AEROSPACE MAINTENANCE COMPETITION

PRESENTED BY Snap-on

# 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 professional and raises awareness of the knowledge and skill required to maintain safe, airworthy aircraft worldwide. **The event will take place April 17-20, 2023, in conjunction with Aviation Week's MRO Americas at the Georgia World Congress Center in Atlanta.**

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 and the world. Five-member teams compete in maintenance events intended to test skill and knowledge required of aviation maintenance professionals. Teams may enter one of the following categories:

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

The competition is made possible through the generous contributions of the aerospace community. A special thank you to all our sponsors that host events, provide prizes, and make monetary contributions in celebration of aviation maintenance professionals.

**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 5405.** The exhibit hall layout is available at https://exhibitor.mroamericas.aviationweek.com/am23/public/eventmap.aspx?shMode=E.

**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://na.eventscloud.com/ereg/index.php?eventid=708416&categoryid=4589387.

Registration is free for AMC participants and visitors. Individuals must be 16 years and older to access the show floor.

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. Participants are highly encouraged to pick up badges on Monday morning to avoid line delays the day of the competition.

- Monday, April 17 — 8:00 am - 6:00 pm
- Tuesday, April 18 — 8:00 am - 5:30 pm
- Wednesday, April 19 — 8:00 am - 5:30 pm
- Thursday, April 20 — 8:00 am - 1:00 pm

**Exhibit Hall Hours**

- Tuesday, April 18 — 9:30 am - 5:30 pm
- Wednesday, April 19 — 9:30 am - 5:30 pm
- Thursday, April 20 — 9:30 am - 1:00 pm

**Schedule of Events**

Monday, April 17

- 8:00 AM – 6:00 PM: Registration (badge collection) for MRO Americas
- 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 18 (Expo floor open to the public at 9:30 AM, doors open for competitors at 8:00 AM)

- 8:00 AM – 9:00 AM: Competitor Walk-Through, Expo floor (competitors, coaches, and judges only)
- 9:00 AM – 5:30 PM: Competition, Expo floor

Wednesday, April 19 (Expo floor open to the public 9:30 AM, doors open for competitors at 8:00 AM)

- 8:30 AM – 5:30 PM: Competition, Expo floor

Thursday, April 20

- 9:00 AM – 12:00 PM: Award Ceremony
- 1:00 PM – 9:00 PM: Event Breakdown

**Competition Rules**

1) Each team consists of five team members.
2) 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.
3) School category teams may be comprised of a combination of—
   a) Currently enrolled students;
   b) Individuals that graduated the institution in the six months previous to the competition that are not currently employed by an aviation-related company; and/or

c) Individuals that are currently employed by an aviation-related company but were enrolled at the school as of April 1, 2023.

4) Each team member must sign a release of liability form to participate. Teams are encouraged to review and bring a signed version to the competition. Hard copies will be provided at orientation if needed. Competitors under the age of 18 must bring a liability release signed by a parent or guardian.
5) Teams have 15 minutes to complete their assigned competitive event. All teams compete in all events.
6) Each event has a designated number of team member(s) required to complete the task. The team will assign member(s) of their choice to compete in each event.
7) 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.
8) Event sponsors provide judges for each event. Judges may stop the clock for their particular event to remedy problems or answer a question at their discretion.
9) Scores are not official until properly recorded in the score dashboard.
10) Score appeals 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.
11) The AMC chairman may remove any team member(s) from the competition for, but not limited to, unprofessional behavior, cheating, etc.
12) 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.
13) Participants are expected to observe personal protection equipment requirements throughout the competition. Failure to observe safety practices will result in penalties.
14) All required tooling and equipment are provided. Personal tools are not allowed.
15) 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.

**Team 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 the wristbands for the duration of the competition. In the event a team member is not able to compete during the event, the alternate must obtain a wristband from the AMC chairman before taking the place of a competing member.

Goodie bags provided at orientation are for competing team members only. Only five bags per team will be distributed. Materials contained in goodie bags *may* be offered to alternates and instructors upon availability.

FOR THE FIRST TIME, alternatives will have an opportunity to compete in an AMC event. Two stages of competition are scheduled after the completion of the competition (designated on the schedule below as ALT RD 1 and ALT RD 2). Only school team alternates are eligible to compete. A sign-up sheet will be available prior to the start of the competition. Specific events will be assigned on a first-come basis.

**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 and bonus points awarded. Standard penalties are assessed for—

- Failure to properly store tools and/or equipment
- Failure to follow procedures or safety-related warnings or cautions
- Incomplete or incorrect recordkeeping
- Improper use of tools or safety equipment

Any additional penalties and bonus opportunities specific to a particular event are detailed in that event's criteria.

Teams and judges will have access to real time scores as they are entered by the scoring committee. Login instructions will be sent to the team's primary contact via email (as provided in the team's registration form) approximately three days prior to the event.

**Event Setup**

Event setup will take place on Monday, April 17 from 8:00 AM to noon.

Event breakdown will take place when the exhibit floor closes on Thursday, April 20 from 1:00 to 9:00 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.

Information regarding shipments and exhibit hall access is in the MRO Americas Exhibitor Manual available at https://mroamericas.aviationweek.com/en/exhibitor-resources1/exhibitor-resources23.html.

**Shipping Information**

To ensure proper delivery, shipments should identify the AMC Booth #5405, and the AMC-designated event or table number (for example, 5405-01, 5405-02, 5405-A, etc.).

Two options are available for shipping to the show in advance:

a) **Warehouse Shipping Address** (for materials arriving between March 16 and April 10)
Aerospace Maintenance Competition / Booth #5405-[Enter Event/Sponsor Table Number]
MRO Americas 2023
C/O Freeman
841 Joseph E Lowery Blvd NW
Atlanta, GA 30318

Freeman will accept crated, boxed or skidded materials beginning Thursday, March 16, 2023, at the above address. Material arriving after April 10, 2023 will be received at the warehouse with an additional after deadline charge. Please note that the Freeman Warehouse does not accept uncrated freight (loose, pad-wrapped material and/or unskidded machinery), COD shipments, hazardous materials, freight requiring refrigerated or frozen storage, a single piece of freight weighing more than 5,000 pounds or a single piece of freight beyond the dimensions of 108" H x 93" W. Warehouse materials are accepted at the warehouse Monday through Friday between the hours of 8:00 AM - 3:30 PM. Certified weight tickets must accompany all shipments. If required, provide your carrier with this phone number: (888) 508-5054.

b) **Show Site Shipping Address** (for materials arriving after April 15)
Aerospace Maintenance Competition / Booth #5405-[Enter Event/Sponsor Table Number]
MRO Americas 2023
C/O Freeman
Georgia World Congress Center
285 Andrew Young International Blvd NW
Atlanta, GA 30313-1591

Freeman will receive shipments at the exhibit facility beginning Saturday, April 15, 2023. Shipments arriving before this date may be refused by the facility. Any charges incurred for early freight accepted by the facility are the responsibility of the Exhibitor. Certified weight tickets must accompany all shipments. If required, provide your carrier with this phone number: (888) 508-5054.

**Competition Layout**

Numbered spaces indicate event assignments. Lettered spaces indicate Career Runway participants.

**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 and any floor and/or table signage that will fit within their designated space. Banners or flags that require hanging or rigging are prohibited.

**Competitor Orientation**

Orientation takes place the day before the competition begins (see schedule, above) and is mandatory for all team members and judges. Guests are not permitted.

One hour before the competition begins, 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 an identifier on the team schedule and to facilitate scoring. Participating teams, their category, and team number assignments are as follows:

| Number | Team Name | Category |
|---|---|---|
| 1 | Blue Origin Test & Flight Operations | Space |
| 2 | Virgin Galactic | Space |
| 3 | Aviation Institute of Maintenance - Atlanta | School |
| 4 | Cape Cod Community College - Team 1 | School |
| 5 | Embry-Riddle University - Team 1 | School |
| 6 | George T. Baker Aviation Technical College | School |
| 7 | Helena College | School |
| 8 | Indian Hills Community College | School |
| 9 | Lewis University | School |
| 10 | Liberty University | School |
| 11 | MIAT College of Technology - Team 1 | School |
| 12 | Middle Tennessee State University - Team 1 | School |
| 13 | Mohawk Valley Community College | School |
| 14 | NIAR WERX | School |
| 15 | Pittsburgh Institute of Aeronautics - Hagerstown | School |
| 16 | San Bernardino Valley College | School |
| 17 | Salt Lake Community College | School |
| 18 | Pittsburgh Institute of Aeronautics - Youngstown | School |
| 19 | Eastern Florida State College | School |
| 20 | South Seattle College | School |
| 21 | Tulsa Tech - Adult Students | School |
| 22 | University of Alaska College | School |
| 23 | Aviation High School | School |

| Number | Team Name | Category |
|---|---|---|
| 24 | West Los Angeles College | School |
| 25 | WSU Tech | School |
| 26 | Pittsburgh Institute of Aeronautics - Myrtle Beach | School |
| 27 | Cape Cod Community College - Team 2 | School |
| 28 | Embry-Riddle University - Team 2 | School |
| 29 | MIAT College of Technology - Team 2 | School |
| 30 | Middle Tennessee State University - Team 2 | School |
| 31 | Pittsburgh Institute of Aeronautics - Pittsburgh | School |
| 32 | Portland Community College | School |
| 33 | Tulsa Tech - Aerospace Academy | School |
| 34 | Aviation Institute of Maintenance - Chicago | School |
| 35 | FedEx Express | MRO/OEM |
| 36 | AzulTec MRO | MRO/OEM |
| 37 | ST Engineering | MRO/OEM |
| 38 | Pratt & Whitney - Team 1 | MRO/OEM |
| 39 | Leonardo DRS Advanced Program Support | MRO/OEM |
| 40 | American Airlines - DWH Air Raiders | MRO/OEM |
| 41 | United Airlines - Base/Line | MRO/OEM |
| 42 | NetJets | MRO/OEM |
| 43 | Pratt & Whitney - Team 2 | MRO/OEM |
| 44 | HAECO Americas | MRO/OEM |
| 45 | Bombardier | MRO/OEM |
| 46 | LATAM - MRO | MRO/OEM |
| 47 | Southwest Airlines - Team Colleen | MRO/OEM |
| 48 | American Airlines - Team Tulsa | MRO/OEM |
| 49 | United States Air Force - 721st Aircraft Maintenance Squadron | Military |
| 50 | United States Air Force - 6th Aircraft Maintenance Group, Macdill AFB | Military |
| 51 | United States Air Force - 86th MXG, Ramstein AB Germany | Military |
| 52 | Royal Canadian Air Force - 433 Tactical Fighter Squadron | Military |
| 53 | United States Air Force - 100 MXS | Military |
| 54 | United States Army - Dominator Aviation, Inc. | Military |
| 55 | United States Air Force - 412 MXG | Military |
| 56 | Royal Canadian Air Force - 12 Air Maintenance Squadron | Military |
| 57 | United States Coast Guard - Aeronautical Engineering Team | Military |
| 58 | United States Air Force - 60 MXG | Military |
| 59 | United States Army - Team Apache | Military |
| 60 | United States Air Force - 309 AMXG | Military |
| 61 | United States Army - 128th Aviation Brigade - Team Blackhawk | Military |
| 62 | United States Air Force - Kirtland Air Force Base | Military |
| 63 | United States Army - 128th Aviation Brigade - Team Chinook | Military |
| 64 | United States Air Force - 436 EDMX | Military |

| Number | Team Name | Category |
|---|---|---|
| 65 | Elevate Aviation - Hangar Queens | General Aviation |
| 66 | Victory Lane Aviation, LLC | General Aviation |
| 67 | American Airlines - LAX Crew | Commercial |
| 68 | United Airlines - Chix Fix | Commercial |
| 69 | Horizon Air | Commercial |
| 70 | Spirit Airlines | Commercial |
| 71 | WestJet Airlines | Commercial |
| 72 | United Airlines - Line | Commercial |
| 73 | AzulTec Line | Commercial |
| 74 | Australian Licenced Aircraft Engineers Association | Commercial |
| 75 | Aircraft Engineers International | Commercial |
| 76 | American Airlines - Chicago | Commercial |
| 77 | American Airlines - MCT Tech Warriors | Commercial |
| 78 | AVIANCA | Commercial |
| 79 | JetBlue | Commercial |
| 80 | Air Canada | Commercial |
| 81 | Southwest Airlines - Team Herb | Commercial |
| 82 | Alaska Airlines - Team Seattle | Commercial |
| 83 | American Airlines - Women in Tech-Ops | Commercial |
| 84 | Alaska Airlines - Team Anchorage | Commercial |

**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 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.

**Event Schedule**

The competition consists of 15-minute stages where teams will compete in a group of events simultaneously. The event schedule provides the start and end time for each stage, and the team numbers assigned to each event for each stage. Numbers within the table indicate team numbers.

*EVENTS WILL BEGIN PROMPTLY AT THE DESIGNATED START TIME AND END AT THE DESIGNATED END TIME. TEAMS ARRIVING LATE WILL NOT RECEIVE DISPENSATION*.

