

FAA/HSAC PART 135 SYSTEM SAFETY RISK MANAGEMENT SAFETY ELEMENT 1.3.15 - RELIABILITY PROGRAM JOB AID

The Federal Aviation Administration (FAA) is proactively moving away from compliance-based safety surveillance programs to Systems Safety Risk Management programs to eliminate air carrier's accidents and incidents. System Safety Risk Management programs was initial implemented with all CFR Part 121 air carriers and are now being applied to CFR Part 135 air carriers.

The FAA reached the limit of its ability of utilizing compliance-based oversight programs in 1996 for CFR Part 121 air carriers. Compliance-based oversight program repeated the same surveillance activities without identifying the actual root causes that could lead to an unsafe operating practice and/or accident. It was based on only looking at meeting the minimum standards established by the rules and regulations. To react to any identified unsafe condition, new rules and regulations had to be enacted, which could expand over many years. The compliance-based oversight system was not an effective means in reducing the causal factors that lead to air carrier accidents.

System Safety Risk Management program, known as Surveillance Evaluation Program (SEP), was implemented in 2001, for CFR Part 121 air carriers to assess how an air carrier operations and maintenance organizations were operating as an integrated whole safety system. For their system to be considered safe, they have to be proactive in identifying potentially unsafe hazards and risk and mitigate it to a safe state. Safety must be built into the air carriers systems by addressing the FAA's primary seven System Elements and their associated sub-elements. Each System Element identifies questions regarding the effectiveness of that system by addressing the following topics of: Responsibility, Authority, Procedures, Control, Process Measurement, and Interfaces.

In 2004 the FAA and the Helicopter Safety Advisory Conference (HSAC) established a workgroup to assess the reasons for the increase of helicopter accidents occurring in the Gulf of Mexico and develop intervention strategies. From this workgroup four of the primary root causes of Gulf of Mexico Helicopter accidents were; "Failure of Equipment/Components", "Lack of Maintenance Supervision", "Lack of Proper Procedures – Maintenance", and "Not Following Proper Procedures – Maintenance". These root causes resulted in the development of intervention questions for each of the applicable System Safety Attributes under System Safety Element 1.3.15 Reliability Program (helicopter performance monitoring) Requirements.

The primary Safety Attribute questions defined within the System Safety Element will determine if an Operator's Policies and Procedures are adequately defined in having a System Safety program; the ability to identify Risk in its daily operations; and being able to mitigate that risk to prevent the future occurrences and/or accidents.

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SAFETY ELEMENT 1.3.15 RELIABILITY PROGRAM JOB AID**

ELEMENT SUMMARY INFORMATION

A “YES” response to the questions means compliance with the statement or indicates the requirements were met. A “NO” response always indicates a negative response to the question and also means the requirements were not met. The air carrier is not complying with the requirements of the Safety Attribute question or the system is weak or inadequate in the area being evaluated. An explanation should always occur with a “NO” response.

Specific Regulator Requirements (SRR):

- 135.411(a)(2) and (b) Applicability of Maintenance Programs
- 135.413 Responsibility For Airworthiness
- 135.419 Approved Aircraft Inspection Programs
- 135.431(a,b) Continuing Analysis and Surveillance

Other CFRs and/or FAA Guidance:

FAA Order 8300.10, Vol. 2, Chapter 3, “Evaluate Category I/II/IIA Landing Minimum Maintenance/Inspection Programs”

FAA Order 8300.10, Vol. 2, Chapter 66 “Approve a Reliability Program”

FAA Order 8300.10, Vol. 2, Chapter 67 “Approve a Contract Reliability Program”

FAA Order 8300.10, Vol. 2, Chapter 80 “Evaluate Short-Term escalation Procedures”

FAA Order 8300.10, Vol. 2, Chapter 84 “FAR Part 121/135 Operation Specifications”

FAA Order 8300.10, Vol. 3, Chapter 38 “Inspection Approved Reliability Program”

FAA Order 8300.10, Vol. 4, Appendix 3 “Handbook Bulletins”

FAA Order 8300.10, Vol. 4, Appendix 4 “Airworthiness Flight Standards Information Bulletins”

AC 120-17A “Maintenance Control by Reliability Methods”

AC 120-16C, Paragraph 6 – as revised “Continuous Airworthiness Maintenance Programs”

FAA/HSAC PART 135 SYSTEM SAFETY RISK MANAGEMENT**1.3.15 RELIABILITY PROGRAM****SECTION 1 – RESPONSIBILITY ATTRIBUTE**

Objective: To determine if there is a clearly identifiable qualified and knowledgeable individual who is accountable for the quality of the process.

