



*Issue Paper (IP)*

**IP Number:** CIP EASA 2023-08 **RI**

**Initial Date (DD/MMM/YYYY):**

**Revision - Date (DD/MMM/YYYY):**

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**Retroactivity (Y/N):** N

<b>Title:</b>	Removal of not MSG-3 related Steps from the L/HIRF Protection Analysis Methodology and Logic Diagram
<b>Submitter:</b>	EASA

Applies To:	
MSG-3 Vol 1	X
MSG-3 Vol 2	X
IMPS	X

**Issue:**

The existence of an L/HIRF Assurance Plan (or equivalent validation program) is solely related to the aircraft certification process.

Its possible use to cover the intent of an MSG-3 derived task cannot be assessed through the MSG-3 methodology. Therefore, no guidance should be provided in the MSG-3 document **on that respect**.

**Problem:**

Current MSG-3 document includes the L/HIRF Protection MSG-3 Logic Diagram (Figure 2-6-1.3 (part 2)).

The workflow clearly shows that the L/HIRF MSG-3 analysis can be considered completed with Step 15: “*For all tasks selected, identify the interval applicable for detecting potential degradation*”.

The following steps, from Step 16 to Step 19, are instead describing a process that is not dependent upon the MSG-3 methodology.



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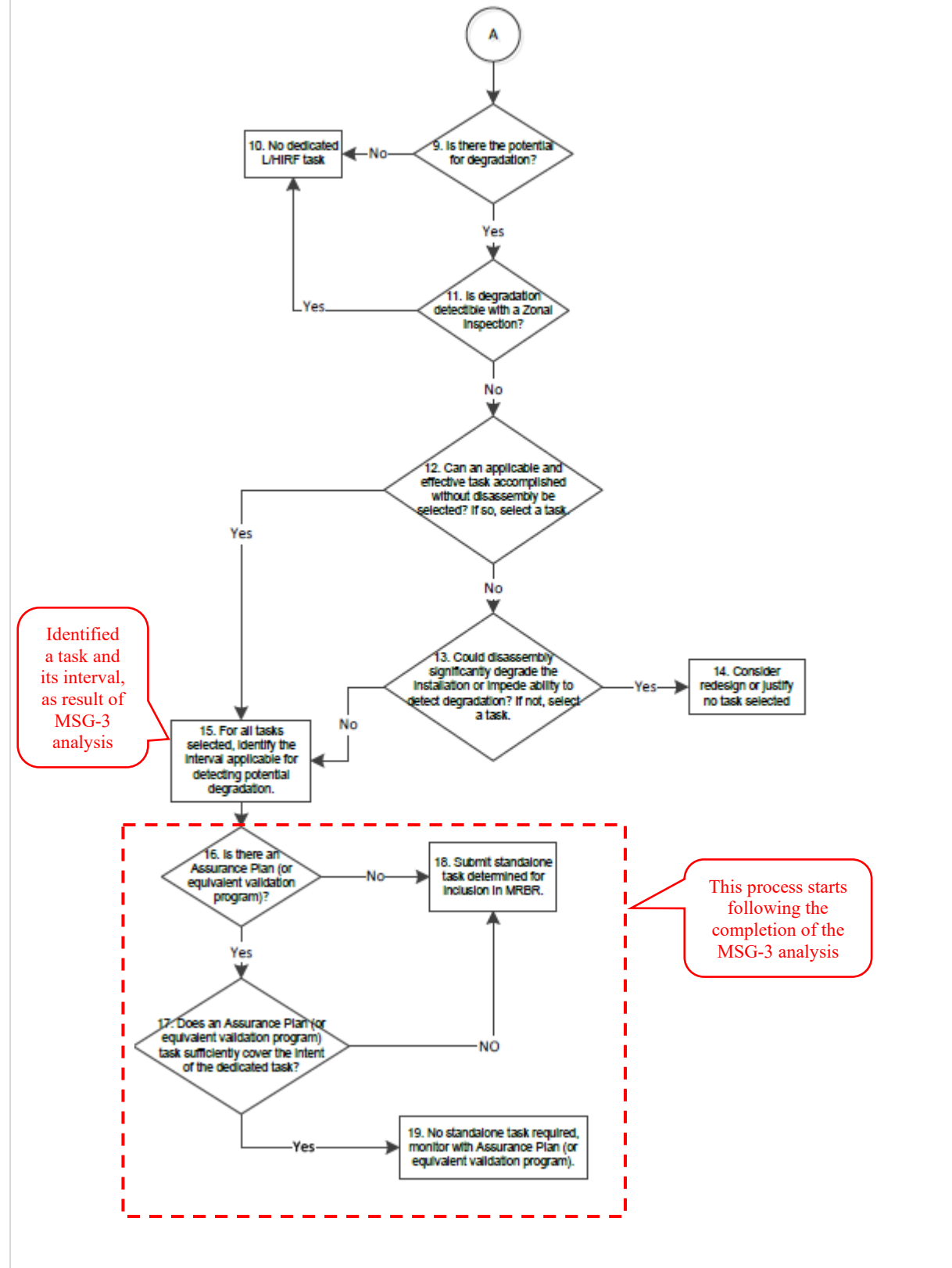
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**Figure 2-6-1.3 L/HIRF Protection MSG-3 Logic Diagram (part 2)**