**Tuesday, April 18, 2023**

| | Stage 1 | Stage 2 | Stage 3 | Stage 4 | Stage 5 | Stage 6 | Stage 7 | Stage 8 | Stage 9 | | Stage 10 | Stage 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Start Time** | 9:00 AM | 9:20 AM | 9:40 AM | 10:00 AM | 10:20 AM | 10:40 AM | 11:00 AM | 11:20 AM | 11:40 AM | 11:55 AM | 12:40 PM | 1:00 PM |
| **End Time** | 9:15 AM | 9:35 AM | 9:55 AM | 10:15 AM | 10:35 AM | 10:55 AM | 11:15 AM | 11:35 AM | 11:55 AM | 12:40 PM | 12:55 PM | 1:15 PM |
| **Group 1: Events 1, 2, 9** | 1 & 43 | 9 & 51 | 17 & 59 | 25 & 67 | 33 & 75 | 41 & 83 | 7 & 49 | 15 & 57 | 23 & 65 | LUNCH | 31 & 73 | 39 & 81 |
| **Group 2: Events 3, 4, 8** | 2 & 44 | 10 & 52 | 18 & 60 | 26 & 68 | 34 & 76 | 42 & 84 | 8 & 50 | 16 & 58 | 24 & 66 | | 32 & 74 | 40 & 82 |
| **Group 3: Events 5, 6, 7** | 3 & 45 | 11 & 53 | 19 & 61 | 27 & 69 | 35 & 77 | 1 & 43 | 9 & 51 | 17 & 59 | 25 & 67 | | 33 & 75 | 41 & 83 |
| **Group 4: Events 10, 11, 12, 13, 15** | 4 & 46 | 12 & 54 | 20 & 62 | 28 & 70 | 36 & 78 | 2 & 44 | 10 & 52 | 18 & 60 | 26 & 68 | | 34 & 76 | 42 & 84 |
| **Group 5: Events 14, 16, 17** | 5 & 47 | 13 & 55 | 21 & 63 | 29 & 71 | 37 & 79 | 3 & 45 | 11 & 53 | 19 & 61 | 27 & 69 | | 35 & 77 | 1 & 43 |
| **Group 6: Events 18, 19, 20** | 6 & 48 | 14 & 56 | 22 & 64 | 30 & 72 | 38 & 80 | 4 & 46 | 12 & 54 | 20 & 62 | 28 & 70 | | 36 & 78 | 2 & 44 |
| **Group 7: Events 21, 22, 23** | 7 & 49 | 15 & 57 | 23 & 65 | 31 & 73 | 39 & 81 | 5 & 47 | 13 & 55 | 21 & 63 | 29 & 71 | | 37 & 79 | 3 & 45 |
| **Group 8: Events 24, 25, 26** | 8 & 50 | 16 & 58 | 24 & 66 | 32 & 74 | 40 & 82 | 6 & 48 | 14 & 56 | 22 & 64 | 30 & 72 | | 38 & 80 | 4 & 46 |

| | Stage 12 | Stage 13 | Stage 14 | Stage 15 | | Stage 16 | Stage 17 | Stage 18 | Stage 19 | Stage 20 | Stage 21 | Stage 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Start Time** | 1:20 PM | 1:40 PM | 2:00 PM | 2:20 PM | 2:40 PM | 3:00 PM | 3:20 PM | 3:40 PM | 4:00 PM | 4:20 PM | 4:40 PM | 5:00 PM |
| **End Time** | 1:35 PM | 1:55 PM | 2:15 PM | 2:35 PM | 2:55 PM | 3:15 PM | 3:35 PM | 3:55 PM | 4:15 PM | 4:35 PM | 4:55 PM | 5:15 PM |
| **Group 1: Events 1, 2, 9** | 5 & 47 | 13 & 55 | 21 & 63 | 29 & 71 | BREAK | 37 & 79 | 3 & 45 | 11 & 53 | 19 & 61 | 27 & 69 | 35 & 77 | 26 & 68 |
| **Group 2: Events 3, 4, 8** | 6 & 48 | 14 & 56 | 22 & 64 | 30 & 72 | | 38 & 80 | 4 & 46 | 12 & 54 | 20 & 62 | 28 & 70 | 36 & 78 | 1 & 43 |
| **Group 3: Events 5, 6, 7** | 7 & 49 | 15 & 57 | 23 & 65 | 31 & 73 | | 39 & 81 | 5 & 47 | 13 & 55 | 21 & 63 | 29 & 71 | 37 & 79 | 2 & 44 |
| **Group 4: Events 10, 11, 12, 13, 15** | 8 & 50 | 16 & 58 | 24 & 66 | 32 & 74 | | 40 & 82 | 6 & 48 | 14 & 56 | 22 & 64 | 30 & 72 | 38 & 80 | 3 & 45 |
| **Group 5: Events 14, 16, 17** | 9 & 51 | 17 & 59 | 25 & 67 | 33 & 75 | | 41 & 83 | 7 & 49 | 15 & 57 | 23 & 65 | 31 & 73 | 39 & 81 | 4 & 46 |
| **Group 6: Events 18, 19, 20** | 10 & 52 | 18 & 60 | 26 & 68 | 34 & 76 | | 42 & 84 | 8 & 50 | 16 & 58 | 24 & 66 | 32 & 74 | 40 & 82 | 5 & 47 |
| **Group 7: Events 21, 22, 23** | 11 & 53 | 19 & 61 | 27 & 69 | 35 & 77 | | 1 & 43 | 9 & 51 | 17 & 59 | 25 & 67 | 33 & 75 | 41 & 83 | 6 & 48 |
| **Group 8: Events 24, 25, 26** | 12 & 54 | 20 & 62 | 28 & 70 | 36 & 78 | | 2 & 44 | 10 & 52 | 18 & 60 | 26 & 68 | 34 & 76 | 42 & 84 | 7 & 49 |

## Wednesday, April 19, 2023

| | Stage 23 | Stage 24 | Stage 25 | Stage 26 | Stage 27 | Stage 28 | | Stage 29 | Stage 30 | Stage 31 | Stage 32 | Stage 33 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Start Time** | 8:30 AM | 8:50 AM | 9:10 AM | 9:30 AM | 9:50 AM | 10:10 AM | 10:30 AM | 10:50 AM | 11:10 AM | 11:30 AM | 11:50 AM | 12:10 PM |
| **End Time** | 8:45 AM | 9:05 AM | 9:25 AM | 9:45 AM | 10:05 AM | 10:25 AM | 10:45 AM | 11:05 AM | 11:25 AM | 11:45 AM | 12:05 PM | 12:25 PM |
| **Group 1: Events 1, 2, 9** | 8 & 50 | 16 & 58 | 24 & 66 | 32 & 74 | 40 & 82 | 6 & 48 | BREAK | 14 & 56 | 22 & 64 | 30 & 72 | 38 & 80 | 4 & 46 |
| **Group 2: Events 3, 4, 8** | 9 & 51 | 17 & 59 | 25 & 67 | 33 & 75 | 41 & 83 | 7 & 49 | | 15 & 57 | 23 & 65 | 31 & 73 | 39 & 81 | 5 & 47 |
| **Group 3: Events 5, 6, 7** | 10 & 52 | 18 & 60 | 26 & 68 | 34 & 76 | 42 & 84 | 8 & 50 | | 16 & 58 | 24 & 66 | 32 & 74 | 40 & 82 | 6 & 48 |
| **Group 4: Events 10, 11, 12, 13, 15** | 11 & 53 | 19 & 61 | 27 & 69 | 35 & 77 | 1 & 43 | 9 & 51 | | 17 & 59 | 25 & 67 | 33 & 75 | 41 & 83 | 7 & 49 |
| **Group 5: Events 14, 16, 17** | 12 & 54 | 20 & 62 | 28 & 70 | 36 & 78 | 2 & 44 | 10 & 52 | | 18 & 60 | 26 & 68 | 34 & 76 | 42 & 84 | 8 & 50 |
| **Group 6: Events 18, 19, 20** | 13 & 55 | 21 & 63 | 29 & 71 | 37 & 79 | 3 & 45 | 11 & 53 | | 19 & 61 | 27 & 69 | 35 & 77 | 1 & 43 | 9 & 51 |
| **Group 7: Events 21, 22, 23** | 14 & 56 | 22 & 64 | 30 & 72 | 38 & 80 | 4 & 46 | 12 & 54 | | 20 & 62 | 28 & 70 | 36 & 78 | 2 & 44 | 10 & 52 |
| **Group 8: Events 24, 25, 26** | 15 & 57 | 23 & 65 | 31 & 73 | 39 & 81 | 5 & 47 | 13 & 55 | | 21 & 63 | 29 & 71 | 37 & 79 | 3 & 45 | 11 & 53 |

| | | Stage 34 | Stage 35 | Stage 36 | Stage 37 | Stage 38 | Stage 39 | Stage 40 | Stage 41 | Stage 42 | ALT RD 1 | ALT RD 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Start Time** | 12:25 PM | 1:10 PM | 1:30 PM | 1:50 PM | 2:10 PM | 2:30 PM | 2:50 PM | 3:10 PM | 3:30 PM | 3:50 PM | 4:10 PM | 4:30 PM |
| **End Time** | 1:10 AM | 1:25 PM | 1:45 PM | 2:05 PM | 2:25 PM | 2:45 PM | 3:05 PM | 3:25 PM | 3:45 PM | 4:05 PM | 4:25 PM | 4:45 PM |
| **Group 1: Events 1, 2, 9** | LUNCH | 12 & 54 | 20 & 62 | 28 & 70 | 36 & 78 | 2 & 44 | 10 & 52 | 18 & 60 | 42 & 84 | 34 & 76 | Alternates: Sign up at AMC table | |
| **Group 2: Events 3, 4, 8** | | 13 & 55 | 21 & 63 | 29 & 71 | 37 & 79 | 3 & 45 | 11 & 53 | 19 & 61 | 27 & 69 | 35 & 77 | | |
| **Group 3: Events 5, 6, 7** | | 14 & 56 | 22 & 64 | 30 & 72 | 38 & 80 | 4 & 46 | 12 & 54 | 20 & 62 | 28 & 70 | 36 & 78 | | |
| **Group 4: Events 10, 11, 12, 13, 15** | | 15 & 57 | 23 & 65 | 31 & 73 | 39 & 81 | 5 & 47 | 13 & 55 | 21 & 63 | 29 & 71 | 37 & 79 | | |
| **Group 5: Events 14, 16, 17** | | 16 & 58 | 24 & 66 | 32 & 74 | 40 & 82 | 6 & 48 | 14 & 56 | 22 & 64 | 30 & 72 | 38 & 80 | | |
| **Group 6: Events 18, 19, 20** | | 17 & 59 | 25 & 67 | 33 & 75 | 41 & 83 | 7 & 49 | 15 & 57 | 23 & 65 | 31 & 73 | 39 & 81 | | |
| **Group 7: Events 21, 22, 23** | | 18 & 60 | 26 & 68 | 34 & 76 | 42 & 84 | 8 & 50 | 16 & 58 | 24 & 66 | 32 & 74 | 40 & 82 | | |
| **Group 8: Events 24, 25, 26** | | 19 & 61 | 27 & 69 | 35 & 77 | 1 & 43 | 9 & 51 | 17 & 59 | 25 & 67 | 33 & 75 | 41 & 83 | | |

| | |
|---|---|
| Event | #1 8Tree and Alaska Airlines Airframe Damage Inspection |
| Provided by |  |
| Team members required | Two |
| Contact(s)/Judge(s) | Howard Chung, howard@8-tree.com<br>Keith Li, keith@8-tree.com |
| Description | Competitors will measure dent damages on an airframe panel using traditional methods and with the dentCHECK inspection tool. Competitors will be evaluated on the ability to follow the prescribed steps outlined in the manual. |
| References | Task Instructions |
| Tools and equipment list | Depth gauge, six-inch ruler, marker, flashlight, calculator, calibration block, camera, dentCHECK inspection tool |
| Instructions | Within the allocated 15 minutes, complete tasks in order:<br>1. Evaluate dent as per Task #1 Manual (Dent Evaluation using Traditional Method)<br>2. Repeat dent evaluation as per Task #2 Manual (Dent Evaluation using dentCHECK) |
| Scoring | Scores will be calculated according to the AMC score sheet. |

| | |
|---|---|
| Event | #2 U.S. Air Force Flex Fluid Lines |
| Provided by | U.S. AIR FORCE |
| Team members required | Two |
| Contact(s)/Judge(s) | TSgt Chad Cunningham chad.cunningham.2@us.af.mil<br>SSgt Immanuel Feete Immanuel.feete@us.af.mil<br>SrA Connor Loeffler connor.loeffler@us.af.mil |
| Description | Hose assembly length is 11.5 inches (“A”). Assembly length is measured from middle of b-nut flat to middle of b-nut flat. Cutoff factor for each hose end fitting is .75 inches (“C”) (See figure 6) |
| References | None |
| Tools and equipment list | Qty 2, 11/16 combination wrench<br>Qty 1, 13/16 combination wrench<br>Qty 1, tape measure<br>Qty 1, feeler gauge (0.23 - .046)<br>Qty 1, 3/8" dr torque wrench able to torque 190-215 in lbs.<br>Qty 1, 3/8" dr 11/16" crow foot<br>Qty 1, hacksaw blade (32 TPI)<br>Qty, 1 diagonal cutters<br>Qty 1, brass pick<br>Qty 2, leather gloves |
| A) Instructions | B) Medium pressure PTFE hose buildup<br>1) Measure hose to required length |

| Event | #2 U.S. Air Force Flex Fluid Lines |
|---|---|

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

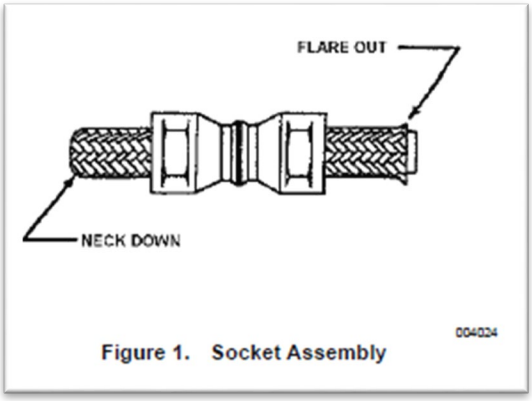


Figure 1. Socket Assembly

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).

| Event | #2 U.S. Air Force Flex Fluid Lines |
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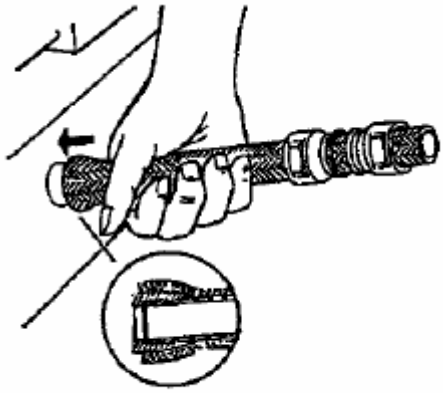

004026

Figure 3. Positioning Sleeve

9) Check tube end to make sure it is bottomed against sleeve and wires are not trapped under sleeve. Trim excess wires as needed.
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

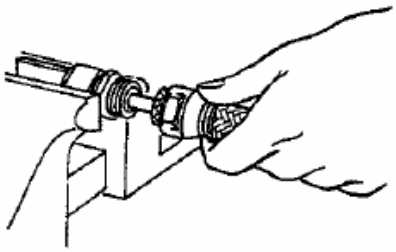

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Figure 4. Positioning Socket and Nipple

14) Reposition assembly by placing socket flats in vise.

| Event | #2 U.S. Air Force Flex Fluid Lines |
|---|---|

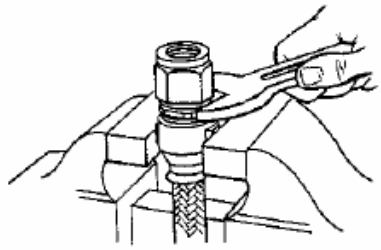

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Figure 5. High-Pressure Hose Tightening Assembly

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.

