Issue Paper (IP)

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		Applies To:	
Title:	MSG-3 "classic task intent" definition	MSG-3 Vol 1	X
		MSG-3 Vol 2	
Submitter:	EASA	IMPS	

Issue:

The meaning of "task intent" needs clarification.

Following the approval of IMRBPB IP 180 "Aircraft Health Monitoring (AHM) integration in MSG-3" and the introduction of "classic Task" definition, a formal definition of "classic task intent" is required to ensure a consistent application of the MSG-3 Level 3 analysis.

Problem:

There are many occurrences of "task intent" wording (sometimes "the intent of the MRBR task") within different documents related to the MRB process:

- MSG-3 rev. 2018.1 Vol 1 and Vol 2 (paragraph 1-3-2, 2-3-8.6, 2-6-1).
- Evolution/Optimization Guidelines IMRBPB Issue Paper 44 (Issue 3) (paragraph 3.0, 5.6, 8.1).
- IMPS Issue 01 (paragraph 3.7).

Despite a formal definition of "task intent" does not exist in the MSG-3 glossary, there has always been a sort of common understanding of the meaning of such a wording, enough not to generate questions or concerns with reference to the context of the different guidelines listed above, resulting in a reasonably consistent approach among the processes applied by the TCHs.

With the approval of the IMRBPB IP 180 "Aircraft Health Monitoring (AHM) integration in MSG-3" an additional occurrence of the wording "task intent" has been added within the new proposed MSG-3 Level 3 analysis logic flow.

In particular it is used as the term of reference for answering the decision box(es) 2-3-9.B that drives the selection of an AHM Alternative **or** of an AHM Hybrid to be used instead of the classic task derived from the MSG-3 Level 2 analysis.
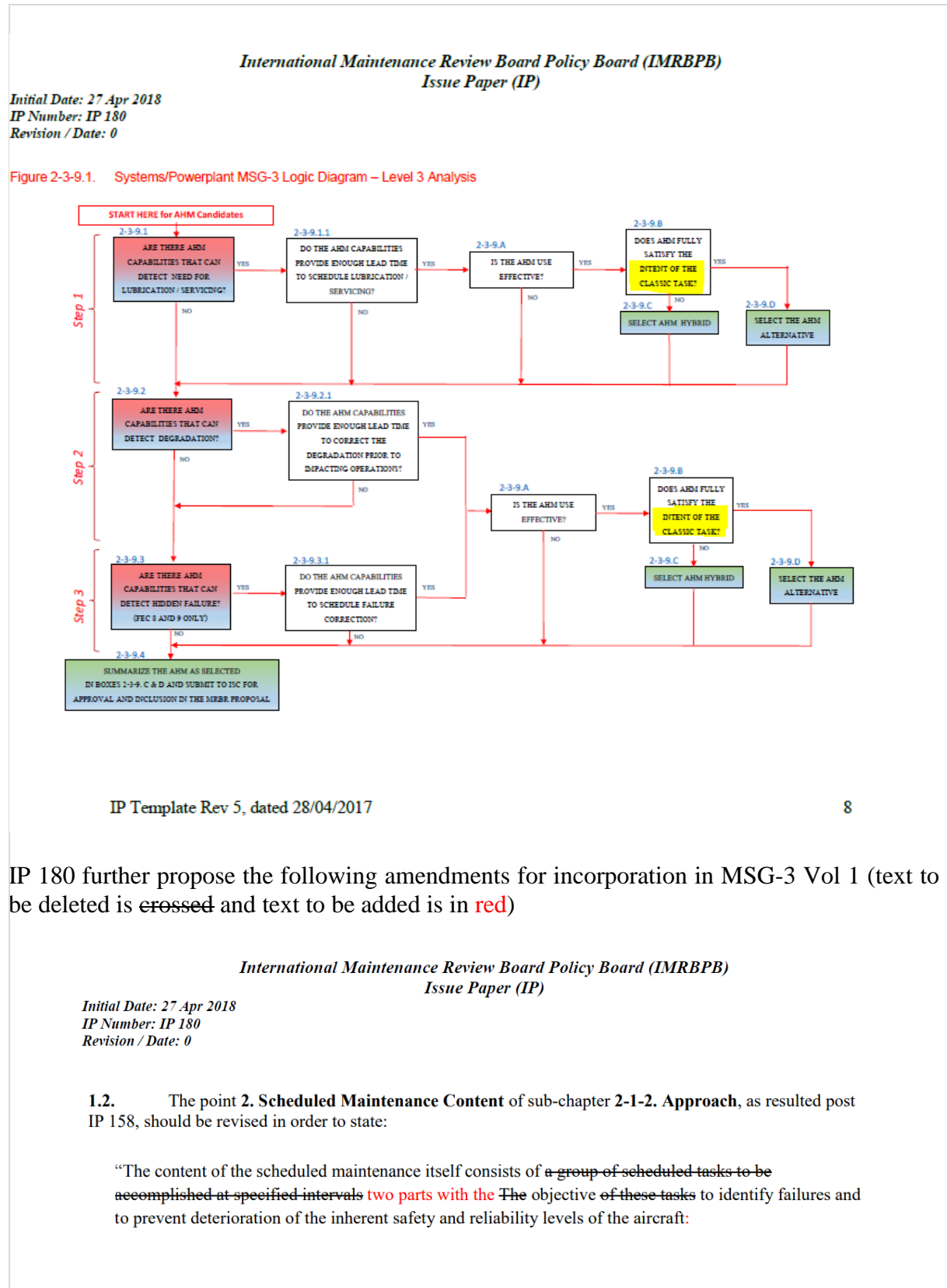
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Figure 2-3-9.1.   Systems/Powerplant MSG-3 Logic Diagram – Level 3 Analysis