To meet the objective, the auditor will accomplish the following task:

1. Identify the individual who is responsible for the quality of the Reliability Program processes.
2. Review the description in the manual that delineates the duties and responsibilities of the individual.
3. Evaluate the individual's qualifications and work experience (or resume if appropriate).
4. Review the appropriate organizational chart.
5. Discuss the Reliability program process with the individual.

To meet the objective, the auditor will determine and record answers to the following questions:

1. Is there a clearly identifiable individual in management who is answerable for quality of the Reliability program processes?	Yes No (explain)
2. Does the individual understand the Procedure Attributes associated with the Reliability program processes?	Yes No (explain)
3. Does the individual understand the Control Attributes associated with the Reliability program processes?	Yes No (explain)
4. Does the individual understand the Process Measurement Attributes associated with the Reliability program processes?	Yes No (explain)
5. Does the individual understand the Interface Attributes associated with the Reliability program processes?	Yes No (explain)
6. Are the duties and responsibilities for this position clearly documented in the air carrier's manual(s)?	Yes No (explain)
7. Are the qualification standards for this position clearly documented?	Yes No (explain)
8. Are the qualification standards for this position appropriate for the duties that are assigned?	Yes No (explain)
9. Does the individual meet the qualification standards?	Yes No (explain)
10. Does the individual acknowledge who has the responsibility for the Reliability program processes?	Yes No (explain)
11. Does the individual know who has authority to establish and modify the Reliability program processes?	Yes No (explain)

FAA/HSAC PART 135 SYSTEM SAFETY RISK MANAGEMENT
1.3.15 RELIABILITY PROGRAM
SECTION 2 – AUTHORITY ATTRIBUTE

Objective: To determine if there is a clearly identifiable qualified and knowledgeable individual who has the authority to establish and modify the Reliability program processes.

To meet the objective, the auditor will accomplish the following task:

1. Identify the individual who has the authority to establish or modify the Reliability program processes.
2. Review the description in the Manual that delineates the duties and responsibilities of the individual.
3. Evaluate the individual’s qualifications and work experience (or resume’ if appropriate).
4. Review the appropriate organizational chart.
5. Discuss the Reliability program processes with the individual.

To meet the objective, the auditor will determine and record answers to the following questions:

1. Is there a clearly identifiable individual who has authority to establish and modify the air carrier’s policies for the Reliability program processes?	Yes No (explain)
2. Does the individual understand the Procedure Attributes associated with the Reliability program processes?	Yes No (explain)
3. Does the individual understand the Control Attributes associated with the Reliability program processes?	Yes No (explain)
4. Does the individual understand the Process Measurement Attributes associated with the Reliability program processes?	Yes No (explain)
5. Does the individual understand the Interface Attributes associated with Reliability program processes?	Yes No (explain)
6. Is the authority of this position clearly documented in the air carrier’s Manual(s)?	Yes No (explain)
7. Are the qualification standards for this position clearly documented?	Yes No (explain)
8. Are the qualification standards for this position appropriate for the duties that are assigned?	Yes No (explain)
9. Does the individual acknowledge that he/she has authority for the Reliability program processes?	Yes No (explain)
10. Does the individual know who has the responsibility for the Reliability program processes?	Yes No (explain)
11. Are the procedures for delegation of authority clearly documented for the Reliability program processes?	Yes No (explain)

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1.3.15 RELIABILITY PROGRAM
SECTION 3 – PROCEDURES ATTRIBUTE

Objective: To determine if the company has documented procedures for accomplishing Reliability program processes.