C) Medium pressure PTFE hose install
1) Place hose into fixture assembly, threading coupling nuts on by hand.
2) Torque coupling nuts 190-215 in lbs. utilizing a backup wrench.

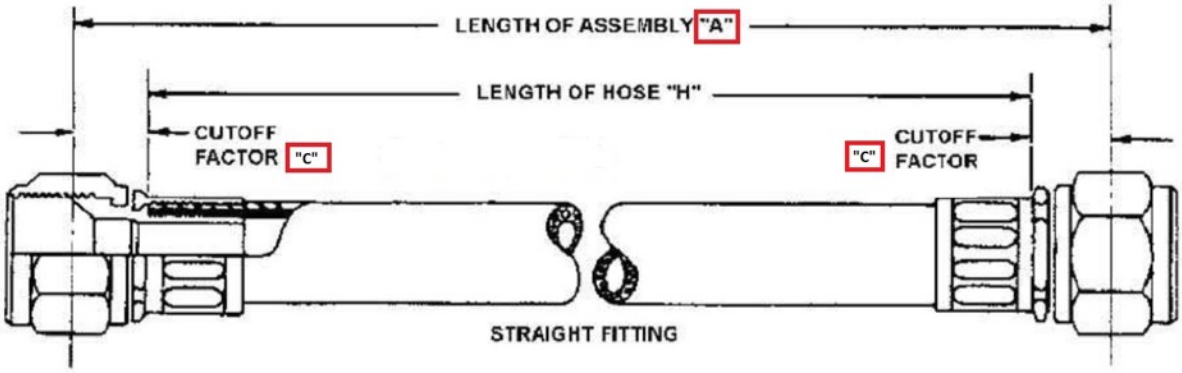



Figure 6.

| Scoring | Scores will be calculated according to the AMC score sheet. |
|---|---|

| Event | #3 Barfield Air Data Test |
|---|---|
| Provided by | BARFIELD |
| Team members required | Two |
| Contact(s)/Judge(s) | Victor Bontorno, Director Distribution & GSTE, 305-894-5408, 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 | DPS1000 – RVSM Digital Pitot Static Test Set Brochure |
| Tools and equipment list | See instructions |
| Instructions | Air Data Procedure |
| Scoring | Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for damaging indicators, not following cautions outlined in the procedure, replacing hose with incorrect parts, unnecessarily replacing a good hose, incorrectly identifying a broken indicator, or loitering in the Pitot-Static event area prior to competing. |

| | |
|---|---|
| Event | #4 Barfield Fault Test |
| Provided by | BARFIELD |
| Team members required | Two |
| Contact(s)/Judge(s) | Victor Bontorno, Director Distribution & GSTE, 305-894-5408, 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 intermittent failures and wiring integrity. Barfield recommends participants fully understand aircraft electrical systems and wiring with potential issues that could be found. The faults found during this procedure will test this knowledge. |
| References | Universal Synaptics PIFD – Portable Intermittent Fault Detector<br>Intermittent Fault Detection Technology from Universal Synaptics<br>Intermittent Fault Detection User Guide<br>Portable Intermittent Fault Detector Specifications<br>IFD Sample Process Guide |
| Tools and equipment list | See instructions |
| Instructions | Intermittent Fault Detection & Isolation with the Portable Intermittent Fault Detector Instructions |
| Scoring | Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for loitering in the event area prior to competing. |

| Event | #5 FedEx Safety Wiring |
|---|---|
| Provided by |  |
| Team members required | Two |
| Contact(s)/Judge(s) | Christopher Hart, christopher.hart@fedex.com<br>Meschelle Barnes, meschelle.barnes@fedex.com |
| Description | This event will test each participant's skill and speed while accomplishing a series of safety wire patterns and safeties. |
| References | AC 43.13-1B - Acceptable Methods, Techniques, and Practices Aircraft Inspection and Repair (w/Change 1) (faa.gov)<br>MD-11 Aircraft Maintenance Manual |
| Tools and equipment list | Safety wire pliers P/N: WTG8A (qty 2)<br>Cannon plug pliers P/N: ATI508KG (qty 2)<br>Flat head screwdriver P/N: SGD2BO (qty 2)<br>0.020 safety wire P/N: WT105-2016 (qty 2)<br>0.032 safety wire P/N: WT105-3216 (qty 2)<br>Diagonal cutters P/N: 808CF (qty 2)<br>Needle nose pliers P/N: 96ACF (qty 2) |
| Instructions | Two team members will safety wire 11 different areas and 2 bonus areas inside of a box within the 15-minute time limit. Competitors will remove 1 or 2 side panels. The top panel is not to be removed during |

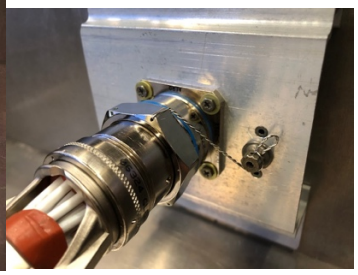
| Event | #5 FedEx Safety Wiring |
|---|---|

the event. After the panel(s) are removed, the team may approach the safety areas in the order they choose. Once the 11 safety wires are complete, the team must notify the judge and time will stop. Team members may now use the remaining time from the 15 minutes to safety the bonus section. The time used to safety the bonus section will not be counted towards your total time. Each safety wire correctly completed in the bonus section will deduct 30 seconds from the team's initial time. Removed side panels will not be required to be reinstalled to complete the event.

Two additional safety wires may be completed as a bonus once the designated 11 areas are complete. Safety areas include:

1) MD-11 flap bus cable turnbuckle (qty 1)

2) Cannon plugs (qty 2) NOTE: cannon plugs must be connected correctly to their receptacles and torqued with the cannon plug pliers. Safety wire size for all cannon plugs is 0.020”

3) MD-11 spoiler actuator push rod (qty 1)

4) MD-11 brake bleed ports (qty 3)

| Event | #5 FedEx Safety Wiring |
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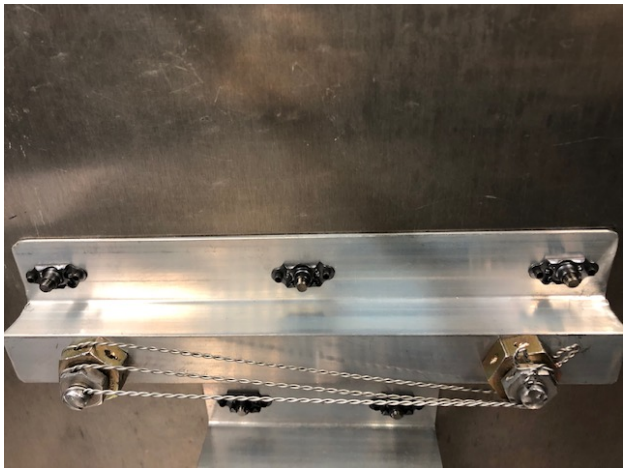
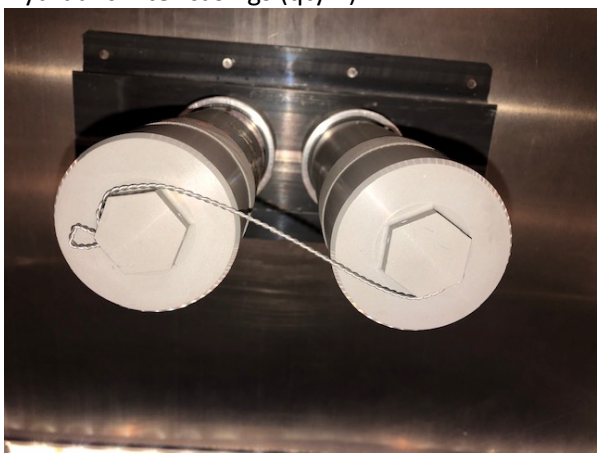


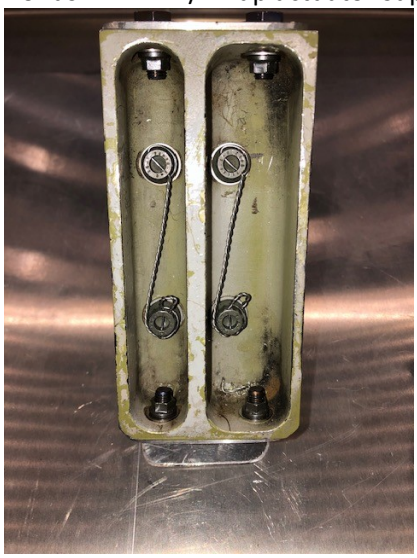
5) MD-10 core cowl U-bolts (qty 3)

| Event | #5 FedEx Safety Wiring |
|---|---|

6) Hydraulic filter casings (qty 1)



7) Bonus: MD-11 I/B flap actuator support structure (qty 2)



Scoring

Scores will be calculated according to the AMC score sheet. Thirty second penalties will be assessed for incorrect size, routing or twist-per-inch, which will be graded based on AC 43.13-1B and pictures provided above. If any section is not completed before starting the bonus section, or if the top access lid is removed, the team shall be scored at the maximum 15-minute time limit.

| | |
|---|---|
| Event | #6 FedEx Express Cargo Floor Lock |
| Provided by |  |
| Team members required | One |
| Contact(s)/Judge(s) | Christopher Hart, christopher.hart@fedex.com<br>Meschelle Barnes, meschelle.barnes@fedex.com |
| Description | This event will test the technician's ability to remove, disassemble, inspect, repair, reassemble, and install a cargo floor lock that is found on the freighter aircraft. |
| References | None |
| Tools and equipment list | Telescoping Magnet (UPT35)<br>8 Ounce Ballpeen Hammer (BP8B)<br>8 Inch Duckbill Pliers (61CFO)<br>3 Piece Plier Set (PL307ACFO)<br>Soft Grip Cotter Pin Puller (SGCP1BO)<br>8 Inch Hook Scribe (YA338A)<br>8 Inch 90 Degree Scribe (YA339A)<br>¼ Inch 40-200 In LB Torque Wrench (QE1R200)<br>3/8 12 Point Offset Ratchet Wrench (OXR12A)<br>5/16 12 Point Offset Ratchet Wrench (OXR10)<br>1/4in Drive 12 Point Shallow Socket sizes 5/16, 3/8, & 7/16 (110TMDY)<br>¼ Inch Drive 4 Inch Extension Knurled (TMXK4) |

| Event | #6 FedEx Express Cargo Floor Lock |
|---|---|
| | ¼ Inch Drive 2 Inch Extension Knurled (TMXK2)<br>¼ Inch Drive 6 Inch Ratchet (THLD72DP) |
| Instructions | Floor Lock Instructions |


| Scoring | Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for failure to show judge torque on wrench before proceeding, failure to install or secure mount bolts, failure to install, torsion spring properly or installing the lock on the seat track incorrectly. |
|---|---|

| | |
|---|---|
| Event | #7 Abaris Training Composite Repair |
| Provided by | ABARIS TRAINING |
| Team members required | Two |
| 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. |
| References | Text book titled "Essentials of Advance Composite Fabrication & Repair" Available thru Aviation Supplies & Academics, Inc.'s website www.asa2fly.com |
| 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. |
| 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.<br>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.<br>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 | #7 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!!<br>D) Teams should be familiar with Ohm's Law when given Voltage, Wattage & solving for Resistance ($R = V^2 \div W$). 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.<br>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.<br>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.<br>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 | #8 Daniels Manufacturing Corporation® Safe-T-Cable® |
| Provided by | DANIELS MANUFACTURING CORPORATION® |
| Team members required | One |
| Contact(s)/Judge(s) | Please direct all emails to Irene Montanaro at Irenem@dmctools.com<br>Judges: Bill Randall, Art Siwecki, Courtney Cozzitorto, and John Whittles |
| 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<br>Verification Equipment<br>Elongated Ferrules<br>Self-Looping Jumper Assembly Cable |
| Tools and equipment list | SCTR325 Safe-T-Cable® Tool (5 inch nose for .032 cable)<br>C10-218 Cable (.032 x 18" safety cables)<br>F10-04 Elongated Ferrules (use where low profile bolts or connectors are present)<br>C10-218JA Self-Looping Jumper Assemblies<br>SCT-TB1 Torque Verification Block<br>SCTD013 Force Tester<br>3/8" Drive Torque Wrench |

| Event | #8 Daniels Manufacturing Corporation® Safe-T-Cable® |
|---|---|
| Instructions | Competitors must first verify proper function and tension 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 after applying measured force. The SCTD013 force tester is then used to verify cable tension after torque verification. Once verification is complete the torque wrench should be returned to zero torque and stored.<br><br>Competitors will then complete as many 2 or 3 bolt patterns as they can in the allotted time. Competitors must properly thread Safe-T-Cable® through the fasteners in a manner that maintains positive tension. Competitors will properly tension the Safe-T-Cable® and crimp a ferrule on the end of the cable using the SCTR325 rotary tool. Any excess cable/FOD must be properly disposed of after application is complete.<br><br>Bonus: The contestant may choose to use a self-looping jumper assembly to secure a threaded fastener to an adjacent structure. |
| Scoring | Scores will be calculated according to the AMC score sheet. Additional penalties will be assessed related to tautness of the cable. |

| Event | #9 Michelin Aircraft Tire Inspection |
|---|---|
| Provided by |  |
| Team members required | One |
| Contact(s)/Judge(s) | Mark Hiscott, Aviation Technical Director – Americas, mark.hiscott@michelin.com<br>Randy Hedrick, Customer Support Engineer randy.hedrick@michelin.com |
| Description | Competitors will answer inspection requirement questions and perform an airworthiness inspection of an aircraft tire including visual inspection, tire pressure reading, inspection record, and required maintenance actions. |
| References | CYGNUS X1 Aircraft Maintenance Manual, Task 32-0000001<br>CYGNUS X1 Aircraft Maintenance Manual, Task 32-0000002<br>Michelin Aircraft Tire Care & Service Manual<br>Tire Inspection Form |
| Tools and equipment list | Proper Tire Pressure Gauge<br>Tread Depth Gauge<br>Tire Inspection Form<br>Appropriate PSE<br>Flashlight |