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The current L/HIRF MSG-3 analysis methodology has been introduced in MSG-3 rev. 2013.1, following the approval of IMRBPB IP 129 “Lightning/HIRF (L/HIRF) Methodology Clarifications” back in 2013. The IMRBPB position as recorded in the IP 129 itself is the following:

*“Prior to the use of this new L/HIRF process an agreement is to be reached with the manufacturer regarding the use of an assurance plan. If an assurance plan is to be used during the L/HIRF MSG-3 analysis the applicable PPH must be updated to include this agreement, which will indicate roles and responsibilities.”*

**This statement as reported in the IP 129 has never been implemented.**

At that time the IMPS document was not existing (IMPS Issue 00 has been approved in 2016) and the MSG-3 analysis document was still the reference for information related to processes that are not dependent upon the MSG-3 methodology.

Following the first IMPS approval things started to change with the implementation of different IMRBPB IPs into the MSG-3 analysis document, to limit the guidelines to those pertinent to the analysis within the frame of an MRB process (e.g. IP 171 “Scope of FD Analysis in MSG-3” and IP 204 “Removal of MRB and CMCC process coordination section from the MSG-3 document”).

Furthermore, IMPS Issue 2 currently refers to a L/HIRF assurance plan:

- In paragraph 4.10 “Specific Considerations for L/HIRF”
  - 4.10.4 During the L/HIRF task development if an Assurance Plan is required to support the MSG-3 analysis, the details of the Assurance Plan should be referenced in the MRBR.
- In paragraph 9.2 “Minimum content of a Periodic Review”
  - [...]
  - Status of sampling programs & assurance plans (e.g., Landing Gear, L/HIRF and Fatigue)
  - [...]

Therefore, to be consistent with the dispositions approved by the IMRBPB within IP 129, guidance related to the impact that an L/HIRF Assurance Plan (or equivalent validation program) may have on the publication in the MRBR of L/HIRF MSG-3 derived tasks, as described in Steps from 16 to 19, should not be placed in the MSG-3 document but in the PPH for those programs that make use of such document when available.

On the other hand, the possibility to take credit for an existing L/HIRF Assurance Plan (or equivalent validation program) to select an applicable and effective visual inspection rather than more complex task (i.e. notes in 2-6-1. Step 12 and Step 13), it is still recognized as an MSG-3 related application.



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Furthermore, the IMRBPB position as recorded in the IP 129 (never implemented into the MSG-3 document) provides important details with reference to the process to be followed and should be considered for implementation into the IMPS document.

**Recommendation (including Implementation):**

A. It is recommended **the following:**

1. Amend MSG-3 Revision **2022.1**, Volume 1 – Fixed Wing Aircraft, Para. 2-6-1.3. as follows:

**Step 15: For all tasks selected, identify the interval applicable for detecting potential degradation**

To determine the maintenance task interval, the Working Group considers the impact of the ED/AD threat on the protection characteristics using best judgment and available information of expected degradation.