To meet the objective, the auditor will accomplish the following task:

1. Review the documented instructions and information related to the Reliability program processes to ensure that they contain who, what, where, when, and how.
2. Review the FAA Guidance and Specific Regulatory Requirements (SRR) included in the supplemental information section of this SAI.
3. Discuss the Reliability program processes with appropriate individual to gain an understanding of the procedures.
4. Observe the Reliability program processes with appropriate individual to gain an understanding of the procedures.

To meet the objective, the auditor will determine and record answers to the following questions:

1. Does the data collection system specify the type of source documents that will be utilized, i.e., Unscheduled Removals, Confirmed Failures, Service Difficulty Reports, Mechanical Interruption Summaries, Pilot Reports, Shop Findings, Bench Checks, Health Usage Monitoring System, Vibration Health Monitoring, and other sources the operator considers appropriate.	Yes No (explain)
2. Does the data collection system specify the flow of information from the source documents to the data entry system for analysis?	Yes No (explain)
3. Do written procedures provide detailed information and instructions for Data Analysis process?	Yes No (explain)
4. Does the Data Analysis system describe the format and content of the Reliability reports?	Yes No (explain)
5. Are the performance standards or norms clearly defined in the analysis process (The standard or norm may be running average, mean average, manufacturer’s standard, history or experience rate, tabulation, graphs, charts, or any other means measure performance against)?	Yes No (explain)
6. Does Data Analysis system utilize statistical performance standards and “Alert Values” for helicopter systems/components?	Yes No (explain)
7. Does Data Analysis system utilize numeric indicators of inspection discrepancy reports and analysis of these reports for adjusting Inspection Intervals?	Yes No (explain)
8. Does Data Analysis systems utilize other non-alerting type programs for a basis for continuous mechanical performance and if so can it be summarized to arrive at norms and negative trends i.e. component removal rates, repeat write-ups, etc.?	Yes No (explain)
9. Do written procedures identify the frequency that management will convene a meeting to address Reliability reports?	Yes No (explain)
10. Do written procedures identify a Reliability meeting processes i.e. previous monthly meeting minutes, discuss items with over-alerts, actions being taken, adjustments to maintenance intervals, special inspections, or other changes to the maintenance program to reduce the alerts?	Yes No (explain)
11. Do written procedure place deadline on implementing corrective action plans for all Reliability deficiencies?	Yes No (explain)

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13. Do written procedures identify the persons or persons responsible for reviewing Reliability report and the process for assigning the action to person(s) to develop a plan to correct the deficiencies within a defined period?	Yes No (explain)
14. Do written procedures explain the method for validating the results of the corrective actions after they have been implemented?	Yes No (explain)
15. Do written procedures define how the Reliability deficiencies are tracked from month to month or until closure for all deficiencies?	Yes No (explain)
16. Do written procedures describe methods for adjusting maintenance inspection and overhaul intervals?	Yes No (explain)
17. Do the written procedures identify: who what, where, when, and how?	Yes No (explain)
18. Does the air carrier have the resources to support the written procedures for the Reliability program?	Yes No (explain)
19. Are the procedures published in different manuals relating to the Reliability process consistent?	Yes No (explain)
20. Does the air carrier have a documented process in their manual(s) to assess the impacts of changing procedures for the Reliability process?	Yes No (explain)
21. Were all observations unrelated to the Reliability process satisfactory?	Yes No (explain)

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1.3.15 RELIABILITY PROGRAM
SECTION 4 – CONTROL ATTRIBUTE

Objective: To determine if checks and restraints are designed into the Reliability program processes to ensure a desired result is achieved.

To meet the objective, the auditor will accomplish the following task:

1. Review the documented instructions and information related to the Reliability program processes.
2. Discuss the Reliability program processes with appropriate individual to gain an understanding of the controls.
3. Observe the Reliability program processes to gain an understanding of the controls.

