019</td>
<td>47</td>
<td>Added linked references to PPG/Olympus event</td>
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<tr>
<td>01</td>
<td>02/04/2019</td>
<td>44</td>
<td>Changed Wheel and Break event from three to two competitors</td>
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<tr>
<td>01</td>
<td>02/04/2019</td>
<td>18</td>
<td>Added AeroSkills event</td>
</tr>
<tr>
<td>01</td>
<td>02/04/2019</td>
<td>73</td>
<td>Added titles to P&amp;W event and split into two separate events. Teams will be assigned one of the two events in subsequent versions of this manual.</td>
</tr>
<tr>
<td>01</td>
<td>02/04/2019</td>
<td>38</td>
<td>Added reference materials to Daniels Manufacturing Corporation Safe-T-Cable event</td>
</tr>
<tr>
<td>01</td>
<td>02/04/2019</td>
<td>36</td>
<td>Added video tutorial link to Daniels Manufacturing Electrical Troubleshooting event</td>
</tr>
<tr>
<td>01</td>
<td>02/04/2019</td>
<td>64</td>
<td>Updated description, tooling list, references, and instructions for American Airlines Pedestal event, added link to remove and replace procedures.</td>
</tr>
<tr>
<td>01</td>
<td>02/04/2019</td>
<td>11</td>
<td>Added event grouping</td>
</tr>
<tr>
<td>01</td>
<td>02/04/2019</td>
<td>8</td>
<td>Added team listing</td>
</tr>
<tr>
<td>01</td>
<td>02/04/2019</td>
<td>12</td>
<td>Added event schedule</td>
</tr>
<tr>
<td>01</td>
<td>02/04/2019</td>
<td>5</td>
<td>Revised schedule to remove competition time on Thursday, April 11, reserved for make-up events as needed.</td>
</tr>
<tr>
<td>02</td>
<td>02/06/2019</td>
<td>72</td>
<td>Changed the number of competitors required on the FedEx event to two (previously three), consistent with event grouping numbers as provided on page 11.</td>
</tr>
<tr>
<td>02</td>
<td>02/06/2019</td>
<td>64</td>
<td>Changed the number of competitors required for the American pedestal event to one (previously two), consistent with event grouping numbers as provided on page 11.</td>
</tr>
</tbody>
</table>