~~**Step 16: Is there an L/HIRF Assurance Plan (or equivalent validation program)?**~~

~~OEM to provide details to the Working Group that may include summary of anticipated test methodologies, sample size details, and general information on type and number of test points.~~

~~**Step 17: Does an L/HIRF Assurance Plan (or equivalent validation program) task sufficiently cover the intent of the dedicated task?**~~

~~OEM must provide details in the L/HIRF Assurance Plan to satisfy the working group that the degradation concern is sufficiently covered. If the need for a task is based on unfavorable in-service experience, it is not a candidate for coverage by the L/HIRF Assurance Plan.~~

~~**Step 18**~~ **Step 16: Submit standalone task determined for inclusion in MRBR.**

All L/HIRF-derived stand-alone tasks should be uniquely identified in the MRBR for traceability during future changes. Once the analysis is completed, the resulting maintenance tasks and intervals for all L/HIRF systems are submitted to the ISC for approval and inclusion in the MRB Report proposal.



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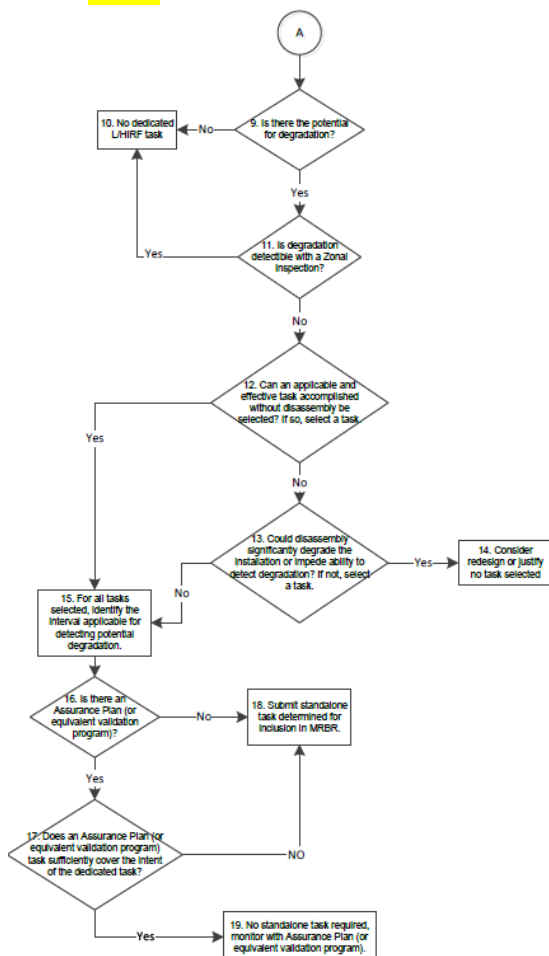
**Step 19: No standalone task required, monitor with an L/HIRF Assurance Plan (or equivalent validation program)**

**OEM must ensure traceability of all dedicated tasks covered by the L/HIRF Assurance Plan, until Engineering and the ISC have agreed sufficient data has been collected to determine permanent disposition of the recommended dedicated task.**

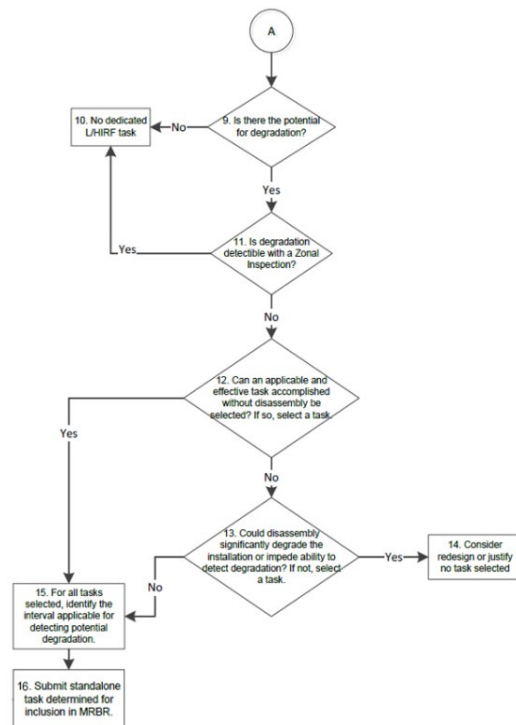
**NOTE: If an L/HIRF Assurance Plan is discontinued, OEM has responsibility to either use the collected data to support “No dedicated task required” or to institute the original dedicated task into the maintenance program.**

2. Amend MSG-3 Revision **2022.1**, Volume 1 – Fixed Wing Aircraft, Figure 2-6-1.3 L/HIRF Protection MSG-3 Logic Diagram (part 2) as follows:

**from:**



**to:**





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**Retroactivity (Y/N): N**

3. Amend MSG-3 Revision 2022.1, Volume 1 – Fixed Wing Aircraft, Para. 2-6. to delete bullet 2.:

## **2.6 Lightning/High Intensity Radiated Field (L/HIRF) Analysis Procedure**

[...]