To meet the objective, the auditor will determine and record answers to the following questions:

1. Are the following checks and restraints built into the Reliability program processes:	
1.1. Does the Reliability Program Data Collection system collect all the necessary source documents, for data entry, within the prescribed time frames?	Yes No (explain)
1.2. Are the Reliability Program Data Analysis reports published within the prescribed time frames?	Yes No (explain)
1.3. Does the Reliability Analysis process collection sufficient data to establish a standard mean deviation to compare monthly performance?	Yes No (explain)
1.4. Are the Reliability Analysis process standard mean deviations or standard norms being adjusted to prevent alerts or spikes in the reports?	Yes No (explain)
1.5. Is justification being provided to raise the alert levels or standard norms above the previous published standard rates?	Yes No (explain)
1.6. Does the Reliability Board or established Reliability group conduct monthly meetings to review and take action as necessary from the analysis reports?	Yes No (explain)
1.7. Does the Reliability Board have a chairperson that is at the highest maintenance position to administrator the program and has final Authority for Reliability program?	Yes No (explain)
1.7. Does the Air Carrier’s Reliability Program making adjustments to the maintenance intervals and maintenance processes to reduce the “Alerts”?	Yes No (explain)
1.8. Do written procedures establish the methods that corrective actions will be taken, (e.g., work orders, special inspections, procedures, engineering orders, and technical standards)?	Yes No (explain)
1.8. Does the Air Carrier or its maintenance provider have the organizational structure and technical expertise to meet or exceed the standards for Reliability Programs contained in AC 120-17A, as revised?	Yes No (explain)
1.9. Does the Air Carrier have an organizational chart, including maintenance providers, in the Reliability Program Document?	Yes No (explain)
1.10. Does the Air Carrier’s method for obtaining FAA approval address the following areas: performance standards, Data Collection system, data analysis system, and Alerting system?	Yes No (explain)
2.0 Do the checks and restraints ensure the desired results are achieved for the Reliability process?	Yes No (explain)
3.0 Does the Air Carrier have a document process in their Manual(s) to assess the impacts of changing the checks and restraints for the Reliability process?	Yes No (explain)
4.0 Does the Air Carrier have the resources to support the checks and restraints for the Reliability process?	Yes No (explain)
5.0 Were all observations unrelated to the Reliability process satisfactory?	Yes No (explain)

FAA/HSAC PART 135 SYSTEM SAFETY RISK MANAGEMENT**1.3.15 RELIABILITY PROGRAM****SECTION 5 – PROCESS MEASUREMENT ATTRIBUTE**

Objective: To determine if operator measures and assesses the Reliability program processes to identify and correct problems or potential problems.

To meet the objective, the auditor will accomplish the following task:

1. Review the documented instructions and information related to the Reliability program processes.
2. Discuss the Reliability program processes with appropriate individual to gain an understanding of the controls.
3. Observe the Reliability program processes to gain an understanding of the controls.

To meet the objective, the auditor will determine and record answers to the following questions:

1. Does the air carrier’s Reliability Program processes include the following Process Measurements?

1.1. Does the air carrier document their Process Measurement methods and results?	Yes No (explain)
1.2 Does the air carrier audit process define the decision-making process for action plans to mitigate the identified Hazards and Risk?	Yes No (explain)
1.3. Does the air carrier take corrective action in response to failures detected during audits?	Yes No (explain)
1.4. Does the air carrier re-evaluate the corrective actions to determine the following; the original hazard, consequence, severity and likelihood have been mitigated effectively?	Yes No (explain)
1.5. Does the air carrier conduct an independent audit of the Reliability program at least biannually to ensure that it meet its intended function (audits are conducted by personnel not associated with Reliability program)?	Yes No (explain)
1.6. Does the air carrier conduct at least 20% of its audits in a random, unannounced fashion?	Yes No (explain)
2. Does the air carrier audit the Data Collection System for quality of content per its’ written procedures?	Yes No (explain)
3. Does the air carrier audit the Data Analysis process for quality of content per its’ written procedures?	Yes No (explain)
4. Does the air carrier audit the Reliability Reports for quality of content per its’ written procedures?	Yes No (explain)
5. Does the air carrier audit the justifications to adjust the “mean” average, “Alert” levels or norms depicted in the reports?	Yes No (explain)
6. Are the process measurement results available to the FAA?	Yes No (explain)
7. Does the air carrier have a documented process to ensure the maintenance program(s) are changed and approved to reflect the Reliability process?	Yes No (explain)
8. Does the Process Measurement adequate evaluate the system element interfaces that are associated with Reliability program processes?	Yes No (explain)
9. Does the air carrier have a documented process in their Manual(s) to assess the impacts of changing procedures for the Reliability program processes?	Yes No (explain)
10. Were all observations unrelated to the Reliability program processes satisfactory?	Yes No (explain)
11. Does the Process Measurement methods appear to be affective?	Yes No (explain)
12. Does the air carrier use their Process Measurement results to improve their programs?	Yes No (explain)

