

**Element Performance Inspection (EPI) Data Collection Tool**  
**1.3.9 Engineering / Major Repairs and Alterations (AW)**

**ELEMENT SUMMARY INFORMATION**

**Purpose of this Element** (certificate holder's responsibility):

- To ensure that all major repairs and major alterations are accomplished in accordance with technical data approved by the administrator.

**Objective** (FAA oversight):

- To determine the effectiveness of the certificate holder's procedures in meeting the desired output of the process.
- To determine if the certificate holder follows its procedures, controls, process measurements, and interfaces for the Engineering/Major Repairs and Alterations process.
- To determine if there were any changes in the personnel identified by the certificate holder as having responsibility and/or authority for the Engineering/Major Repairs and Alterations process.

**Specific Instructions:**

- To accomplish this EPI, the inspector will review all documentation related to any major repair or alteration to ensure they were accomplished in accordance with FAA approved technical data.
- The inspector should review any engineering technical data packages to verify they contain referenced drawings, engineering specifications, reference location, photos, etc., are included in the packages and references FAA approved technical data.
- The inspector should verify the engineering technical data was appropriate for the major repair or alteration, and the repair or alteration was properly classified (major/minor).
- Engineering technical data described above is defined as an Engineering Order (EO) or Engineering Authorization (EA) generated by a certificate holder that provides procedures, instructions, information, recording of steps or tasks, analysis, calculations, referenced drawings or photos, engineering specifications, reference locations etc., to accomplish a repair or alteration. Any EO or EA generated must identify if the repair or alteration is a major or minor and if classified as a major repair or alteration must include FAA approved technical data.

**Related EPIs:**

- 1.1.1 Aircraft Airworthiness (AW)
- 1.1.2 Appropriate Operational Equipment (AW)
- 1.2.1 Airworthiness Release / Logbook Entry (AW)
- 1.2.2 Major Repairs and Alterations Records (AW)
- 1.3.3 Maintenance Facility / Main Maintenance Base (AW)
- 1.3.6 AD Management (AW)
- 1.3.7 Outsource Organization (AW)
- 1.3.12 SFAR36 (AW)
- 2.1.1 Manual Currency (AW)
- 2.1.2 Content Consistency Across Manuals (AW)

## SUPPLEMENTAL INFORMATION

### Specific Regulatory Requirements (SRRs):

- SRRs:
  - 121.135(a)(1)
  - 121.135(b)(1)
  - 121.135(b)(2)
  - 121.135(b)(3)
  - 121.367
  - 121.379
  - 121.379(a)
  - 121.379(b)
  - 43.10(b)
  - 43.13(a)
  - 43.17(e)(1)
  - 43.3(d)

### Related CFRs & FAA Policy/Guidance:

- Related CFRs:
  - Intentionally left blank
- FAA Policy/Guidance:
  - FAA Order 8900.1, Volume 6, Chapter 11, Section 19
  - AC 120-77

### EPI Section 1 - Performance Observables

**Objective:** The tasks and questions in this section of the data collection tool (DCT) are designed to assist the inspector in determining if the certificate holder follows its written procedures and controls and meets the established performance measures of the process. To accomplish this, questions have been generated to test both the outputs of the process as well as the process itself. Question 1 and its following subquestions are directed at the output(s) of the process, whereas questions 2-6, when answered, should be directed at the process itself.

#### Tasks

	To meet this objective, the inspector must accomplish the following tasks:
1.	Review the information listed in the Supplemental Information section of this DCT.
2.	Review the certificate holder's policies, procedures, instructions, and information for the Engineering/Major Repairs and Alterations process.
3.	Review the last accomplished associated safety attribute inspection (SAI) for this element with emphasis on the controls, process measurements, and interface attribute sections.
4.	Observe the certificate holder's Engineering/Major Repairs and Alterations process to gain an understanding of the procedures, instructions, and information.
5.	Discuss the Engineering/Major Repairs and Alterations process with the personnel (other than management) that perform the duties and responsibilities required by the process.