1. L/HIRF protection relies on both external and internal L/HIRF protection components.  
[...]

### ~~2. Use of Lightning/HIRF Assurance Plan Philosophy~~

~~L/HIRF Assurance Plans, regardless of source, can be used to validate L/HIRF protection performance and/or maintenance program effectiveness.~~

~~After a task is proposed through the MSG-3 analysis process and where an L/HIRF Assurance Plan (or equivalent validation program) exists, the philosophy used in the L/HIRF MSG-3 logic is to either retain the proposed task or use the L/HIRF Assurance Plan (or equivalent validation program) to cover the intent of the MSG-3 task. For example, in cases where there is little data and the potential for degradation is low, an LHSI may be more effectively covered by the L/HIRF Assurance Plan.~~

### ~~3 2. Good Performance Philosophy~~ [...]

4. Amend MSG-3 Revision 2022.1, Volume 2 – Rotorcraft, Para. 2-6. to delete bullet 2.:

## **2.6 Lightning/High Intensity Radiated Field (L/HIRF) Analysis Procedure**

[...]

1. L/HIRF protection relies on both external and internal L/HIRF protection components.  
[...]

### ~~2. Use of Lightning/HIRF Assurance Plan Philosophy~~

~~L/HIRF Assurance Plans, regardless of source, can be used to validate L/HIRF protection performance and/or maintenance program effectiveness.~~

~~After a task is proposed through the MSG-3 analysis process and where an L/HIRF Assurance Plan (or equivalent validation program) exists, the philosophy used in the L/HIRF MSG-3 logic is to either retain the proposed task or use the L/HIRF Assurance Plan (or equivalent validation program) to cover the intent of the MSG-3 task. For example, in cases where there is little data and the potential for degradation is low, an LHSI may be more effectively covered by the L/HIRF Assurance Plan.~~

### ~~3 2. Good Performance Philosophy~~ [...]



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5. Amend MSG-3 Revision 2018.1, Volume 2 – Rotorcraft, Para. 2-6-1.3. as follows:

**Step 15: For all tasks selected, identify the interval applicable for detecting potential degradation**

To determine the maintenance task interval, the Working Group considers the impact of the ED/AD threat on the protection characteristics using best judgment and available information of expected degradation.

~~**Step 16: Is there an L/HIRF Assurance Plan (or equivalent validation program)?**~~

~~OEM to provide details to the Working Group that may include summary of anticipated test methodologies, sample size details, and general information on type and number of test points.~~

~~**Step 17: Does an L/HIRF Assurance Plan (or equivalent validation program) task sufficiently cover the intent of the dedicated task?**~~

~~OEM must provide details in the L/HIRF Assurance Plan to satisfy the working group that the degradation concern is sufficiently covered. If the need for a task is based on unfavorable in-service experience, it is not a candidate for coverage by the L/HIRF Assurance Plan.~~

**Step 18 Step 16: Submit standalone task determined for inclusion in MRBR.**

All L/HIRF-derived stand-alone tasks should be uniquely identified in the MRBR for traceability during future changes. Once the analysis is completed, the resulting maintenance tasks and intervals for all L/HIRF systems are submitted to the ISC for approval and inclusion in the MRB Report proposal.

~~**Step 19: No standalone task required, monitor with an L/HIRF Assurance Plan (or equivalent validation program)**~~

~~OEM must ensure traceability of all dedicated tasks covered by the L/HIRF Assurance Plan, until Engineering and the ISC have agreed sufficient data has been collected to determine permanent disposition of the recommended dedicated task.~~

~~NOTE: If an L/HIRF Assurance Plan is discontinued, OEM has responsibility to either use the collected data to support “No dedicated task required” or to institute the original dedicated task into the maintenance program.~~