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13. Are the Process Measurement results accessible to the FAA?	Yes No (explain)
14. Does the organization that conducts the process measurement have direct access to the person(s) with the responsibility and authority for the Operational Control processes?	Yes No (explain)
15. Does the air carrier have the resources to support the Process Measurement for the Operational Control process?	Yes No (explain)
16. Were all observations unrelated to the Process Measurement satisfactory?	Yes No (explain)
17. Best practices/favorable comments:	

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SECTION 6 – INTERFACES ATTRIBUTE

Objective: To determine if operator identifies and manages the interactions between the Reliability program processes includes safety attributes.

To meet the objective, the auditor will accomplish the following task:

1. Review the documented instructions and information related to the Reliability program processes.
2. Discuss the Reliability program processes with appropriate individual to gain an understanding of the interfaces.
3. Observe the Reliability program processes to gain an understanding of the controls.

To meet the objective, the auditor will determine and record answers to the following questions:

1. Are the following interfaces identified for the Reliability program processes:

1.1. Appropriate Operational Equipment (Element 1.1.2)	Yes No (explain)
1.2. Major Repairs and Alterations (Element 1.2.2)	Yes No (explain)
1.3. Maintenance Log/Recording Requirements (Element 1.2.3)	Yes No (explain)
1.4. MIS Reports (Element 1.2.4)	Yes No (explain)
1.5. Mechanical Reliability Reports (Element 1.2.5)	Yes No (explain)
1.6. Maintenance Program (Element 1.3.1)	Yes No (explain)
1.7. Inspection Program (Element 1.3.2)	Yes No (explain)
1.8. MEL/CDL/Deferred Maintenance (Element 1.3.5)	Yes No (explain)
1.9. Outsource Organization (Element 1.3.7)	Yes No (explain)
1.10. Engineering/Major Repairs and Alterations (Element 1.3.9)	Yes No (explain)
1.11. Parts/Material Control/SUP (Element 1.3.10)	Yes No (explain)
1.12. Continuous Analysis and Surveillance (CAS) (Element 1.3.11)	Yes No (explain)
1.13. GMM/Equivalent (1.3.14)	Yes No (explain)
1.14. Other Programs Approved by Operations Specifications	Yes No (explain)
1.15. Content Consistency Across Manuals (Element 2.1.2)	Yes No (explain)
1.16. Maintenance Training Program (Element 4.2.1)	Yes No (explain)
1.17. RII Training Requirements (Element 4.2.2)	Yes No (explain)

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SECTION 6 – INTERFACES ATTRIBUTE

1.18. Director of Maintenance (Element 7.1.1)	Yes No (explain)
1.19. Chief Inspector (Element 7.1.2)	Yes No (explain)
2. List any additional interfaces identified.	Yes No (explain)
3. Are there procedures to ensure that interfaces occur?	Yes No (explain)
4. Are there controls to ensure that interfaces occur?	Yes No (explain)
5. Are the interfaces between the Reliability process and other processes treated consistently in the Manual(s)?	Yes No (explain)
6. Were all observations unrelated to the RII Personnel process satisfactory?	Yes No (explain)
7. Best practices/favorable comments:	Yes No (explain)