# 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 responsibility):

- 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 shall familiarize himself/herself with the Certficate 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 EPI(s):**

- 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 Mechanical Reliability Reports (MRR) (AW)
- 1.3.1 Maintenance Program (AW)
- 1.3.11 Continuous Analysis and Surveillance (CAS) (AW)
- 1.3.15 Reliability 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)
- 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 Requirement(s) (SRRs):**

- SRRs:
  121.135(a)(1)
  121.135(b)(1)
  121.135(b)(2)
  D086

**Related CFR(s) & FAA Policy/Guidance:**

- Related CFRs:
  Intentionally left blank

- FAA Policy/Guidance:
  FAA Order 8300.10 Volume 2 Chapter 82
  HBAW 95−6A
  Advisory Circular 25−13
  Advisory Circular 120−42A

| EPI SECTION 1 − PERFORMANCE OBSERVABLES | | |
|---|---|---|
| **Objective:** (FAA oversight responsibility): To determine if the Certificate Holder follows its procedures, controls, process measures and interfaces for the Engine Condition Monitoring. | | |
| ***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 policies, procedures, instructions and information for the Engine Condition Monitoring program contained in the Certificate Holder's manual. | |
| 3 | Review the associated SAI for this element with emphasis on the controls, process measurements and interface attribute sections. | |
| 4 | Observe the Engine Condition Monitoring program to gain an understanding of the procedures, instructions and information contained in the Certificate Holder's manual. | |
| 5 | Discuss the Engine Condition Monitoring program with the personnel (other than management) that perform the duties and responsibilities required by the program. | |
| ***Questions*** | | |
| | To meet this objective, the inspector will answer the following questions: | |
| 1 | Were the following Performance Measures met: | |
| 1.1 | Were the personnel working the program adequately trained? | ☐ Yes<br>☐ No, Explain |
| 1.2 | Did the data collected from Engine Condition Monitoring process produce adequate reports to support the program?<br>*Related performance JTIs:*<br>• Check at the air carrier specified location by checking for documents used to report engine mechanical performance that performance is being monitored in accordance with the Certificate Holder’s design.<br>*Sources:* HBAW 95−6A par 5<br>• Check at the air carrier specified location that when engine condition monitoring detects deterioration, notification takes place in accordance with the Certificate Holder’s design.<br>*Sources:* 8300.10 Volume 2, Chapter 82, Section 2, Para 5 B (2) | ☐ Yes<br>☐ No, Explain |
| 1.3 | Was the program designed to identify sudden parameter shifts or engine deterioration?<br>*Related performance JTIs:*<br>• 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.<br>*Sources:* AC 120−42A APPENDIX 4. 75, 120, and 180 MIN. ETOPS MAINTENANCE REQUIREMENTS (5) | ☐ Yes<br>☐ No, Explain |
| 1.4 | Was corrective action timely and documented?<br>*Related performance JTIs:*<br>• Check at the air carrier specified location that engine mechanical performance is being analyzed in accordance with the Certificate Holder’s design.<br>*Sources:* HBAW 95−6A par 5(M) | ☐ Yes<br>☐ No, Explain |

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| | • Check at the air carrier specified location by reviewing the data collection and analysis that timely correction of engine problems is taking place in accordance with the Certificate Holder's design.<br>*Sources:* 8300.10 Volume 2, Chapter 82, Section 1, Para 5 (c) | |
| 1.5 | Were full power takeoff demonstrations performed and recorded?<br>*Related performance JTIs:*<br>• Check at the air carrier specified location that the engine condition monitoring program is receiving information regarding the deterioration of internal engine parts and that information is being monitored in accordance with the Certificate Holder's design.<br>*Sources:* 8300.10 Volume 2, Chapter 82, Section 2, Para 5 B (2)<br>• 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.<br>*Sources:* AC 25−13 5 e.<br>• 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.<br>*Sources:* AC 25−13 5 e.<br>• 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.<br>*Sources:* AC 25−13 5 e. | ☐ Yes<br>☐ No, Explain |
| 1.6 | Were the Engine Condition Monitoring parameters clearly documented?<br>*Related performance JTIs:*<br>• 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.<br>*Sources:* AC 120−42A APPENDIX 4. 75, 120, and 180 MIN. ETOPS MAINTENANCE REQUIREMENTS (5) | ☐ Yes<br>☐ No, Explain |
| 2 | Were the Certificate Holder's policies, procedures, instructions and information contained in it's manual, for the Engine Condition Monitoring program followed? | ☐ Yes<br>☐ No, Explain |
| 3 | Were the Engine Condition Monitoring program controls followed? | ☐ Yes<br>☐ No, Explain |
| 4 | Did the records for the Engine Condition Monitoring program comply with the instructions provided in the Certificate Holder's manual? | ☐ Yes<br>☐ 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? | ☐ Yes<br>☐ No, Explain |

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| 6 | Did personnel properly handle the associated interfaces by complying with other written policies, procedures, instructions and information that are related to this element? | ☐ Yes<br>☐ No, Explain |

| **EPI SECTION 1 − PERFORMANCE OBSERVABLES −Drop Down Menu** |
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| 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 | |
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| **Objective:** To determine if the person identified by the Certificate Holder having responsibility and/or authority for the Engine Condition Monitoring is qualified, knowledgeable, and recognizes that responsibility and/or authority. (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: | |
| 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. | |
| NOTE: If no personnel or major program changes (as defined by the Principal Inspector) 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 2.1 &2.2 below, and provide the name/title. | |
| 3 Review the duties and responsibilities for the person(s) who manage the Engine Condition Monitoring program documented in the Certificate Holder's manual. | |
| 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: | |
| 2. Are the following aspects of the Management Responsibility and Authority Attributes addressed for the Engine Condition Monitoring program: | |
| 2.1 Is there a clearly identified person who is responsible for the quality of the Engine Condition Monitoring program? | ☐ Yes<br>☐ No, Explain<br>Name/Title: |
| 2.2 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? | ☐ Yes<br>☐ No, Explain<br>Name/Title: |
| 2.3 Does the responsible person know that he/she has responsibility for the Engine Condition Monitoring program? | ☐ Yes<br>☐ No, Explain<br>☐ Not Applicable |
| 2.4 Does the person with authority know that he/she has authority for the Engine Condition Monitoring program? | ☐ Yes<br>☐ No, Explain<br>☐ Not Applicable |
| 2.5 Does the person with responsibility for the Engine Condition Monitoring program meet the qualification standards? | ☐ Yes<br>☐ No, Explain<br>☐ |

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| | ☐ Not Applicable |
| 2.6 Does the person with authority to establish and modify the Engine Condition Monitoring program meet the qualification standards? | ☐ Yes<br>☐ No, Explain<br>☐ Not Applicable |
| 2.7 Does the person with responsibility understand the controls, process measurements and interfaces associated with the Engine Condition Monitoring program? | ☐ Yes<br>☐ No, Explain<br>☐ Not Applicable |
| 2.8 Does the person with authority understand the controls, process measurements and interfaces associated with the Engine Condition Monitoring program? | ☐ Yes<br>☐ No, Explain<br>☐ Not Applicable |
| 2.9 Does the responsible person know who has authority to establish and modify the Engine Condition Monitoring program? | ☐ Yes<br>☐ No, Explain<br>☐ Not Applicable |
| 2.10 Does the individual with authority know who has the responsibility for the Engine Condition Monitoring program? | ☐ Yes<br>☐ No, Explain<br>☐ Not Applicable |

| EPI SECTION 2 − MANAGEMENT RESPONSIBILITY & AUTHORITY OBSERVABLES −Drop Down Menu |
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| 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. |