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CIP MPIG-2025-01

Assessment of electric propulsion High Voltage wiring in
MSG-3

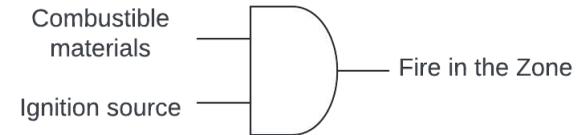
May 2025 - Dubai, UAE

EWIS: Any wire, wiring device, or combination of these, including termination devices, installed in any area of the aircraft for the purpose of transmitting electrical energy between two or more intended termination points. Refer to governing regulations for a specific definition.

Background

Assessment of EWIS today:

- Assessed under Zonal - EZAP;
- Assesses the effects of fire where combustible materials and wiring co-exist;
- Main goals:
 - minimise the accumulation of combustible materials
 - AND
 - improve the likelihood that EWIS degradation will be identified and corrected → Ignition source prevention;
- Other considerations: close proximity to Flight Controls, hydraulics, etc;



Method proven to be effective



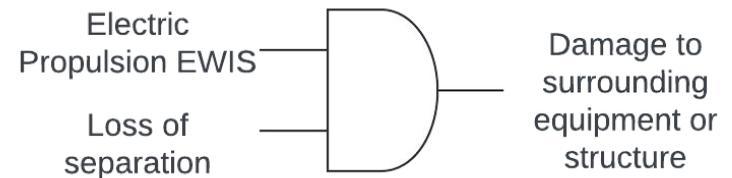
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Motivation for CIP (Problem)

Electric Propulsion EWIS:

- May require different methods for wiring protection (e.g. fuses vs thermal circuit breakers);
- Higher duty cycle at higher loads → nature of propulsion systems;
- Higher 'energy/power' (Voltage x Current);
- Loss of separation between High Voltage (HV) wiring and surrounding equipment or structure may cause damage, **irrespective of the presence of combustible materials;**

*The MSG-3 methodology should be revisited **for electric propulsion EWIS** to properly consider the need for HV electric propulsion EWIS maintenance*



MPIG approach to the Problem

2024 → Initial draft discussed in Hamburg (MPIG Face to Face meeting)

- Feedback to narrow the changes to electric propulsion, since the motivation is driven by Electric Propulsion, and current methods are adequate and proven effective for other applications;

2024/2025 → Identified small group to work on the CIP

- Considered groups proposals and goals from MPIG;
- CIP consensus & agreed with larger MPIG audience;



ARCHER



SKYDRIVE



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wisk



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MPIG Requirements for proposal

- ✓ Leverage EZAP;
- ✓ Ensure traditional EZAP is not affected;
- ✓ Changes should only be related to electric propulsion;

No disruption to current EZAP process that is referenced and relied upon to meet some certification requirements and guidelines (e.g. FAA AC 25-27)