#### Questions

	To meet this objective, the inspector must answer the following questions:	
1.	Were the following performance measures met:	
1.1.	<p>Did the certificate holder use only FAA approved technical data for major repairs and major alterations or major repair data developed in accordance with 14 CFR SFAR 36-8?</p> <p><i>Related Performance JTIs:</i></p> <ol style="list-style-type: none"> <li>1. Check at the air carrier specified location that Canadian Approved Maintenance Organization (AMO) is using approved data while performing a major repair. <i>Sources: 43.17(e)(2)</i></li> <li>2. Check at the air carrier specified location that Canadian Approved Maintenance Organization (AMO) has used approved data for performing a major repair. <i>Sources: 43.17(e)(2)</i></li> <li>3. Check at the air carrier specified location that Canadian Approved Maintenance Organization (AMO) is using approved data while performing a major alteration. <i>Sources: 43.17(e)(2)</i></li> <li>4. Check at the air carrier specified location that Canadian Approved Maintenance Organization (AMO) has used approved data for performing a major alteration. <i>Sources: 43.17(e)(2)</i></li> <li>5. Check at the air carrier specified location that approval for return to service after a major repair is done in accordance with technical data approved by the Administrator. <i>Sources: 121.379(b)</i></li> </ol>	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain <input type="checkbox"/> Not Applicable

	<p>6. Check at the air carrier specified location that approval for return to service after a major repair has been done in accordance with technical data approved by the Administrator. <i>Sources: 121.379(b)</i></p> <p>7. Check at the air carrier specified location that approval for return to service after a major alteration is done in accordance with technical data approved by the Administrator. <i>Sources: 121.379(b)</i></p> <p>8. Check at the air carrier specified location that approval for return to service after a major alteration has been done in accordance with technical data approved by the Administrator. <i>Sources: 121.379(b)</i></p>	
1.2.	Did the certificate holder provide a comprehensive engineering technical data package appropriate for the major repair or alteration?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain
1.3.	<p>Did the certificate holder's technical data properly classify the repairs or alterations as minor or major? <i>Related Performance JTIs:</i></p> <p>1. Check at the air carrier specified location that the manual system has procedures to determine safety related software changes to its Line Replaceable Units (LRU) are controlled and monitored as major alterations in accordance with the Certificate Holder design. <i>Sources: FAA Order 8900.1, Volume 6, Chapter 11, Section 19, Paragraph 6-2618 D, 1.</i></p> <p>2. Check at the air carrier specified location that safety related software changes to its Line Replaceable Units (LRU) are being treated and performed as major alterations in accordance with the Certificate Holder design. <i>Sources: FAA Order 8900.1, Volume 6, Chapter 11, Section 19, Paragraph 6-2618, D, 1.</i></p>	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain
1.4.	<p>Did the certificate holder use the proper tools and test equipment when performing the major repair or alteration? <i>Related Performance JTIs:</i></p> <p>1. Check at the air carrier specified location that maintenance is performed using accepted methods, techniques, and practices in accordance with the Certificate Holder design. <i>Sources: 43.13(a)</i></p> <p>2. Check at the air carrier specified location that alterations are performed using accepted methods, techniques, and practices in accordance with the Certificate Holder design. <i>Sources: 43.13(a)</i></p> <p>3. Check at the air carrier specified location that tools, equipment and test apparatus, recommended by the manufacturer or the equivalent acceptable to the Administrator, is being used when performing maintenance in accordance with the Certificate Holder design. <i>Sources: 43.13(a)</i></p> <p>4. Check at the air carrier specified location that tools, equipment and test apparatus, recommended by the manufacturer or the equivalent acceptable to the Administrator, is being used when performing alterations in accordance with the Certificate Holder design.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain