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IP 180 further propose the following amendments for incorporation in MSG-3 Vol 1 (text to be deleted is ~~crossed~~ and text to be added is in red)

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1.2.   The point **2. Scheduled Maintenance Content** of sub-chapter **2-1-2. Approach**, as resulted post IP 158, should be revised in order to state:

"The content of the scheduled maintenance itself consists of ~~a group of scheduled tasks to be accomplished at specified intervals~~ two parts with the ~~The~~ objective ~~of these tasks~~ to identify failures and to prevent deterioration of the inherent safety and reliability levels of the aircraft:

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a) A group of scheduled tasks to be accomplished at specified intervals. The tasks in scheduled maintenance may include:

   (1) Lubrication/Servicing (LU/SV or LUB/SVC)

   (2) Operational/Visual Check (OP/VC or OPC/VCK)

   (3) Inspection/Functional Check (IN*/FC or */FNC)

      * General Visual Inspection (GV or GVI)

      * Detailed Inspection (DI or DET)

      * Special Detailed Inspection (SI or SDI)

      * Scheduled Structural Health Monitoring (S-SHM)

   (4) Restoration (RS or RST)

   (5) Discard (DS or DIS)

and

b) A group of alternative procedures and/or actions and/or tasks, as related to above (1) to (5), which make use of AHM capability.

1.6.   The sub-chapter **2-3-3. Logic Diagram** should be revised in order to state:

"The decision logic diagrams ~~(Ref. [Figure 2-2.1]) is~~ are used for analysis of systems/powerplant items. The logic flow is designed whereby the user begins the analysis at the top of the diagram, and answers to the "YES" or "NO" questions will dictate direction of the analysis flow.

1. Levels of Analysis

The decision logic has two levels (Level 1 and 2) enabling the development of classic tasks (Ref. [Figure 2-2.1]) and a third level (Level 3) enabling the use of AHM (Ref. [Figure 2-3-9.1]):

1.9.   The **Appendix A. Glossary** should be revised in order to include the following definitions:

"[…]

Aircraft Health Monitoring (AHM)	Aircraft Health Monitoring (AHM) is the use of data generated from specific aircraft systems to determine condition, reduced resistance to failure or degradation of function for the purpose of timely scheduling maintenance actions (the use typically includes Sensing, Acquisition, Transfer, Analysis and Action(s) taken: "SATAA").
AHM Alternative	AHM that mitigates all failure cause(s) covered by a classic task.
AHM Candidate	Failure cause(s) for which AHM capability exists and for which a classic task exists.
AHM Hybrid	A combination of AHM and a task resulting in a scheduled action.
Classic Task	A task that results from Level 2 analysis.

