

Element Performance Inspection (EPI) Data Collection Tool

1.3.20 Engine Condition Monitoring (AW)

ELEMENT SUMMARY INFORMATION

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

- To provide an Engine Condition Monitoring program that includes a system for data collection and analysis that ensures timely analysis and correction of engine problems.

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 Engine Condition Monitoring program.
- To determine if there were any changes in the personnel identified by the certificate holder as having responsibility and/or authority for the Engine Condition Monitoring program.

Specific Instructions:

- To accomplish this EPI the inspector will familiarize himself/herself with the certificate holder's Engine Condition Monitoring program to include any unique requirements generated by the powerplant manufacturer or fleet differences.
- The EPI may be accomplished where the certificate holder collects samples, maintains records, and analyzes data. Particular attention should be taken to changes made to the program and program generated interval changes.

Related EPIs:

- 1.1.1 Aircraft Airworthiness (AW)
- 1.2.2 Major Repairs and Alterations Records (AW)
- 1.2.3 Maintenance Log / Recording Requirements (AW)
- 1.2.5 Service Difficulty Reports (SDR) (AW)
- 1.3.1 Maintenance Program (AW)
- 1.3.2 Inspection Program (AW)
- 1.3.3 Maintenance Facility / Main Maintenance Base (AW)
- 1.3.6 AD Management (AW)
- 1.3.7 Outsource Organization (AW)
- 1.3.9 Engineering / Major Repairs and Alterations (AW)
- 1.3.11 Continuous Analysis and Surveillance (CAS) (AW)
- 1.3.15 Reliability Program (AW)
- 2.1.1 Manual Currency (AW)
- 2.1.2 Content Consistency Across Manuals (AW)
- 2.1.3 Distribution (Manuals) (AW)
- 2.1.4 Availability (Manuals) (AW)
- 5.1.8 Extended Range Operations with Two-Engine Airplanes (ETOPS) (AW)

SUPPLEMENTAL INFORMATION

Specific Regulatory Requirements (SRRs):

- SRRs:
 - 121.135(a)(1)
 - 121.135(b)(1)
 - 121.135(b)(2)
 - 121.135(b)(3)
 - D.086

Related CFRs & FAA Policy/Guidance:

- Related CFRs:
 - Intentionally left blank
- FAA Policy/Guidance:
 - FAA Order 8900.1, Vol 4, Ch 6, Sec 3
 - Advisory Circular 25-13
 - Advisory Circular 120-42A

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 information listed in the Supplemental Information section of this data collection tool.
2.	Review the certificate holder's policies, procedures, instructions, and information for the Engine Condition Monitoring program.
3.	Review the last accomplished associated safety attribute inspection (SAI) for this element with emphasis on the controls, process measurements, and interface attribute section responses.
4.	Observe the certificate holder's Engine Condition Monitoring program to gain an understanding of the procedures, instructions, and information.
5.	Discuss the Engine Condition Monitoring program with the personnel (other than management) who perform the duties and responsibilities required by the program.

Questions		
	To meet this objective, the inspector will answer the following questions:	
1.	Determine whether the following performance measures were met:	
1.1.	Were the personnel working the program adequately trained?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain
1.2.	Did the data collected from Engine Condition Monitoring process produce adequate reports to support the program?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain
1.3.	Was the program designed to identify sudden parameter shifts or engine deterioration? <i>Related Performance JTIs:</i> 1. Check at the air carrier specified location that the procedures used to detect deterioration at an early stage allow for an effective corrective action before safe operation is effected in accordance with the Certificate Holder's design. <i>Sources:</i> AC 120-42A APPENDIX 4. 75, 120, and 180 MIN. ETOPS MAINTENANCE REQUIREMENTS (5)	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain
1.4.	Was corrective action timely and documented?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain
1.5.	Were full power takeoff demonstrations performed and recorded? <i>Related Performance JTIs:</i> 1. Check at the records repository by reviewing aircraft records that aircraft engine takeoff demonstrations are being accomplished using the airplane's takeoff thrust setting in accordance with the Certificate Holder's design. <i>Sources:</i> AC 25-13 5 e.	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain

	<p>2. Check at the air carrier specified location that the engine condition monitoring program is receiving information regarding each airplane's engine takeoff demonstration using the airplane's takeoff thrust setting and that information is being monitored in accordance with the Certificate Holder's design. <i>Sources: AC 25-13 5 e.</i></p> <p>3. Check at the records repository by reviewing aircraft records that aircraft engine takeoff demonstrations using the airplane's takeoff thrust setting is being recorded as part of each airplane's permanent record in accordance with the Certificate Holder's design. <i>Sources: AC 25-13 5 e.</i></p>	
1.6.	<p>Were the Engine Condition Monitoring parameters clearly documented? <i>Related Performance JTIs:</i></p> <p>1. Check at the air carrier specified location that the parameters listed in the ECM program are being monitored in accordance with the Certificate Holder's design. <i>Sources: AC 120-42A APPENDIX 4. 75, 120, and 180 MIN. ETOPS MAINTENANCE REQUIREMENTS (5)</i></p>	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain
2.	Were the certificate holder's policies, procedures, instructions, and information for the Engine Condition Monitoring program followed?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain
3.	Were the Engine Condition Monitoring program controls followed?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain
4.	Did the records for the Engine Condition Monitoring program comply with the instructions provided by the certificate?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain
5.	Were the process measurements for the Engine Condition Monitoring program 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

EPI Section 1 - Performance Observables Drop-Down Menu	
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 Engine Condition Monitoring program.
2.	Identify the person who has overall authority for the Engine Condition Monitoring program.
3.	Review the duties and responsibilities for the person(s) who manage the Engine Condition Monitoring program.
4.	Review the appropriate organizational chart.
5.	Discuss the Engine Condition Monitoring program 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 Engine Condition Monitoring program?	<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 procedures, policies, instructions, and information for the Engine Condition Monitoring program?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain Name/Title:
3.	Does the responsible person know that he/she has responsibility for the Engine Condition Monitoring program?	<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 Engine Condition Monitoring program?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain <input type="checkbox"/> No Change
5.	Does the person with responsibility for the Engine Condition Monitoring program 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 Engine Condition Monitoring program 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 Engine Condition Monitoring program?	<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 Engine Condition Monitoring program?	<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 Engine Condition Monitoring program?	<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 Engine Condition Monitoring program?	<input type="checkbox"/> Yes <input type="checkbox"/> No, Explain <input type="checkbox"/> No Change

EPI Section 2 - Management Responsibility & Authority Observables Drop-Down Menu	
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.