	<i>Sources: 43.13(a)</i>	
2.	Were the certificate holder's policies, procedures, instructions, and information, for the Engineering/Major Repairs and Alterations process followed?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain
3.	Were the Engineering/Major Repairs and Alterations process controls followed?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain
4.	Did the records for the Engineering/Major Repairs and Alterations process comply with the instructions provided in the certificate holder's manual?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain
5.	Were the process measurements for the Engineering/Major Repairs and Alterations process effective in identifying problems or potential problems and providing corrective action for them?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain
6.	Did personnel properly handle the associated interfaces by complying with other written policies, procedures, instructions, and information that are related to this element?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain

<b>EPI Section 1 - Performance Observables Drop-Down Menu</b>	
1.	Personnel.
2.	Tools and Equipment.
3.	Technical Data.
4.	Procedures, policies or instructions or information.
5.	Materials.
6.	Facilities.
7.	Controls.
8.	Process Measures.
9.	Interfaces.
10.	Desired Outcome.
11.	Other.

### EPI Section 2 - Management Responsibility & Authority Observables

**Objective:** The questions in this section address the responsibility and authority of the process. They are designed to assist the inspector in determining if there is a clearly identifiable, qualified, and knowledgeable person who is responsible for the process, is answerable for the quality of the process, and has the authority to establish and modify the process. (The person with the authority may or may not be the person with the responsibility.)

#### Tasks

	To meet this objective, the inspector must accomplish the following tasks:
	NOTE: If no personnel or major program changes (as defined by the Principal Inspector (PI)) affecting the responsibility or authority attributes for this element have occurred since the last SAI and/or EPI was accomplished, then do not perform tasks 3-6, below. Answer questions 1 and 2, below, and provide the name/title.
1.	Identify the person who has overall responsibility for the Engineering/Major Repairs and Alterations process.
2.	Identify the person who has overall authority for the Engineering/Major Repairs and Alterations process.
3.	Review the duties and responsibilities for the person(s) who manage the Engineering/Major Repairs and Alterations process.
4.	Review the appropriate organizational chart.
5.	Discuss the Engineering/Major Repairs and Alterations process with the management personnel identified in tasks 1 and 2.
6.	Evaluate the qualifications and work experience of the management personnel identified in tasks 1 and 2.

#### Questions

	To meet this objective, the inspector must answer the following questions:	
1.	Is there a clearly identified person who is responsible for the quality of the Engineering/Major Repairs and Alterations process?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain Name/Title:
2.	Is there a clearly identified person who has authority to establish and modify the certificate holder's policies, procedures, instructions, and information for the Engineering/Major Repairs and Alterations process?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain Name/Title:
3.	Does the responsible person know that he/she has responsibility for the Engineering/Major Repairs and Alterations process?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain <input type="checkbox"/> No Change
4.	Does the person with authority know that he/she has authority for the Engineering/Major Repairs and Alterations process?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain <input type="checkbox"/> No Change
5.	Does the person with responsibility for the Engineering/Major Repairs and Alterations process meet the qualification standards?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain <input type="checkbox"/> No Change

6.	Does the person with authority to establish and modify the Engineering/Major Repairs and Alterations process meet the qualification standards?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain <input type="checkbox"/> No Change
7.	Does the person with responsibility understand the controls, process measurements, and interfaces associated with the Engineering/Major Repairs and Alterations process?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain <input type="checkbox"/> No Change
8.	Does the person with authority understand the controls, process measurements, and interfaces associated with the Engineering/Major Repairs and Alterations process?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain <input type="checkbox"/> No Change
9.	Does the responsible person know who has authority to establish and modify the Engineering/Major Repairs and Alterations process?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain <input type="checkbox"/> No Change
10.	Does the individual with authority know who has the responsibility for the Engineering/Major Repairs and Alterations process?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain <input type="checkbox"/> No Change



<b>EPI Section 2 - Management Responsibility &amp; Authority Observables Drop-Down Menu</b>	
1.	Assignment of responsibility.
2.	Assignment of authority.
3.	Does not understand procedures, policies or instructions and information.
4.	Does not understand controls.
5.	Does not understand process measurements.
6.	Does not understand interfaces.
7.	Span of control.
8.	Position vacant.
9.	Other.