| Event | #9 Michelin Aircraft Tire Inspection |
|---|---|
| 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 stationery for 4 hours.<br>A) Answer the following questions:<br>1) How does altitude and air temperature affect landing performance of aircraft tires?<br>2) How often should on-wing aircraft tire pressures be verified?<br>3) How much is the pressure of an aircraft wheel/tire assembly allowed to decrease in 24 hours?<br>4) What is the cause of Chevron Cutting?<br>5) What is the purpose of the Sidewall Vents?<br>B) Perform visual inspection of wheel/tire assembly per job card including tread depth.<br>C) Record the following on the Cygnus X-1 Tire Inspection Form:<br>1) Tire Part Number and Size including Ply, Load and Speed Rating<br>2) Tire Serial Number<br>3) Retread Level<br>4) Remaining Tire Skid Depth<br>D) Record any noted conditions and damages on inspection form. Determine tire disposition and required actions.<br>E) Perform Tire Pressure Check and record readings. Determine tire disposition and required actions.<br>F) Determine what corrective actions may be required and make appropriate maintenance log entries. |
| Scoring | Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for incorrect answers/log entries. |

| | |
|---|---|
| Event | #10 Moeller Aerospace Click-Loc® Challenge – We Won't Back Off |
| Provided by | MOELLER AEROSPACE<br>CLICK-LOC SELF-LOCKING TECHNOLOGY |
| Team members required | One |
| Contact(s)/Judge(s) | Edward Probst, Director, probste@click-loc.com<br>Eric Zochowski, Design Engineer<br>Katie Feser, Senior Sales Manager |
| Description | This is a skill event that compares the installation of Safety Wire to Click-Loc® Self-Locking Technology |
| References | Safety Wire Specification AS567<br>Click-Loc® Installation Instructions |
| Tools and Equipment List | Station #1:<br>A) 13/16" combination box end wrench<br>B) 3/4" Crowfoot wrench with 3/8 "drive<br>C) 1-150 lb/in torque wrench with 3/8" drive<br>Station #2:<br>A) 13/16" combination box end wrench<br>B) 3/4" Crowfoot wrench with 3/8" drive<br>C) 1-150 lb/in torque wrench with 3/8" drive<br>D) Safety wire pliers<br>E) Safety wire .032 CS<br>F) Wire cutters<br>Station #3: |

| Event | #10 Moeller Aerospace Click-Loc® Challenge – We Won't Back Off |
|---|---|

A) 3/8" drive ratchet
B) 2" - 3/8" drive extension
C) 1-150 lb/in torque wrench with 3/8" drive
D) 9/16" Socket
E) 13/16" Socket

Station #4:

A) 3/8" drive ratchet
B) 2" - 3/8" drive extension
C) 1-150 lb/in torque wrench with 3/8" drive
D) 9/16" Socket
E) 13/16" Socket
F) Safety wire pliers
G) Safety wire .032 CS
H) Wire cutters

Station #5:

A) 11/16" combination box end wrench
B) 11/16" Crowfoot wrench 3/8" drive
C) 1-150 lb/in torque wrench with 3/8" drive

Station #6:

A) 11/16" combination box end wrench
B) 11/16" Crowfoot wrench 3/8" drive
C) 1-150 lb/in torque wrench with 3/8" drive
D) Safety wire pliers
E) Safety wire .032 CS
F) Wire cutters

| Event | #10 Moeller Aerospace Click-Loc® Challenge – We Won't Back Off |
|---|---|
| Instructions | A) Station 1 – Upper left corner of panel (Click-Loc® turnbuckle)<br>1) Rotate and adjust the Heim joint to fit over the stud.<br>2) Torque the jam nut to 100 lb/in +/- 5 lb/in.<br>B) Station 2 – Upper right corner of panel (safety wire turnbuckle)<br>1) Rotate and adjust the Heim joint to fit over the stud.<br>2) Safety wire the jam nut to the turnbuckle body per AS567.<br>C) Station 3 – Middle left side of panel (Click-Loc® Brake Bleeder)<br>1) Install adapter into port.<br>2) Torque adapter to port to 100 lb/in +/- 5 lb/in.<br>3) Install Click-Loc® bleed valve into adapter and torque to 35 lb/in +/- 5 lb/in.<br>D) Station 4 – Middle right side of panel (standard brake bleeder)<br>1) Install adapter into port.<br>2) Torque adapter to 100 lb/in +/- 5 lb/in.<br>3) Safety wire adapter to the port per AS567.<br>4) Install standard bleed valve into adapter and torque to 25 lb/in +/- 5 lb/in.<br>5) Safety wire bleed valve to adapter per AS567.<br>E) Station 5 – Lower Left side of panel (Click-Loc® -06 fluid fitting)<br>1) Slide the B-Nut down the fluid tube and connect to the nipple of the bulkhead fitting and hand thread together.<br>2) Torque the B-nut to 70 lb/in +/- 10 lb/in.<br>F) Station 6 – Lower right side of panel (safety wire -06 fluid fitting)<br>1) Slide the B-nut down the fluid tube and connect to the nipple of the bulkhead fitting and hand thread together.<br>2) Torque the B-nut to 70 lb/in +/- 10 lb/in.<br>3) Safety Wire the B-nut to the bulkhead fitting per AS567. |
| Scoring | Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for failure to validate torque wrench settings with judge before use. |

| | |
|---|---|
| Event | #11 (A) Pratt & Whitney Active Clearance Control Valve Test |
| Provided by | |
| Team members required | One |
| Contact(s)/Judge(s) | Hank Norton james.k.norton@pw.utc.com |
| Description | The task involves the removal, inspection, and replacement of an Active Clearance Control (ACC) valve installed on the PW1100G-JM engine.<br>**NOTE: This event is made up of two separate tasks. Teams numbered 1-42 will complete Event #11(A) and teams numbered 43-84 will complete Event #11(B).** |
| References | 43.13-1B – Acceptable Methods, Techniques, and Practices – Aircraft Inspection and Repair |
| Tools and equipment list | Electrical Connector Pliers<br>3/8” drive ratchet<br>3/8” drive 6” extension<br>3/8” drive, 3/8” 12 point deep well socket<br>11/16” open end wrench<br>½” open end wrench<br>7/8” open end wrench<br>Dead blow plastic hammer<br>6” flathead screwdriver |

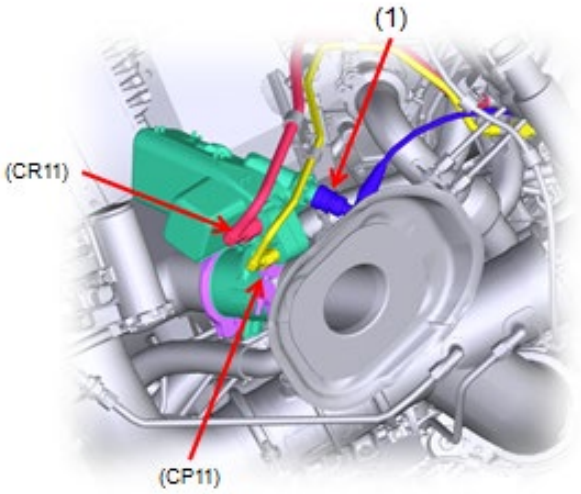
| Event | #11 (A) Pratt & Whitney Active Clearance Control Valve Test |
|---|---|
| | 3/8” drive torque wrench (click type – 200-1000 in/lb)<br>3/8” drive torque wrench (click type – 40-200 in/lb)<br>3/8” drive, 7/8” crows-foot<br>3/8” drive, 11/16” crows-foot<br>Lint-Free cotton cloth |

Instructions

***Removal***

1) Using the connector pliers, disconnect the electrical connector (1) from the ACC valve connection point.

2) Place a lint-free cotton cloth under the servo fuel tubes (CR11) and (CP11) to absorb any fluid leakage.



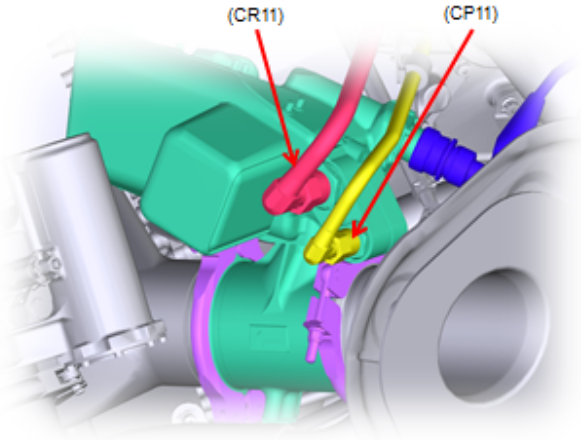
| Event | #11 (A) Pratt & Whitney Active Clearance Control Valve Test |
|---|---|

3) Use a 7/8" wrench to loosen the servo return fuel tube B-nut (CR11) while using a 11/16" wrench as a back-up to apply counter-torque.

4) Disconnect the servo return fuel tube from the ACC valve.

5) Use a 11/16" wrench to loosen the servo pressure fuel tube B-nut (CP11) while using a ½" wrench as a back-up to apply counter-torque.

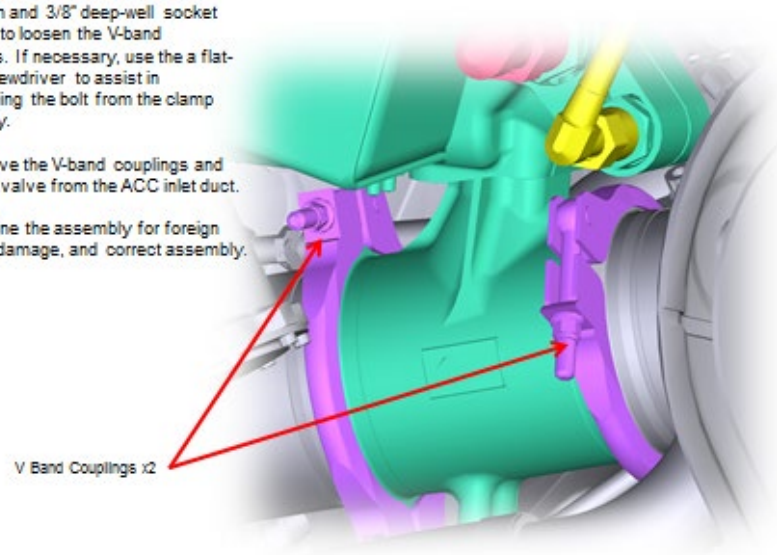
6) Disconnect the servo pressure tube from the ACC valve




7) Use a 3/8" drive ratchet with a 6" extension and 3/8" deep-well socket installed to loosen the V-band couplings. If necessary, use the a flat-head screwdriver to assist in disengaging the bolt from the clamp assembly.

8) Remove the V-band couplings and the ACC valve from the ACC inlet duct.

9) Examine the assembly for foreign objects, damage, and correct assembly.



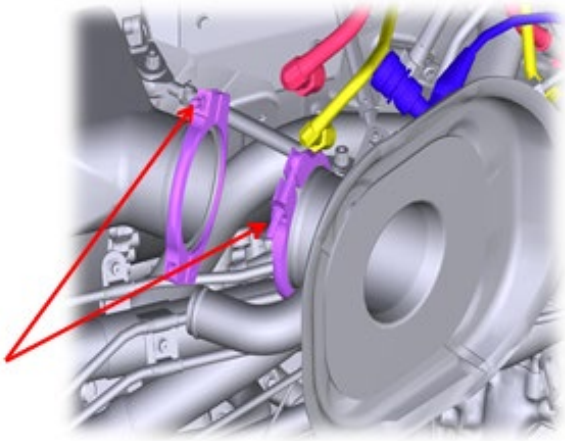
| Event | #11 (A) Pratt & Whitney Active Clearance Control Valve Test |
|---|---|

***Installation***

Install the Active Clearance Control Valve as follows:

1) Place the V-band coupling on the inlet duct side of the valve.

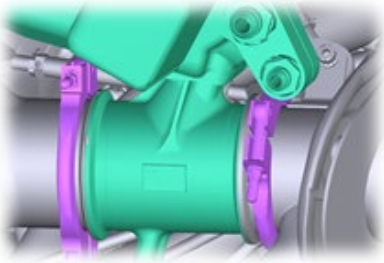
2) Place the V-band coupling on the outlet duct side of the valve.

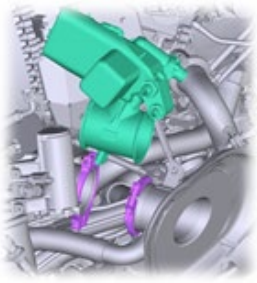


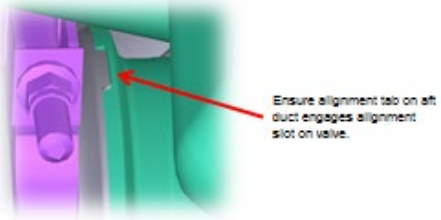

Hardware removed from graphic for clarity

3) Place the valve in position between the ducts.

4) Maneuver the V-band couplings to engage both the ducts and the ACC valve.

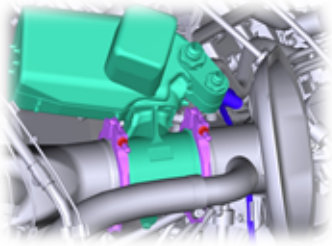






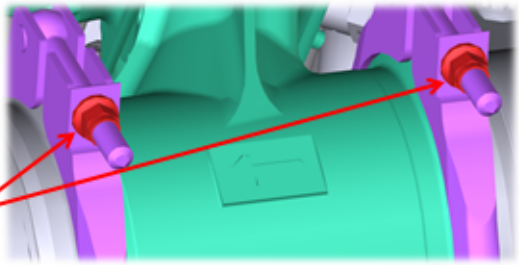
| Event | #11 (A) Pratt & Whitney Active Clearance Control Valve Test |
|---|---|

5) Using a 3/8" drive torque wrench with a 6" extension and a 3/8" deep-well socket installed, apply a torque of between 85 - 100 in.lb. to the two V-band coupling nuts.



