International Maintenance Review Board Policy Board (IMRBPB)
Issue Paper (IP)

Initial Date : 28 April 2016
IP Number: IP 157
Revision / Date: 00 / 28 April 2016

Title: Use of the Term "Critical Protection" in LHIRF MSG-3 Guidelines

Applies To:	
Vol 1:	
Vol 2:	
Both:	X
IMPS	

Submitter: LHWG

Issue: The meaning of the word "critical" in the LHIRF MSG-3 logic can be interpreted as having the potential for a catastrophic condition per CFR 25.1309. LHIRF components are not determined to be "critical" during the certification process even if they are part of a "critical system" protection scheme. Use of the word critical creates different interpretations in the industry which may result in different scope of completed analysis between those OEMs that interpret MSG-3 guidelines.

Problem:
MSG-3 general section 2-6 contains the sentence: "The L/HIRF analysis is a collaborative effort between the OEM Design and Maintenance Engineering groups, which reviews the L/HIRF protection items of critical systems and structure in order to maintain the inherent safety and reliability levels of the aircraft." Use of the word critical along with the identification of inherent safety can be confused to mean those components that provide for the continued safe flight and landing of the aircraft; directly tying the LHIRF protection to the certification level. In this case, those components that are protecting essential systems with hazardous failure conditions may be eliminated from analysis since there is no mention of the essential certification category in the MSG-3 guidelines. The guidelines are not intended to eliminate or include specific components based on the direct certification level of the systems or structures that they protect. Previous versions of LHIRF MSG-3 guidance included directions to include Critical and Essential systems within the MSG-3 LHIRF analysis. This is no longer the specified intent of MSG-3. Removal of association with the "critical" category will remove possible interpretations that tie the MSG-3 logic directly to the certification basis of the aircraft.

Recommendation (including Implementation):

It is proposed to remove references to critical systems and structure in the LHIRF Section 2-6 and Glossary definition of an LHSI.

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LHWG Proposal:

2-6. Lightning/High Intensity Radiated Field (L/HIRF) Analysis Procedure
This section contains guidelines for determining the dedicated scheduled maintenance tasks and intervals for L/HIRF protection using a progressive logic diagram. A glossary of terms and definitions used in the logic diagram is listed in Appendix A. This logic is the basis of an evaluation technique applied to each L/HIRF Significant Item (LHSI), using the data available and associated environments (ED/AD). Principally, the evaluations are based on the LHSI susceptibility to degradation. The L/HIRF analysis is a collaborative effort between the OEM Design and Maintenance Engineering groups, which reviews the L/HIRF protection ~~items of critical systems and structure~~ LHSIs in order to maintain the inherent safety and reliability levels of the aircraft.

2-6-1. L/HIRF Maintenance

3. L/HIRF Protection Analysis Methodology and Logic Diagram (see Figure 2-6-1.3)

Step 1: Identify L/HIRF Aircraft Protection by location

Using a process acceptable to the certifying authority, OEM Design Engineering specialists will ~~provide a~~ identify and list ~~of~~ L/HIRF protection components ~~for critical systems and structures which are determined through a process acceptable to the certifying authority~~.relating to all systems and structural components required to maintain the inherent safety of the aircraft. ~~This list will contain all systems and structural components required to maintain the inherent safety of the aircraft~~. Additional protection components can be added to the list at the discretion of the MSG-3 analyst. The aircraft protection components shall be identified by location on the aircraft.

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Glossary Definition Revision Proposed for "Lightning/HIRF Significant Item"

Lightning/HIRF Significant Items (LHSIs) address L/HIRF protection components determined by the OEM Design Engineering specialists as those that protect ~~critical~~ systems / structure ~~as determined by the OEM Design Engineering specialists~~ whose failure would affect the inherent safety levels of the aircraft. The scope of each LHSI is defined by the MSG-3 analyst. LHSIs may also address operational or economic considerations determined significant by the MSG-3 analyst.

LHSIs will include all of these significant aircraft system or structural Lightning/HIRF protection components or groups of components in an installed environment. Components that make up LHSIs are selected using engineering judgment based on the anticipated consequences of the protection component degradation. Typical protection components may include bonding jumpers, connectors, and embedded mesh in structural panels.

NOTE:
All L/HIRF protection components that protect ~~critical~~ systems/ structures as ~~defined~~ identified by OEM Design Engineering must be addressed in an LHSI. Other L/HIRF protection components may be included by the MSG-3 analyst as desired and accepted by the ISC.

IMRBPB Position: proposed wording is accepted. CIP IND 2015-08 closed as IP157
Date: 28 April 2016

Status of Issue Paper (when closed state the closure date): 28 April 2016

Retroactive: N

Recommendation for implementation: Amend text at next revision of MSG3

Important Note: The IMRBPB positions are not policy. Positions become policy only when the policy is issued formally by the appropriate National Aviation Authority.