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Such modifications introduce already a clear segregation between the nature of classic MSG-3 tasks and AHM Alternative/Hybrid, generating the need to deeply understand the concept of "intent" in order to properly answer the question in the Box 2-3-9.B.
It has to be highlighted that the term "task" following "AHM" or "AHM Alternative" or "AHM Hybrid" is omitted <u>on purpose</u> (e.g. IP 180 never makes reference to "AHM Alternative task").

Furthermore, IP 180 introduces a NOTE to clarify how to answer the Box 2-3-9.B:

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Box 2-3-9.B: (as applicable to all three steps) DOES AHM FULLY SATISFY THE INTENT OF THE CLASSIC TASK?
AHM must address all failure causes covered by the classic task.

Note:	In assessing the question consideration should include AHM capability beyond those associated with failure cause (e.g. functional failure). The way AHM mitigates the failure cause does not necessarily have to be the same as the classic task, for example a failure cause covered by a classic qualitative visual check (failure finding task) may be fully covered by quantitative AHM monitoring (potential failure finding).

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The NOTE above aims to give some directions with reference to the meaning of the word "intent" in the AHM context, pointing to the concept of "*the way the AHM mitigates the failure cause*" that "*does not necessarily have to be the same as the classic task*".
The question now becomes: how is it possible to properly answer the Decision Box 2-3-9.B without introducing a formal definition of "classic task intent" in the MSG-3 analysis? The term of reference/comparison must be clear when comparing the different "*two parts*" of the content of scheduled maintenance itself, as per IP 180 approved modification.

Many TCHs have gained a lot of experience over time and streamlined their MSG-3 analysis, not doing the straight "*one Level 2 analysis for each FF/FC combination*" as described in MSG-3, but often combining several Failure Causes in just a single Level 2 analysis.
Also, the same task can be found applicable and effective in more than one Level 2 analysis and, finally, many manufacturers do have task combination/consolidation steps in their procedures.
This all leads to existing classic tasks in existing MRBRs, but also will in the future create classic tasks, which do address more than one failure cause / cover more than one function, so the intent of those tasks will be a summary of reasons why the task must be performed.

Furthermore, it is generally very difficult to determine the task intent by just looking at the task title, description, or procedure. This is why traditionally the AMM minimum content for a task contains a "*reason for the job*" information (i.e. ref. to ATA 100 2-1-2.1(1)(a)).

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To fully understand the original MSG-3 task intent it is therefore necessary to go back to the "source document" (i.e. the Level 2 analysis of the related MSI); for this specific reason most TCHs make use of a dedicated form in the MSG-3 analysis, which lists the finally selected tasks with a reference to the Level 2 analysis that allows to trace back each single task to the reason why it has been selected (i.e. in a Format "F/FF/FE/FC" or similar, such as "1B3a").

Last but not least, we cannot disregard the fact that many tasks can do more than what they have been selected for, so there is a difference between "the intent" and "the capability" of a task.

Recommendation (including Implementation):

It is proposed to add a definition of "classic task intent" to the MSG-3 document Appendix A. Glossary:

Classic Task (MSI)	A task that results from Level 2 analysis.
Classic Task (MSI) – Intent	The reason or summary of reasons for which the task has been selected in the source Level 2 analysis: 1) to prevent or avoid a functional failure due to a specific failure cause, and/or 2) to detect functional degradation characteristics due to a specific failure cause, and/or 3) to detect a hidden functional failure, and/or 4) to confirm the availability of a function.

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IMRBPB Position:	
Date:	24 June 2022
Position:	Agreed, closed in 2022 meeting as IP 200
Recommendation for Implementation:	As per effective date

Status of the Issue Paper:	X	Active
		Incorporated in MSG-3 / IMPS (with details)
		Archived