New steps

Editorial changes

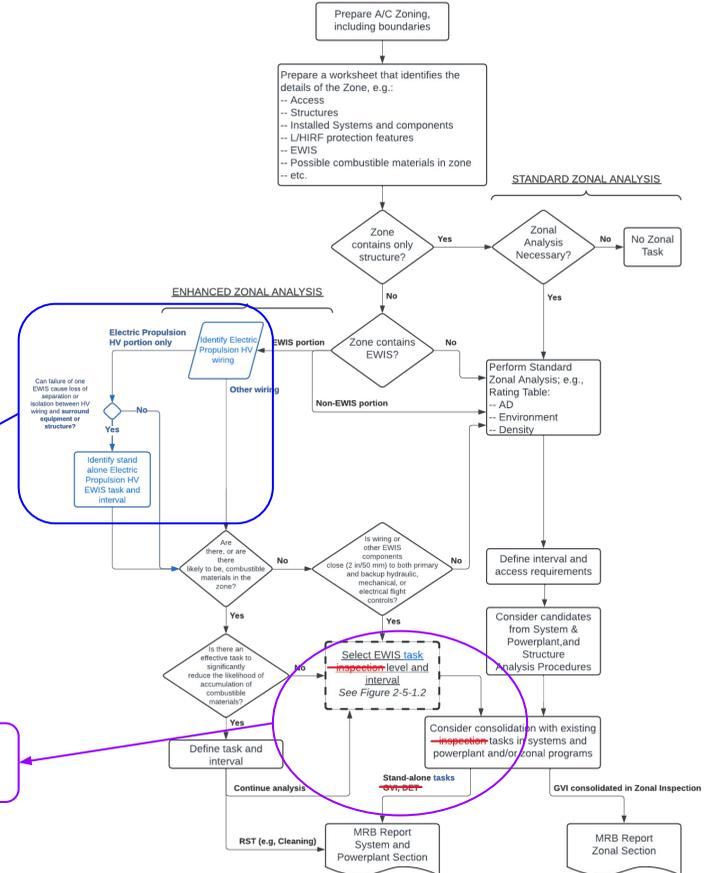
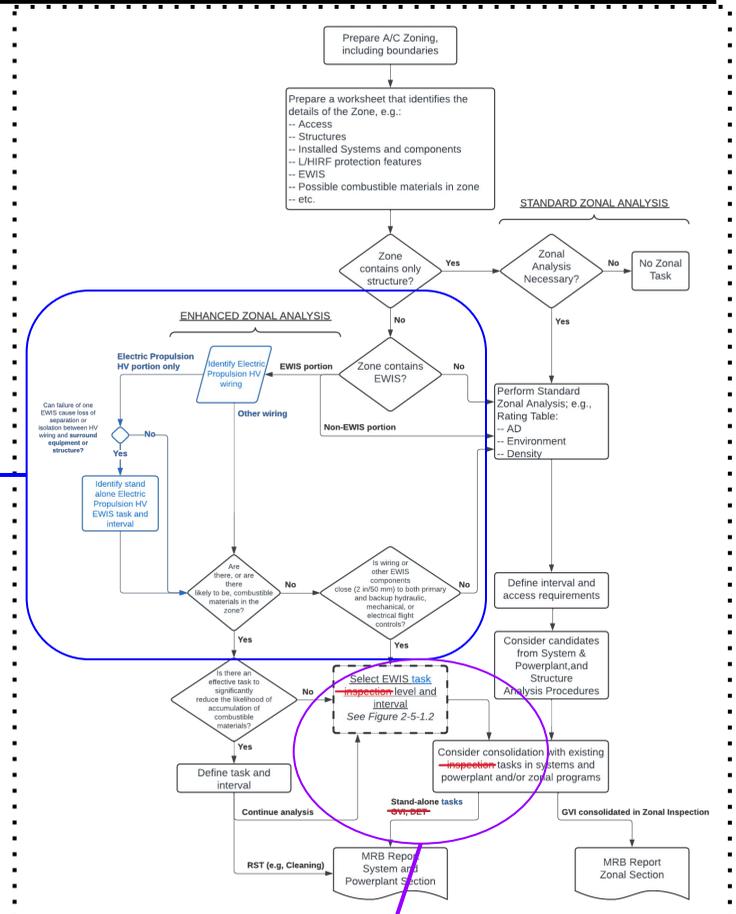
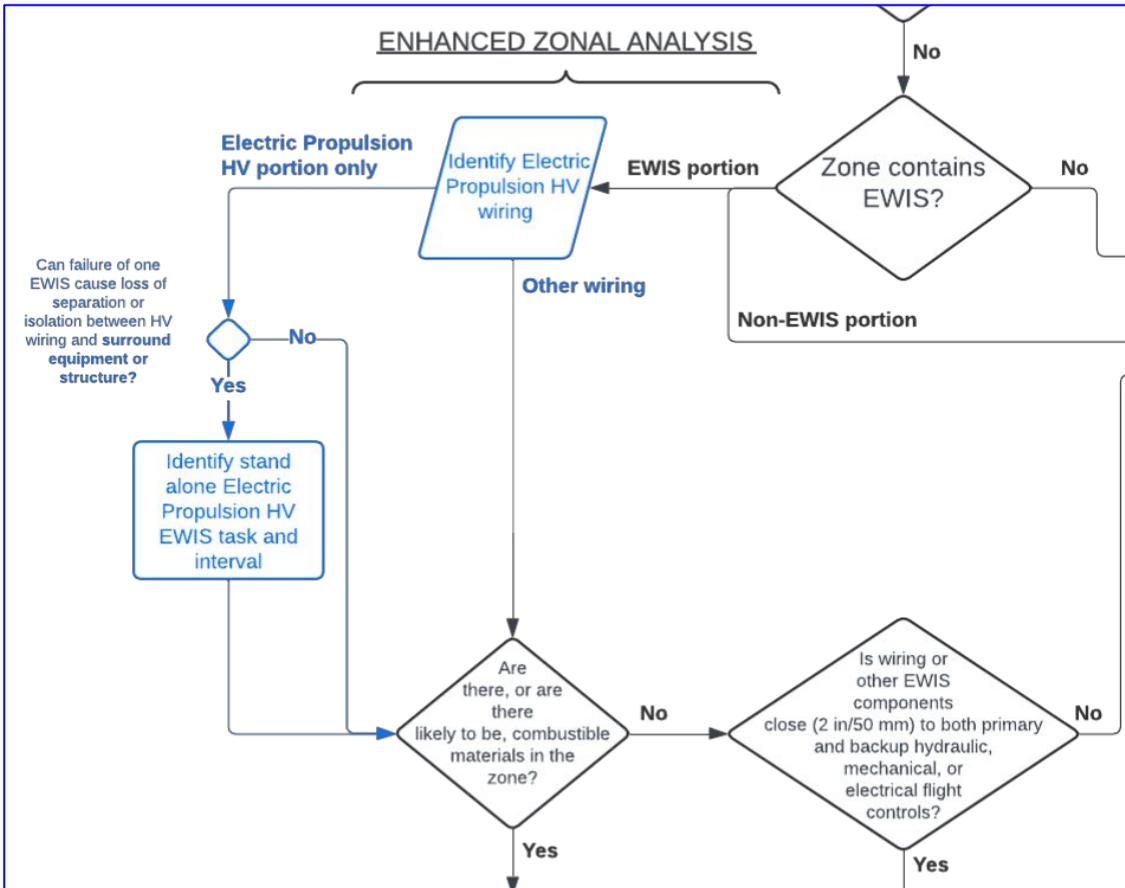


Figure 2-5-1.1. Zonal MSG-3 Logic Diagram

Proposal Discussion



Minor text changes to accommodate any task types arising.

Proposal Summary - Glossary Definition

Electric Propulsion High Voltage EWIS:

EWIS elements carrying single phase AC voltages greater than 213 Volts rms or DC voltages greater than 300 VDC (line to ground for unipolar, or between two lines for bipolar) used to power electric propulsion elements.





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