6) Tap the V-band couplings at several places around their perimeter lightly with a soft face mallet to ensure proper seating.

7) Re-Torque the two V-band coupling nuts using the torque wrench combination from step #5 again until the torque indication holds.



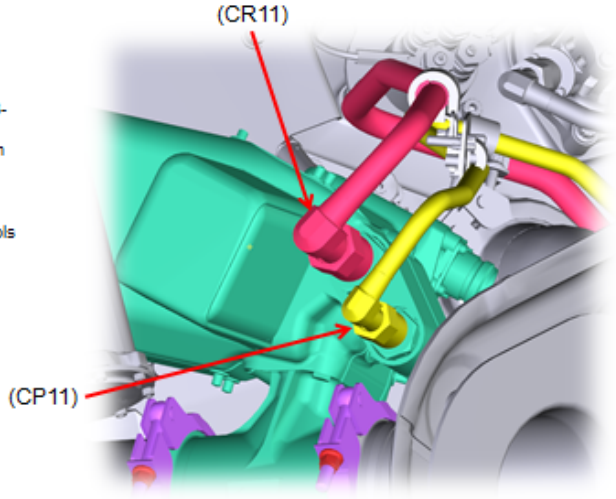

Hardware removed from graphic for clarity

8) Connect the servo fuel tubes (CR11) and (CP11) to the ACC valve by hand.

9) Using a 3/8" drive torque wrench with a 6" extension and a 7/8" crows-foot, apply an initial torque of between 200 - 225 in.lb. to the tube B-nut (CR11). Apply counter-torque using a 11/16" wrench while applying torque.

10) Fully loosen the tube B-nut using the appropriate tools while keeping the b-nut engaged on the threads.

11) Using the tools and practices from step #9, re-apply a final torque of between 200 - 225 lb.in. to the tube B-nut (CR11).

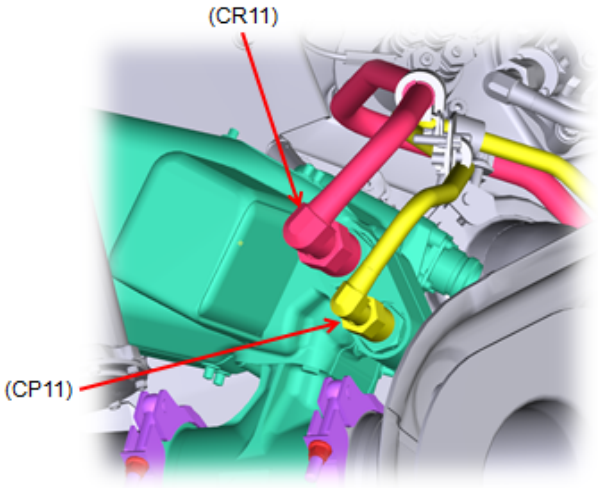


| Event | #11 (A) Pratt & Whitney Active Clearance Control Valve Test |
|---|---|

12) Using a 3/8" drive torque-wrench with a 6" extension and a 11/16" crows-foot installed , apply an initial torque of between 340 - 375 in. lb. to the tube B-nut (CP11).

13) Fully loosen the tube b-but using the appropriate tools while keeping the b-nut engaged on the threads.

14) Using the tools and practices from step #12, re-apply a final torque of between 340 - 375 in. lb. to the tube B-nut (CP11).

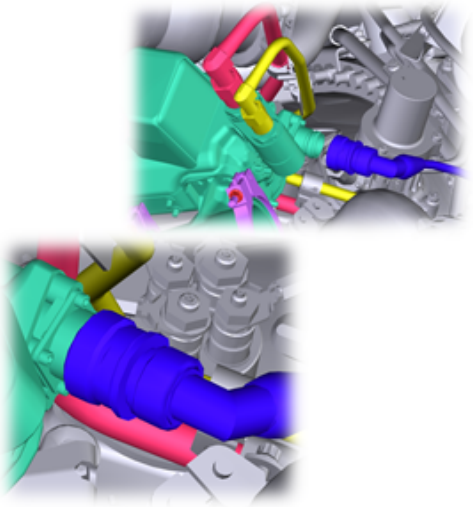



15) Align and engage the electrical connector of the wiring harness with the connection receptacle on the ACC valve.

16) Push lightly inward on the electrical connector while tightening the coupling ring by hand.

17) Using the connector pliers, tighten the electrical connector to the connection receptacle on the valve.

18) Tighten the connection until the connector pliers slip on the connector ring or until it no longer rotates.



| Scoring | Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for failure to place cloth under fuel lines, validate torque wrench settings with the judge before use, use back-up wrenches properly to apply counter-torque, or visually examine the ACC valve and report findings to the judge. |
|---|---|

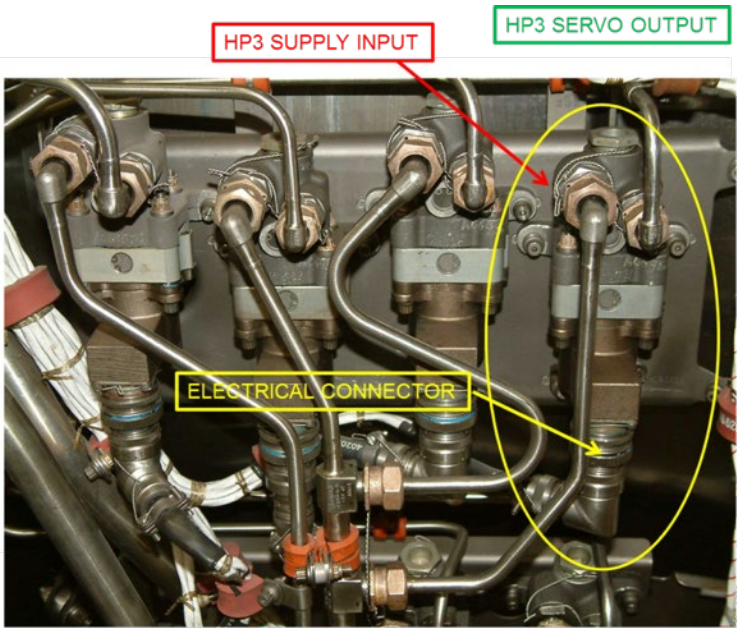
| | |
|---|---|
| Event | #11(B) Pratt & Whitney Bleed Valve Solenoid Test |
| Provided by |   |
| Team members required | One |
| Contact(s)/Judge(s) | Steve Lewis steve.lewis@pw.utc.com |
| Description | This is a skill event that requires utilization of engine test equipment to determine proper function of engine components.<br>**NOTE: This event is made up of two separate tasks. Teams numbered 1-42 will complete Event #11(A) and teams numbered 43-84 will complete Event #11(B).** |
| References | V2500 HPC STAGE 7 SOLENOID VALVE 4020KS2, REMOVAL – FUNCTIONAL – TEST INSTRUCTIONS<br>BASIC SOLENOID TEST PROCEDURES LISTED ON TEST SET FACE PLATE |
| Tools and equipment list | IAE 2R19437 TEST SET<br>11/16 COMBINATION WRENCH<br>¾ COMBINATION WRENCH<br>13/16 COMBINATION WRENCH<br>7/8 COMBINATION WRENCH<br>¼ INCH DRIVE RATCHET<br>¼ – 12 POINT SOCKET<br>¼ INCH DRIVE EXTENSION 6 INCH<br>PLIERS SOFT-JAW |

| Event | #11(B) Pratt & Whitney Bleed Valve Solenoid Test |
|---|---|
| | 11/16 CROWS FOOT ¼ DRIVE (OPEN END)<br>13/16 CROWS FOOT ¼ DRIVE (OPEN END)<br>TORQUE WRENCH 0-250 INCH POUNDS<br>STRAP WRENCH FOR ELECTRICAL CONNECTOR<br>PROTECTIVE CAPS/COVERS |
| Instructions | **REMOVAL STAGE 7 SOLENOID VALVE 4020KSE**<br>A) DISCONNECT THE HP3 AIR TUBES:<br>1) HP3 SUPPLY INPUT<br>2) HP3 SERVO OUTPUT<br>B) DISCONNECT THE ELECTRICAL CONNECTOR<br>C) REMOVE HPC STAGE 7 SOLENOID VALVE:<br>1) REMOVE THE BOLTS & WASHERS WHICH ATTACH SOLENOID VALVE TO ENGINE BRACKET.<br>2) REMOVE SOLENOID VALVE.<br>D) INSTALL PROTECTIVE COVERS.<br>**FUNCTIONAL TEST OF SOLENOID VALVE 4020KSE WITH TEST SET IAE2RI9437**<br>A) INSTALLATION OF TEST SET:<br>1) CONNECT RED LINE TO SOLENOID VALVE SUPPLY INPUT CONNECTOR. TORQUE TO 210 IN LBS.<br>2) CONNECT GREEN LINE TO SOLENOID VALVE SERVO OUTPUT CONNECTOR. TORQUE TO 165 IN LBS.<br>B) CONNECT SOLENOID VALVE ELECTRICAL CONNECTOR WITH CABLE PROVIDED TO TEST SET.<br>C) PREFORM BASIC SOLENOID TEST PROCEDURES LISTED ON TEST SET FACE PLATE.<br>NOTE: SOLENOID VALVE IS ALREADY CONNECTED TO TEST SET)<br>D) REMOVAL OF SOLENOID VALVE FROM TEST SET:<br>1) TURN TEST SET ELECTRICAL POWER OFF AND REMOVE ELECTRICAL CABLE<br>2) REMOVE RED LINE FROM SOLENOID VALVE SUPPLY INPUT CONNECTOR<br>3) REMOVE GREEN LINE FROM SOLENOID VALVE SERVO OUTPUT CONNECTOR. |

| Event | #11(B) Pratt & Whitney Bleed Valve Solenoid Test |
|---|---|

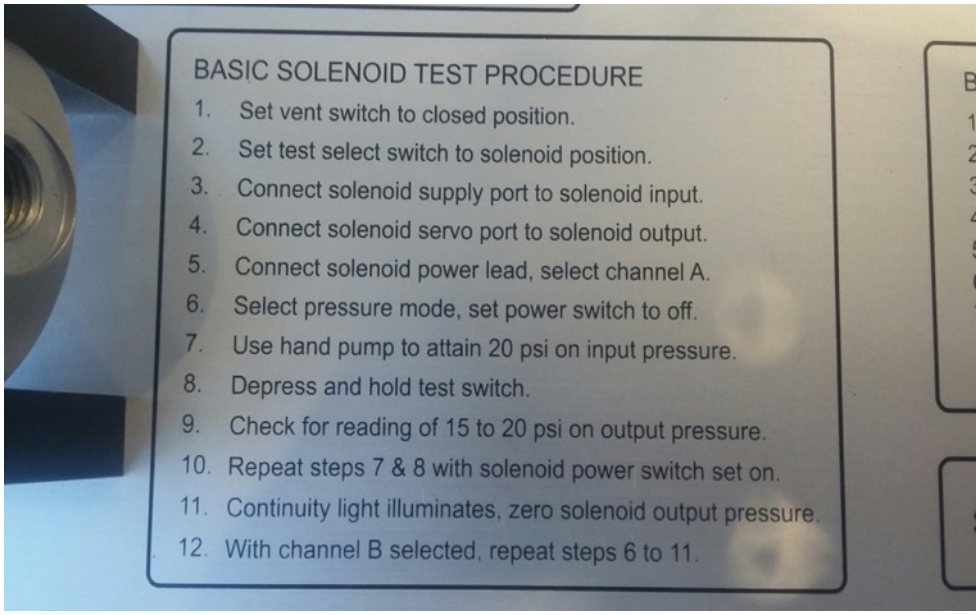
**INSTALLATION OF STAGE 7 SOLENOID VALVE 4020KSE**

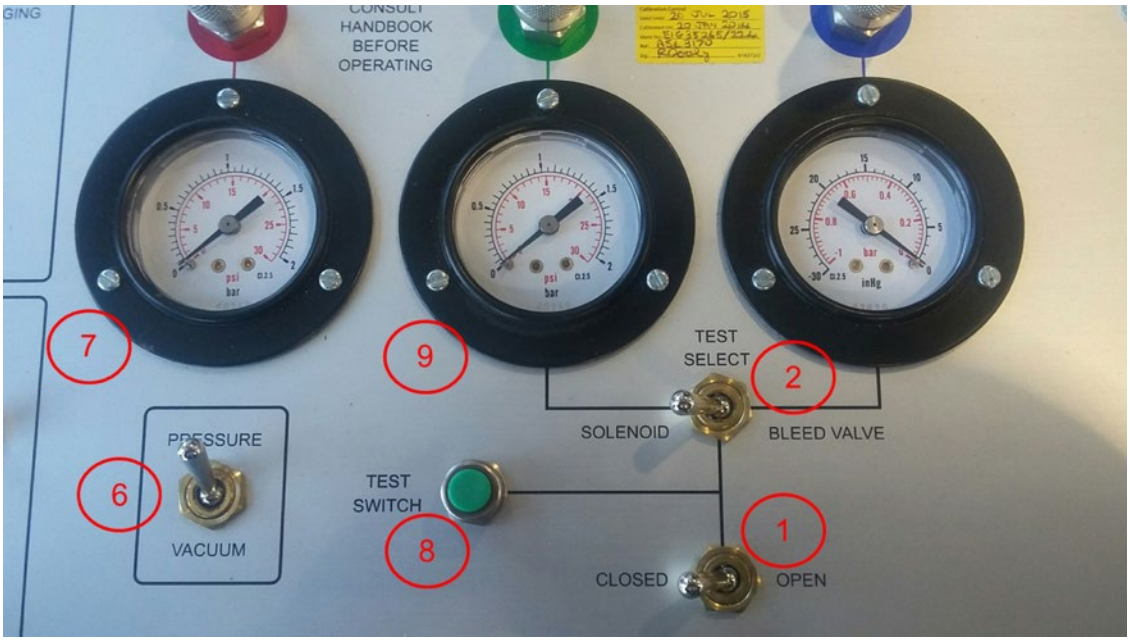
A) REMOVE PROTECTIVE COVERS FROM LINES AND ELECTRICAL CONNECTOR
B) ATTACH THE SOLENOID VALVE TO ENGINE BRACKET WITH WASHERS AND BOLTS. TORQUE TO 40 IN LBS.
C) INSTALL THE ELECTRICAL CONNECTOR TO THE SOLENOID VALVE
D) TIGHTEN CONNECTOR FULLY UNTIL RED LINE IS NO LONGER VISABLE
E) CONNECT THE HP3 AIR TUBES:
    1) CONNECT THE HP3 SUPPLY LINE TO SOLENOID VALVE. TORQUE TO 210 IN LBS.
    2) CONNECT THE HP3 SERVO LINE TO SOLENOID VALVE. TORQUE TO 165 IN LBS.
F) CLEAN UP AND REPLACE TOOLS.
G) INFORM JUDGE THAT EVENT IS COMPLETED.



