Summary of comments to **TCO E** Module "Identify and Describe Information Contained in Documentation"

- Consider adding the following regulatory text or summarize where appropriate:
- **FAR 121.379 (b)**
  - Authority to approve maintenance, preventative maintenance and alterations.
    - "…In the case of a major repair or major alteration, the work must have been done in accordance with data approved by the Administrator"

Summary of comments to **TCO E** Module "Identify and Describe Information Contained in Documentation"

- **AC 120-77 Paragraph 8** "The structural repair manual, Maintenance and Restoration/ Overhaul Manuals, and the Instructions for continued Airworthiness"
  - b. The SRM provides repair instructions, material substitutions, and allowable damage limits data for continued- in-service condition of aircraft's structure….."

Summary of comments to **TCO E** Module “Identify and Describe Information Contained in Documentation”

- **AC 120-77 Paragraph 8**
  - **b (1).** “It is the operators responsibility to classify repairs as major or minor…”
  - **b (2).** “The SRM also provides limits of damage that an operator may use to continue an aircraft in service without repair…”

Summary of comments to **TCO E** Module "Identify and Describe Information Contained in Documentation"

- **AC 120-77 Paragraph 8**
  - **c**. Performing maintenance in accordance with the SRM is one way to maintain certain areas of an aircraft in an airworthy condition…any subsequent repairs must continue to comply…with Part 43"
  - **d.** "…the SRM may also be used, when supported by appropriate substantiating data to develop new different repair…The SRM may also contain specific procedures authorizing continued operation…before a permanent repair is required to be completed"

Summary of comments to **TCO E** Module "Identify and Describe Information Contained in Documentation"

- **FAA Order 8300.10 Chg. 21**
  - Chapter 1.Perform Field Approval of Major Repairs and Major Alterations.
  - Paragraph 5. Permits the following types of data for major repairs:
  - 4 (a) Type certificate Data Sheets (TCDS)
  - 4(b) Supplemental Type Certificate (STC)…
  - 4(c) Appliance manufacturer's manuals…4(q).

Summary of comments to **TCO E** Module “Identify and Describe Information Contained in Documentation”

- **FAA Order 8110.4B Paragraph 2-15.**
  - Post Certification Activities. Specifies how data may be approved for major repairs:
    - (3) Stress analysis, damage tolerance assessment, or process specifications used to substantiate a major repair to a primary structure can only be approved by :
      - (a) An ACO
      - (b) DER with authorization in the necessary engineering discipline
      - (c) DAS……

Summary of comments to **TCO E** Module "Identify and Describe Information Contained in Documentation"

- E1: Describe Requirements in Material and Process Specifications and Approved Repair Information
  - "Repair process instructions" second paragraph:.
    - … some OEM SRMs (e.g. some general aviation OEMs) do not have adequate research and/or testing backup for it to be considered approved data. …(**General Aviation aircraft that hold a Type certificate have FAA approved data included in their SRM).**

Summary of comments to **TCO E** Module "Identify and Describe Information Contained in Documentation"

- E1: Describe Requirements in Material and Process Specifications and Approved Repair Information
  - **Other Sources of Approved Repair Information**
    - Many airlines have their own internal repair documents. … usually require the OEM's approval, or **DER approval**) …"

Summary of comments to **TCO E** Module “Identify and Describe Information Contained in Documentation”

- **E4: Understand the requirements and engineering approvals necessary for valid sources of technical information and maintenance instructions**
- Section 25.571 Damage tolerance and fatigue evaluation of structure. **ADD: Discussion regarding FAR 23.573 “Damage tolerance and fatigue evaluation of structure” subpart (a) “Composite airframe structure”**

Summary of comments to **TCO C** Module- Understand roles and Responsibilities

- **C1: Identify the steps required in repair design, process planning, inspection and approval.**
  - First Paragraph, “Repairs to moveable control **…. If we discuss specific details of movable surfaces suggest mentioning repairs for PSEs (i.e”Repairs of PSEs must also be evaluated for damage tolerance)**

Summary of comments to **TCO C** Module- Understand roles and Responsibilities

- **C1:** Identify the steps required in repair design, process planning, inspection and approval
  - "Within Boeing SRMs…" (**Suggest discussing"Boeing SRMs as an example. Include the same information as a general discussion. This training is to be used for FAR part 23 aircraft well as other manufacturers of FAR part 25 aircraft, FAR part 27 and 29)**

Summary of comments to **TCO C** Module- Understand roles and Responsibilities

- **C1:** Identify the steps required in repair design, process planning, inspection and approval
  - "In the event that an approved repair design is not available, the maintenance engineer has several options;
- b) " … In some instances, such as damage to a PSE not covered by the SRM, an adequate damage disposition or repair design will require evaluation by the OEM". **ADD: The repair data may also be DER approved**.

Summary of comments to **TCO C** Module- Understand roles and Responsibilities

- **C1:** Identify the steps required in repair design, process planning, inspection and approval
  - Maintenance Planning Data document, SRM and Component Records. For planned maintenance events such as medium or heavy maintenance checks (e.g. “C” or “D” Checks),**For FAR part 23 there are not any “C” and “D” Checks. There are 100 hr inspections or “Annual inspections”**

Summary of comments to **TCO C** Module- Understand roles and Responsibilities

- **C 4: Distinguish between skills needed for structures engineers, inspectors and technicians dealing with composite maintenance and repair.**
- . “Repair technicians need to be trained and qualified in … technicians will be responsible for processing all kinds of repairs”. (**This paragraph is repeated in the beginning of the same paragraph)**

Summary of comments to **TCO C** Module- Understand roles and Responsibilities

- C2: "Describe the steps in the bonded and bolted repair processes, including details of damage discovery through repair completion and approval"
    - **Step 11: ADD**: "**Make sure that each repair ply matches the material of the ply that it will repair (or is an authorized substitution, such as glass fiber for aramid, fabric for tape, etc.). If the repairs are not symmetrical in shape, make sure that the warp direction will match the plies to be repaired as you cut out the shapes".**

Summary of comments to **TCO C** Module- Understand roles and Responsibilities

- C2: “Describe the steps in the bonded and bolted repair processes, including details of damage discovery through repair completion and approval”

    - **Step 12: ADD: “Put the first ply down and orient the warp direction in the same direction as the bottom ply. Then put each replacement repair ply down with the specified warp directions, and finish with additional ply (or plies) over the tapered repair. Sweep each ply to remove any wrinkles**

Summary of comments to **TCO C** Module-Understand roles and Responsibilities

- C4 “Distinguish between skills needed for structures engineers…..dealing with composite maintenance and repair”
  - “Structures Engineer” 4th paragraph insert test in bold:

“structures **FAA** Designated Engineering Representative (DER) **(or a Designee & Delegation Types Organizational Delegations (DDS) DAS/DOA/SFAR36 or an Organizational Designation Authorization (ODA) Authorized Representative (AR))** will be needed to approve … a structures DER/**AR.**