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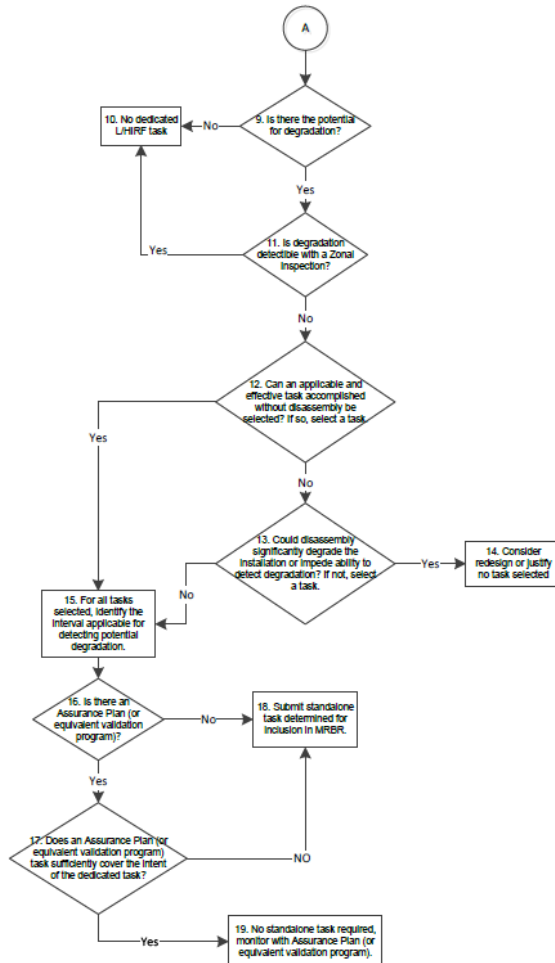
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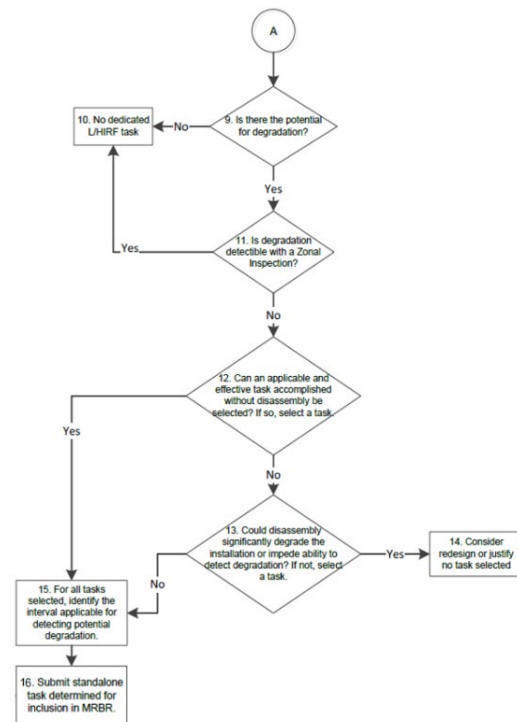
Retroactivity (Y/N): N

6. Amend MSG-3 Revision 2018.1, Volume 2 – Rotorcraft, Figure 2-6-1.3 L/HIRF Analysis Methodology Logic Diagram (Part 2) as follows:

from:



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B. Amend IMPS Issue 02 to add the new paragraph 4.10.5:

**4.10 Specific Considerations for L/HIRF**

**4.10.1** L/HIRF tasks should reside in the Systems/Powerplant section of the MRBR. However, the MRBR may include a section for unique L/HIRF requirements rules when deemed necessary by MRB/ISC/TCH.

**4.10.2** The MRBR should identify L/HIRF tasks in a manner mutually acceptable to the MRB/ISC/TCH and this shall be documented in the PPH.

**4.10.3** The MRBR should contain information that L/HIRF dedicated tasks typically reside in ATA 20 of the Systems /Powerplant section of the MRBR and do not have an FEC.

**4.10.4** During the L/HIRF task development if an Assurance Plan is required to support the MSG-3 analysis, the details of the Assurance Plan should be referenced in the MRBR.

**4.10.5** L/HIRF Assurance Plans (or equivalent validation programs), regardless of source, can be used to validate L/HIRF protection performance and/or maintenance program effectiveness. Prior to the use of the L/HIRF process an agreement is to be reached with the manufacturer regarding the use of an Assurance Plan (or equivalent validation program). If an Assurance Plan (or equivalent validation program) is to be used during the L/HIRF MSG-3 analysis, the applicable PPH must be updated to include this agreement, which will indicate roles and responsibilities.

**IMRBPB Position:**

**Date:**

**Position:**

**Recommendation for Implementation:**

**Status of the Issue Paper:**

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Active

Incorporated in MSG-3 / IMPS (with details)

Archived