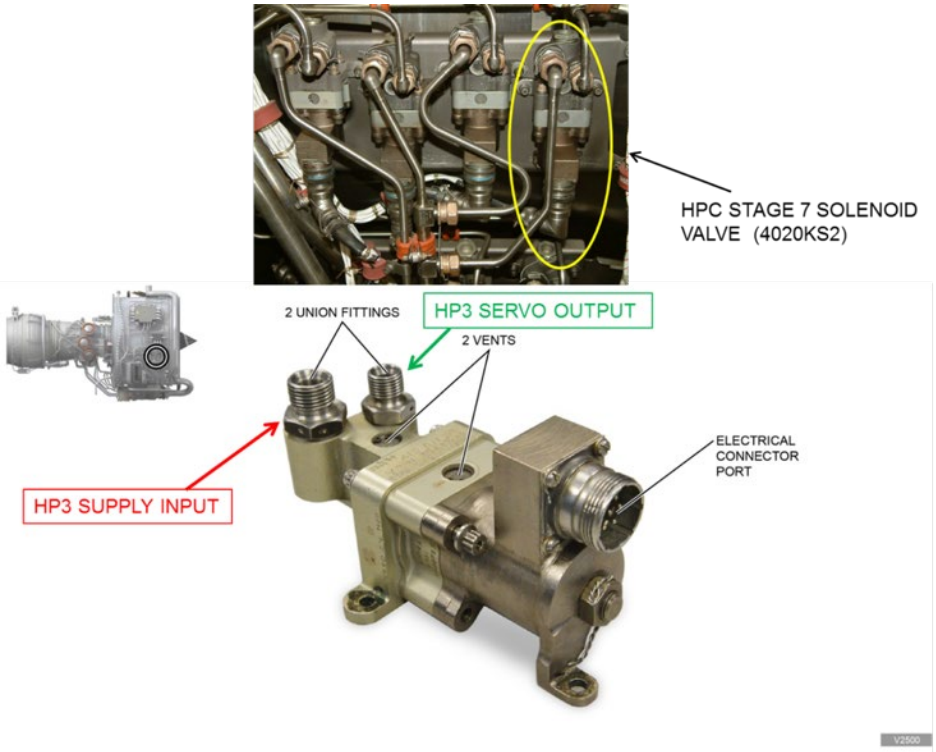

HPC STAGE 7 SOLENOID VALVE 4020KS2

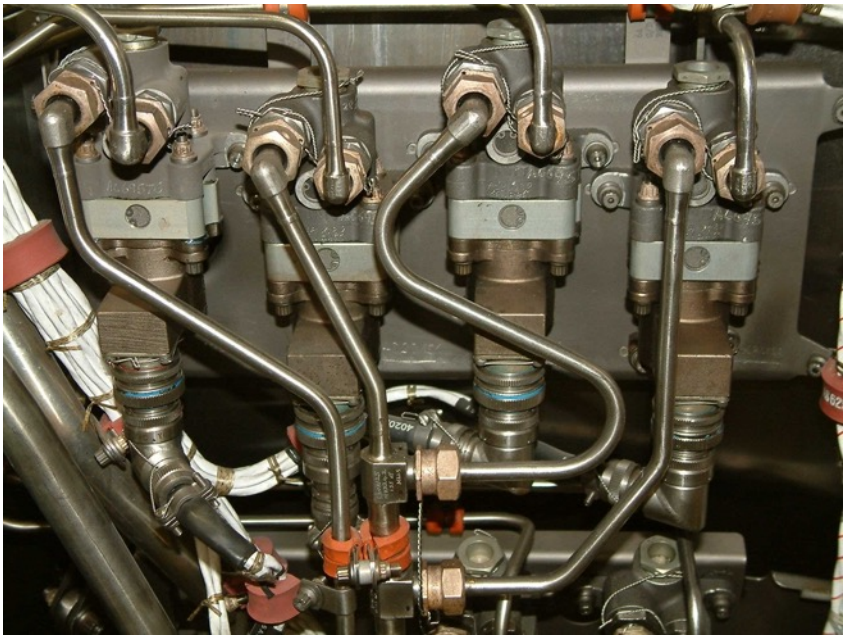
| Event | #11(B) Pratt & Whitney Bleed Valve Solenoid Test |
|---|---|



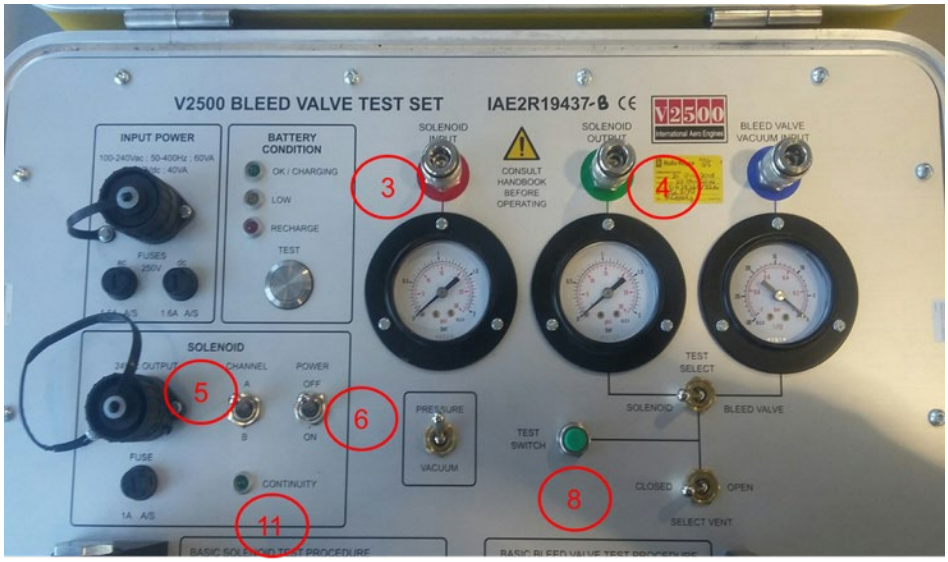



| Event | #11(B) Pratt & Whitney Bleed Valve Solenoid Test |
|---|---|



| Event | #11(B) Pratt & Whitney Bleed Valve Solenoid Test |
|---|---|




| Scoring | Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for each step not completed, or incorrect test results. |
|---|---|

| Event | #12 American Airlines Pedestal |
|---|---|
| Provided by |  |
| Team members required | One |
| Contact(s)/Judge(s) | Aaron Klippel mtnbikeaj@yahoo.com<br>Ed Kempa ekempa1@yahoo.com |
| Description | Execute removal and replacement of MD-80 pedestal floor light. |
| References | Removal and Replacement Instructions |
| Tools and equipment list | See removal and replacement instructions, linked above. |
| Instructions | See removal and replacement instructions, linked above. |
| Scoring | Scores will be calculated according to the AMC score sheet. |

| | |
|---|---|
| Event | #13 American Airlines APU Starter |
| Provided by | American Airlines |
| Team members required | One |
| Contact(s)/Judge(s) | Lyle Becnel, Technical Crew Chief, American Airlines<br>lyle.becnel@aa.com<br>Jason Yoder Technical Crew Chief, American Airlines<br>Jason.yoder@aa.com |
| Description | Remove and replace MD80 APU starter O-ring packing per instructions. Competitors will show judge torques and return to zero after usage. |
| References | MD80 AMM 49-40-03-201 Figure 201<br>APU Starter rev1.23 |
| Tools and equipment list | 7/16” Deep socket 6 pt ¼ Dr<br>7/16” Std. socket 6 pt ¼ Dr<br>11" Extension ¼ Dr<br>11" Wobble extension ¼ Dr<br>6” Diagonal cutters<br>Seal removal tool<br>Ratchet handle ¼ Dr<br>Torque wrench 40-200in lbs ¼ Dr<br>Inspection mirror<br>Magnetic pickup tool |

| | |
|---|---|
| Event | #13 American Airlines APU Starter |
| Instructions | Remove and Replace MD80 APU Starter Instructions (Rev. 2.7.23) |
| Scoring | Scores will be calculated according to the AMC score sheet. |

| | |
|---|---|
| Event | #14 Av-DEC® Antenna Gasket Installation Test |
| Provided by | Av-DEC The Science That Stops Corrosion. |
| Team members required | One |
| Contact(s)/Judge(s) | Sean Long sean.long@avdec.com<br>Jay Hitchcock jay.hitchcock@avdec.com |
| Description | These instructions describe the method for removing antenna, aircraft surface preparation and antenna installation using the Av-DEC HI-TAK® Conductive Polyurethane Gasket and HI-TAK® StretchSeal® Polyurethane Rolled Sealant (PRS®). This method is to be used only for antenna gasket installations between an antenna and aluminum aircraft skin or ground plane. |
| References | None |
| Tools and equipment list | Screwdriver and bits<br>Plastic/wooden/phenolic scrappers<br>Cotton wipers<br>Isopropyl alcohol<br>Torque screwdriver (05-40inch lbs.)<br>Av-DEC HI-TAK® Polyurethane Conductive Gasket (AG247000-01)<br>Av-DEC HI-TAK® StretchSeal® Kit (EN110589-02)<br>Extech Precision Milliohm Meter Model 380460<br>Scissors |
| Instructions | A) Removal<br>1) Remove fasteners from antenna. |

| Event | #14 Av-DEC® Antenna Gasket Installation Test |
|---|---|

2) Use a phenolic, wooden, or plastic tool as a wedge between the antenna and the aircraft surface to separate antenna from the aircraft if needed.
3) Once antenna is separated, cut the cable ties from the connector wrap and remove the StretchSeal® PRS®.
*4)* Disconnect aircraft coax cable and peel antenna gasket from antenna/fuselage. Use isopropyl alcohol to remove any remaining residue. *(Figure 1)*

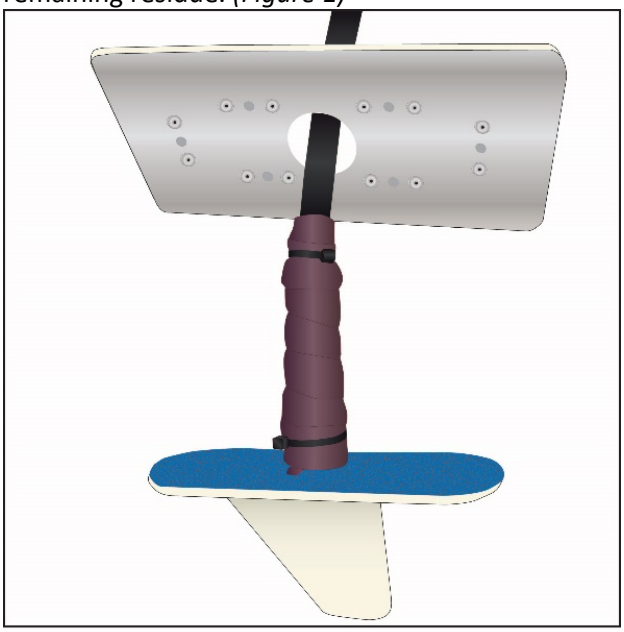


Figure 1

B) Surface Preparation
   1) Inspect faying surface areas that will contact the Av-DEC gasket materials for corrosion.
   2) Surfaces that will come in contact with Av-DEC materials shall be wiped with a clean solvent-dampened cotton wiper, followed immediately by wiping with a clean dry cotton wiper to remove any remaining paint, dust, grease, fingerprints, and/or any other contamination prior to the Av-DEC material installation.
C) Gasket Installation

| Event | #14 Av-DEC® Antenna Gasket Installation Test |
|---|---|

1) Av-DEC HI-TAK® Conductive Polyurethane Gaskets are supplied with protective release film on both sides of the gasket.
2) Remove the gasket from the protective packaging, taking care not to fold or bend it. Leave release film in place until ready to install gasket.
3) Verify that fastener holes and connector cutouts in the gaskets will align with the antenna when positioned for installation.
4) Remove release film from the side of the gasket marked “antenna side” and position over the antenna.
5) Beginning at one side or corner of the antenna, place gasket into position, carefully aligning gasket fastener holes with antenna fastener holes. Release film should remain on the exposed “aircraft side” of gasket until immediately prior to antenna installation.
6) Connect aircraft coax cable to antenna. *(Figure 2)*

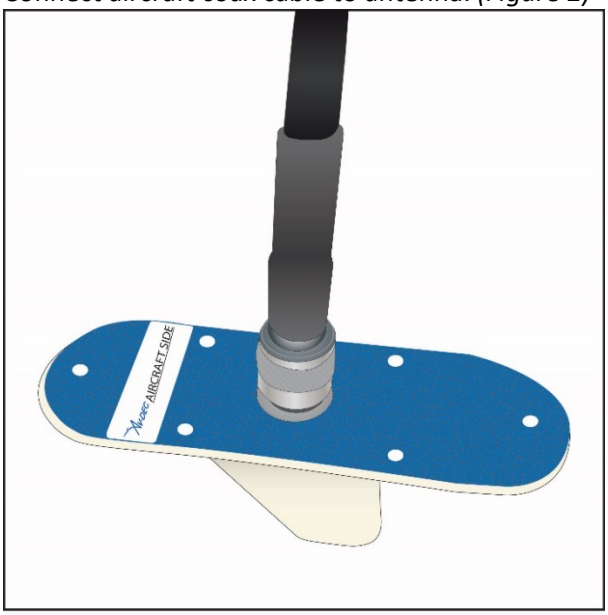



Figure 2

D) Sealing Aircraft Harness/Antenna Connector
1) To apply the StretchSeal® PRS®, remove the PRS® from the package and unroll a small amount.

| Event | #14 Av-DEC® Antenna Gasket Installation Test |
|---|---|

2) Wrap the StretchSeal® PRS® clockwise around the mated connector with a 50% overlap while stretching the PRS® 25% to 50% to ensure a tight wrap. A tight wrap is necessary to ensure a proper seal. *(Figure 3)*

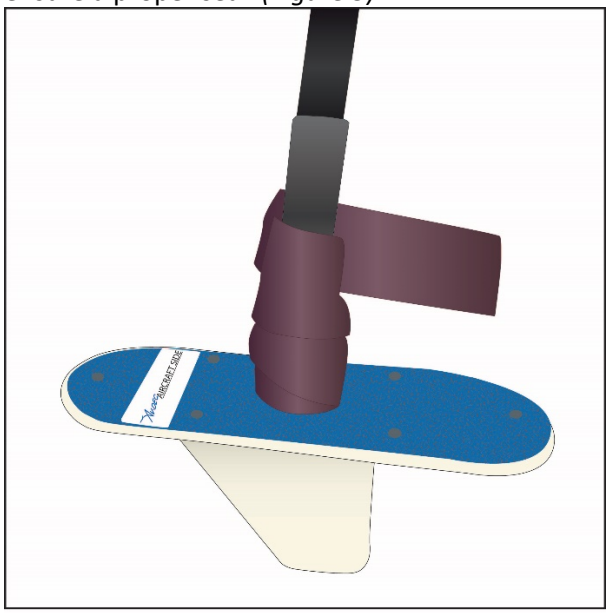


Figure 3

3) Coverage shall be from the base of the antenna to at least ½" beyond the connector and onto the insulation jacket of the coax cable. Trim excess StretchSeal® if necessary. *(Figure 4)*

| Event | #14 Av-DEC® Antenna Gasket Installation Test |
|---|---|

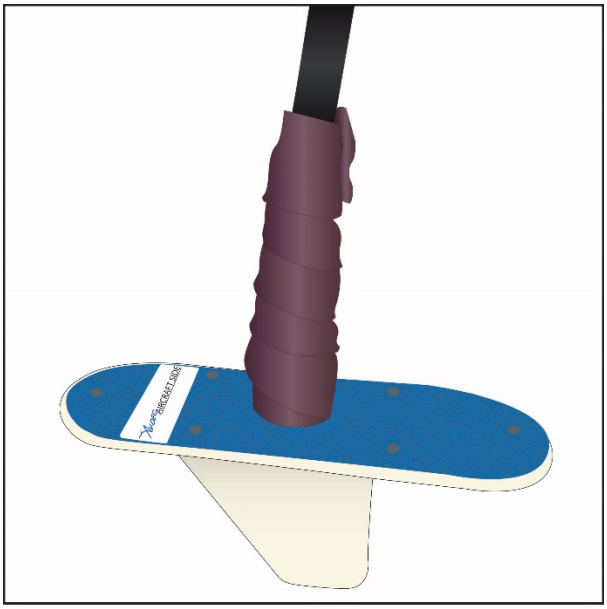


Figure 4

4) Apply cable ties at the beginning and end of the StretchSeal® wrap around the connector and coax cable. Dress cable ties.

   **NOTE:** Aircraft cutout hole must be at least ¼" greater in diameter than the connector outer diameter when using StretchSeal® PRS®.

E) Antenna Installation:
   1) Remove the release film from the "aircraft side" of the HI-TAK® Conductive Polyurethane Gasket.
   2) Using new fasteners, pre-position at least two fasteners through the antenna and gasket.
   3) Align fasteners at the correct locations on the aircraft surface. (Figure 5)

| Event | #14 Av-DEC® Antenna Gasket Installation Test |
|---|---|

Figure 5

4) Tighten each fastener 1-2 turns to hold the antenna in place on the aircraft.
5) Install all remaining fasteners except one. *(Figure 6)*

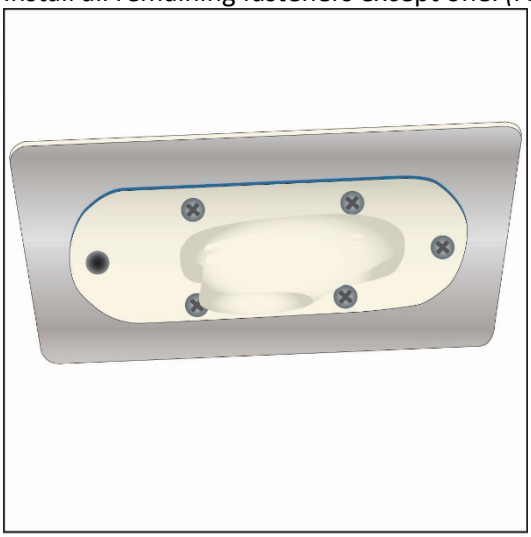


Figure 6

6) Manually tighten fasteners to 10 in-lb. Wait at least 30 seconds and re-tighten fasteners.

| Event | #14 Av-DEC® Antenna Gasket Installation Test |
|---|---|

F) Bonding Check:

1) Measure the resistance between the antenna baseplate and the airplane skin with a milli ohm meter. Make sure that the resistance is 2.5 milli ohms or less, and, if not, retighten fasteners until desired resistance is achieved. (Figures 7&8)

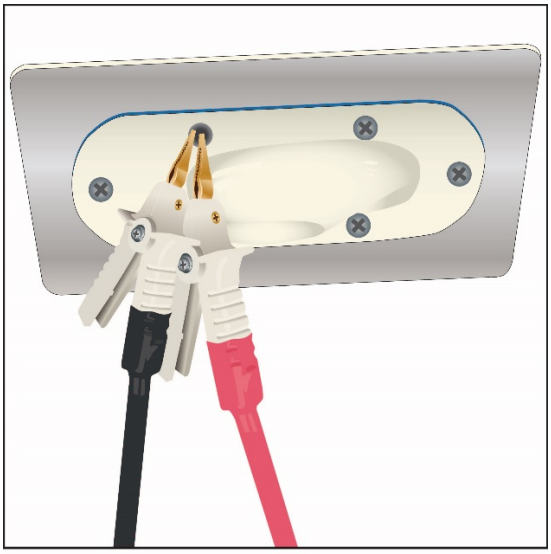


Figure 7

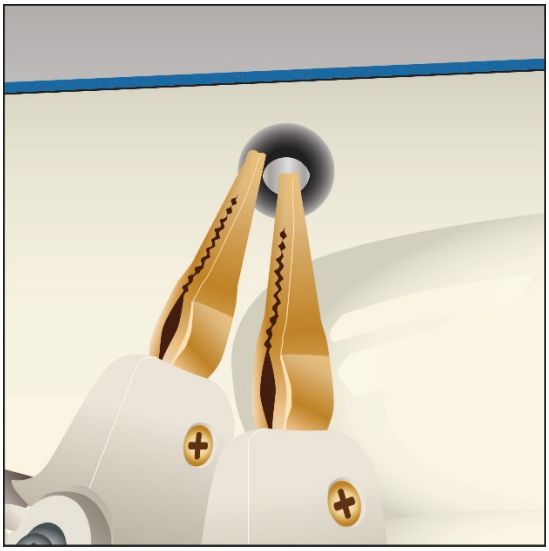


Figure 8

| Event | #14 Av-DEC® Antenna Gasket Installation Test |
|---|---|
| | 2) Install the remaining fastener and manually tighten to 10 in-lb. |
| Scoring | Scores will be calculated according to the AMC score sheet. |

| Event | #15 drbillj.com and Northrop Rice Human Factors Exam |
|---|---|
| Provided by | |
| Team members required | One |
| Contact(s)/Judge(s) | Dr. Bill Johnson, drbillj@gmail.com<br>Cathy Landry, clandry@northroprice.com |
| Description | This event will consist of multiple-choice questions relating to human factors. |
| References | FAA Aviation Maintenance Technician General Handbook Chapter 14 |
| Tools and equipment list | Tablet |
| Instructions | Each designated team member will sit for a timed exam, proctored on a tablet. |
| Scoring | Scores will be calculated based on the number of incorrect answers and unanswered questions, and the time it takes to complete the test. |

| Event | #16 NBAA & Standard Aero Engine Fan Blade Removal |
|---|---|
| Provided by | |
| Team members required | Two |
| Contact(s)/Judge(s) | Darrell Capra, Program Director<br>Joe Capra, Program Director<br>Chris Bodine, Vice President, General Manager |
| Description | The pilot reported a bird strike on landing rollout with power lever at idle. You and your team have already borescoped the high-pressure compressor (HPC) verifying no damage to the core of the engine.<br>This event will test your ability to remove the fan blades from a Honeywell TFE731 turbofan engine and then replace it.<br>This event will require technicians to remove the fan blades in a uniform manner to prevent shingling of the mid span dampeners and then reassembly the engine with a replacement fan blade.<br>INSTEAD OF THE STANDARD 15 MINUTES, EACH TEAM WILL ONLY HAVE SEVEN MINUTES TO COMPLETE THIS EVENT. |
| References | Light Maintenance Manual Removal of Fan Blades (steps D.(1)(b)-(e))<br>Light Maintenance Manual Installation of Fan Blades (steps C.(1)(e)-(j))<br>*Note: these are references only that explain the steps of removing and reinstalling fan blades, each team will be briefed on the procedures immediately before competing.* |
| Tools and equipment list | Hand tools and silver pencil will be provided. |

| Event | #16 NBAA & Standard Aero Engine Fan Blade Removal |
|---|---|
| Instructions | A) Number fan blades & remove each fan blade from fan hub<br>B) Reassemble with replacement blade |
| Scoring | Scores will be calculated according to the AMC score sheet. A one-minute bonus will be given to teams that reassemble the fan blade. |

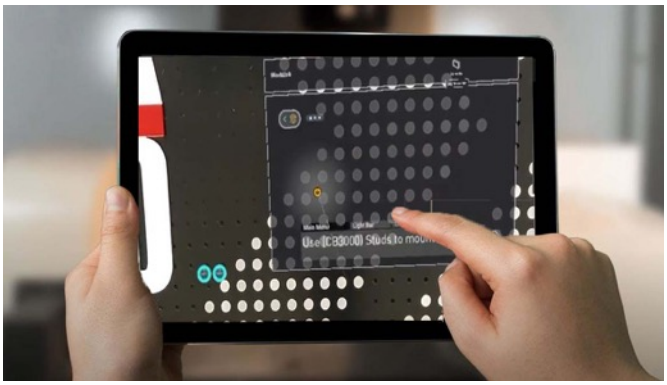
| | |
|---|---|
| Event | #17 Click Bond XR Process Optimization |
| Provided by | CLICK BOND® |
| Team members required | Two |
| Contact(s)/Judge(s) | Ellie Keene, Brand Experience Designer, 775-885-8000 x1197, ellie.keene@clickbond.com |
| Description | The challenge of validation and tracking within aerospace maintenance has created an opportunity for XR to become a solution for process optimization.<br><br>In this event, competitors must utilize their communication, teamwork, and forward-thinking skills to complete an avionic modification to an aircraft section. They are using an iPad and Click Bond assembly fasteners. Competitors will be guided through a series of steps within the AR on the iPad to collect, locate, modify, and position the fasteners. |
| References | Event information is available at https://www.clickbond.com/amc.<br><br>Resources available at the weblink include videos, tutorials, and instructions. All information will be posted by March 24, unless otherwise noted on the website. |
| Tools and equipment list | Rules and instruction sheet (provided at competition)<br><br>(1) iPad<br><br>(1) Aircraft piece<br><br>(1) Fastener kit and tools |

| Event | #17 Click Bond XR Process Optimization |
|---|---|

Instructions

Team members will complete an XR installation sequence:

A) Read all instructions provided at the competition and on the website linked above
B) Use provided iPad
C) Follow guided instructions in the correct order
D) Accurately position the fasteners



Scoring

Scores will be calculated according to the AMC score sheet. Additional penalties may be assessed for collecting the wrong fastener or incorrect positioning on the panel.

| Event | #18 PPG Transparencies |
|---|---|
| Provided by |  |
| Team members required | Two |
| Contact(s)/Judge(s) | Connie Little, Product Support Engineer, connie.little@ppg.com |
| Description | The transparencies section will require a framing assembly repair and a Surface Seal application. One competitor will conduct a framing assembly repair, and the other must prepare glass and apply Surface Seal coating solution. |
| References | None |
| Tools and equipment list | See procedures, linked below |
| Instructions | Glass Plug Replacement Procedure<br>Surface Seal® Procedure |
| 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 | #19 PPG Virtual Reality Paint Booth |
|---|---|
| Provided by | |
| Team members required | One |
| Contact(s)/Judge(s) | Connie Little, Product Support Engineer, connie.little@ppg.com |
| Description | The competitor will use a Virtual Reality (VR) paint booth to simulate painting. |
| References | None |
| Tools and equipment list | None |
| Instructions | A) When it's your turn, disinfect your hands using the provided alcohol gel dispenser.<br>B) Approach the flat screen display and accept the VR paint gun from the PPG operator.<br>C) Spray the panel on the VR display using good painting techniques to achieve a consistent target film thickness of 3 – 6 wet mils while minimizing overspray.<br>D) Each participant will be allowed five total minutes to spray one panel for practice, receive the evaluation of that panel, and then spray a second panel to earn a score.<br>E) Tell the operator when you are finished. |
| Scoring | Performance results are calculated using a weighted average of 90% target film coverage and 10% transfer efficiency. |

| Event | #20 PPG Wing Sealant |
|---|---|
| Provided by |  |
| Team members required | Two |
| Contact(s)/Judge(s) | Connie Little, Product Support Engineer, connie.little@ppg.com |
| Description | Competitors will perform a sealant repair in an inaccessible area. Selection of correct tooling and equipment to perform the job, safety/PPE, quality and cleanliness of job performed will be considered. |
| References | None |
| Tools and equipment list | Provided on site |
| Instructions | Sealants Procedure (provided on site) |
| 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 | #21 United Fuel Tank Entry Precautions |
|---|---|
| Provided by | UNITED |
| Team members required | Two |
| Contact(s)/Judge(s) | Fred Glau, fred.glau@united.com |
| Description | Competitors will defuel and refuel a 747-400 fuel tank. |
| References | Fuel Tank Diagram<br>Fuel Tank SIM Photos<br>Grounding lug photo |
| Tools and equipment list | Speed Handle with no 3 apex bit<br>Screw Driver with no 3 apex bit<br>0-200 in/lb torque wrench<br>Grease pencil |
| Instructions | Fuel tank procedures |
| Scoring | Scores will be calculated according to the AMC score sheet. |

| Event | #22 United Cable Rigging |
|---|---|
| Provided by | UNITED |
| Team members required | Two |
| Contact(s)/Judge(s) | Fred Glau, fred.glau@united.com |
| Description | After first flight the aileron cable rig was found to be out of tolerance. Team members will re-rig cables AA & AB. |
| References | Cable Rigging Tension and Turnbuckle Diagram |
| Tools and equipment list | Cable Tension Meter ACX-250-1<br>Cable diameter gauge |
| Instructions | Instructions |
| Scoring | Scores will be calculated according to the AMC score sheet. |

| Event | #23 Perfect Point E-Drill Fastener Removal |
|---|---|
| Provided by | PERFECT POINT AEROSPACE MAINTENANCE TECHNOLOGY |
| Team Members Required | One |
| Contact(s)/Judge(s) | Jim Becker, Director-Business Development<br>Nils Besvold, Sales and Marketing Associate, nils@ppedm.com |
| 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 5 fasteners using an E-drill from a wing flap. The Fasteners will be of a blind-bolt configuration and exact part numbers will be presented at the competition. |
| References | Event Detailed Instructions<br>Test article photos<br>E-drill Training Videos<br>Full E-drill User Guide |
| Tools and equipment list | Eye protection required. The E-drill hand tool, locating devices, punches, hammers, and consumables will be provided. |

| Event | #23 Perfect Point E-Drill Fastener Removal |
|---|---|
| Instructions | A) Using supplied reference data, remove the Qty. (5) fasteners identified on the flap. The fasteners to be removed will be marked. See references for detailed instructions and videos on using the E-drill with blind-bolt.<br>B) Using the Air Punch, sever the stem of the fastener from the head.<br>C) 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, mis-handling the tool or locators, and excessive water leakage or sparking. |

| | |
|---|---|
| Event | #24 Eastern Florida State Simulated Spacecraft Vacuum Loading |
| Provided by | Eastern Florida STATE COLLEGE |
| Team members required | Two |
| Contact(s)/Judge(s) | E.J. Mango, mangoe@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 150 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.<br><br>(Note: The Flight Tank does not drain during line evacuation).<br><br>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.<br><br>All steps must be completed. There are no provisions for NOT PERFORMING a step or series of steps.<br><br>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. |

| Event | #24 Eastern Florida State Simulated Spacecraft Vacuum Loading |
|---|---|
| References | None |
| Tools and equipment list | • PE provided for the individual performing the procedure<br>  ○ Tyvek suit (simulates SCAPE Suit)<br>  ○ Disposable Polypropylene Coveralls with Hood and Booties<br>  ○ Neoprene gloves<br>  ○ Face Shields<br>  ○ Disposable Respirator<br>  ○ Painters Tape<br>• Equipment provided<br>  ○ Control Box – 3 (plus 3 AC to DC adapters)<br>  ○ Vacuum Pump w/gauge<br>  ○ Air compressor plus one 3 way adapter and 2 hoses<br>  ○ Compressed air-pressure regulator<br>  ○ Supply tank<br>  ○ Flight tanks<br>  ○ Vacuum & Fluid Lines (6 Tygon tubes cut to 4 foot lengths each)<br>  ○ Digital Scale<br>  ○ Poly-Temp PTFE Thread Tape<br>• Tool Bag and Tools<br>  ○ Tube Bender<br>  ○ Tube Cutter<br>  ○ 37 Degree Flaring Tool<br>  ○ Fitting Box<br>  ○ Spare Tubing<br>  ○ Box Cutter<br>  ○ Needle Nose Pliers<br>  ○ Tape Measure<br>  ○ Phillips and Flathead Screwdrivers<br>  ○ 2 Adjustable Wrenches<br>  ○ Wire Cutters<br>  ○ Slip Joint Pliers<br>  ○ Scissors |
| Instructions | A) Preparation and protocol |

| Event | #24 Eastern Florida State Simulated Spacecraft Vacuum Loading |
|---|---|

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 (Reference Figure 1)
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 (Figure 1) 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 (Figure 1)
7) Verify Flight Tank is on digital scale.

C) Evacuate Tank
1) Turn on power to Control Box
2) Open MV 4
3) Start Vacuum Pump
4) Open Vacuum Valve
5) Open Flight Valve
6) Open MV2
7) Evacuate system until vacuum gage reads at least 22 Hg +/- 5
8) Close Vacuum Valve
9) Close Flight Valve
10) Close MV 4
11) 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

| Event | #24 Eastern Florida State Simulated Spacecraft Vacuum Loading |
|---|---|

4) Open Flight Valve and cycle valve as necessary to meter 150 grams of fluid into Flight Tank – NOTIFY JUDGE WHEN COMPLETE
5) Close all valves (manual and electric)

Note: If Vacuum load was unsuccessful, Step E-System Drain must be completed before restarting step C- Evacuate tank

E) System Drain
1) Verify all valves closed (manual and electric)
2) Adjust and 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 off power 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

| Event | #24 Eastern Florida State Simulated Spacecraft Vacuum Loading |
|---|---|

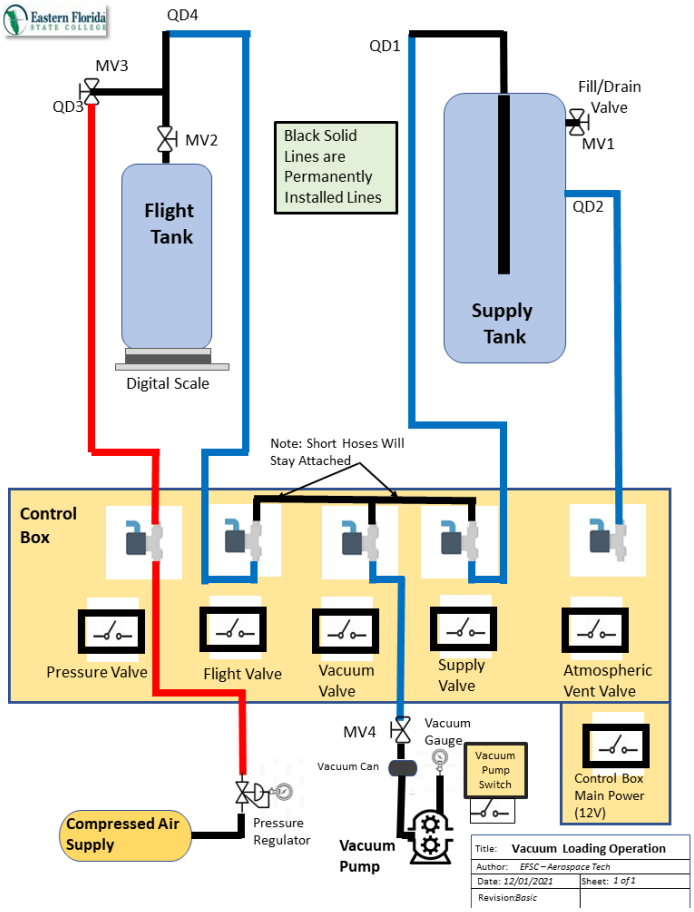



**Figure 1 : Space Vehicle – Vacuum Loading Operation**

| Scoring | Scores will be calculated according to the AMC score sheet.<br>Bonus of 30 seconds for proper use of command & response.<br>Bonus of 60 seconds for exact loading to 150 grams.<br>Penalty of 60 seconds for each step not completed.<br>Penalty of 15 seconds for each gram over or under required load of 150 grams. |
|---|---|

| | |
|---|---|
| Event | #25 Alaska Airlines External Power Receptacle |
| Provided by | |
| Team members required | Two |
| Contact(s)/Judge(s) | Robert A. Long, Shop Aircraft Technician, robert.long@alaskaair.com<br>Ken Pitt, Powerplant Engineer, Ken.pitt@alaskaair.com<br>Roger Bailey, Technical Services<br>Duane Bailey, Technical Services<br>Phil Bailey, Manager Regultory Compliance |
| 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 the complete appropriate paperwork. |
| References | Task Summary<br>Simulator Aircraft Maintenance Manual (Rev. i) |
| Tools and equipment list | Inspection flashlight, screwdriver, wrench – hex 1/8 inch and 3/16 inch, wear gage, safety tags |
| Instructions | A) Identify the aircraft and aircraft type you are tasked to work on<br>B) Understand the discrepancy provided on the logbook sheet and determine planned action for corrective action<br>C) Identify the appropriate sections of the Simulated Aircraft Structure (SAS) Maintenance Manual to accomplish corrective maintenance action and associated Task Cards |

| Event | #25 Alaska Airlines External Power Receptacle |
|---|---|
| | D) Identify components, determine effectivities, utilize tools, hardware, technical data and standard aircraft maintenance practices to complete tasks<br>E) Complete logbook entry filling in required areas with appropriate information<br>F) Consider completed task on SAS Simulator same as completed task on live aircraft<br>G) Tool collection and accountability<br>H) Foreign object debris (FOD) survey within work location<br>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 | #26 Gore Access Panel and D-Nose Leading Edge Sealing |
| Provided by |  |
| Team members required | One |
| Contact(s)/Judge(s) | Jack Penick, Application Engineer jpenick@wlgore.com<br>Nate Mooney, Application Engineer nmooney@wlgore.com<br>Gerhard Burmann, Application Engineer gburmann@wlgore.com<br>Gabriella Mokos, Application Engineer gmokos@wlgore.com |
| Description | Access Panel using GORE® SKYFLEX® Aerospace Materials |
| References | Installation Guide Gaskets<br>Video Environmental Sealant - Gasket |
| Tools and equipment list | Scissors<br>Nylon Awl for punching holes<br>Torque Wrench – One per team<br>Speed Handle – Two per team<br>Screwdriver and bits – Two per team<br>Rags |
| Instructions | A) Find 720 Series GORE® SKYFLEX® Aerospace Gaskets Part Number GSC-21-96704-027 and ensure within shelf life.<br>B) Ensure Access Panel and Frame clean and free of debris – use provided rag to wipe faying surfaces.<br>C) Apply GORE® SKYFLEX® Aerospace Gasket on Polycarbonate Panel shown in Figure 1 – Carefully Align fastener holes in gasket with |

| Event | #26 Gore Access Panel and D-Nose Leading Edge Sealing |
|---|---|

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.

D) See Installation Guide for Gaskets and watch video link in References.
E) Install Panel in Opening – Gasket between frame and panel.
F) Use provided speed handle / screwdriver to seat each of the 20 fasteners using a staggered pattern.
G) Use provided torque wrench to tighten each fastener to 30 in·lbs using a staggered pattern


*Figure 1 - Shows Gasket installed on Lexan Access panel*

Scoring

Scores will be calculated according to the AMC score sheet. Application of GORE® SKYFLEX® Aerospace Materials will be judged on time, quality, and adherence to the installation instructions in the Installation Guides and video links provided.

Penalties may be assessed for failure to follow work instructions, failure to align gasket to access panel, using incorrect correct tools or returning tools to improper location.

**Record of Revisions**

| Revision Number | Revision Date | Page(s) Affected | Revision Description |
|---|---|---|---|
| 00 | 02/01/2023 | ALL | Initial Release |
| 01 | 04/04/2023 | 5 | Removed industry tour from schedule of events. There will be no industry tour at this year's competition. |
| 01 | 04/04/2023 | 7 | Fixed broken link to score sheet (rev. 9). |
| 01 | 04/04/2023 | 9 | Revised and replaced competition floor layout |
| 01 | 04/04/2023 | 10-12 | Removed and replaced team list with final team roster to include team number assignments. |
| 01 | 04/04/2023 | 13-14, 62 | Added human factors test (Event #15) to event group 4. |
| 01 | 04/04/2023 | 13-14 | Revised and replaced schedule to cut lunch breaks from one hour to 45 minutes to accommodate two additional teams. |
| 01 | 04/04/2023 | 16 | Removed and replaced judge contacts for U.S. Air Force Flex Fluid Line (Event #2). |
| 01 | 04/04/2023 | 20 | Added criteria for Barfield Air Data Test (Event #3). |
| 01 | 04/04/2023 | 21 | Added criteria for Barfield Fault Test (Event #4). |
| 01 | 04/04/2023 | 22 | Changed safety wire plier part number to WTG8A (was previously THWTR1A) for FedEx safety wire event (Event #5) and clarified bonus section instructions. |
| 01 | 04/04/2023 | 27-28 | Removed "10pc 1/4in Drive 12 Point Shallow Socket Set 3/16 to 9/16 (110TMDY)" from FedEx Express Cargo Floor Lock (Event #6) tool and equipment list and replaced with "1/4in Drive 12 Point Shallow Socket sizes 5/16, 3/8, & 7/16 (110TMDY)." Added photo of floor lock to instructions section. |
| 01 | 04/04/2023 | 38 & 44 | Revised contacts/judges for Pratt & Whitney Active Clearance Control Valve Test (#11(A)) and Bleed Valve Solenoid Test (#11(B)). Revised note to assign even-numbered teams to event #11(A) and odd-numbered teams to #11(B). |
| 01 | 04/04/2023 | 52 | Removed and replaced APU Starter Instructions (Event #13). |
| 01 | 04/04/2023 | 69 | Removed and replaced United Fuel Tank Entry Precautions procedures (new PDF instruction download is dated 04apr23 in the file name). |
| 01 | 04/04/2023 | 76 | Revised steps in Eastern Florida State Simulated Spacecraft Vacuum Loading event (Event #24) to add "Adjust and" to the beginning of step E)1) and changed step F)3) from 5 hoses to 6. |
| 02 | 04/04/2023 | 13-14 | Fixed error in schedule for stages 22 through 42. |

| Revision Number | Revision Date | Page(s) Affected | Revision Description |
|---|---|---|---|
| 03 | 04/05/2023 | 10-12 | Renumbered teams. |
| 03 | 04/05/2023 | 38 & 44 | Revised note for Pratt & Whitney event that teams numbered 1-42 will complete Event #11(A) and teams numbered 43-84 will complete Event #11(B). |