**Data Item Description**

**Failure Modes and Effects Analysis Report**

**ILS-076-010**

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| **DATA ITEM DESCRIPTION** |
| 1. **TITLE**

Failure Modes and Effects Analysis Report | 1. **IDENTIFICATION NUMBER**

ILS-076-010 |
| 1. **DESCRIPTION / PURPOSE**

The Failures Modes and Effects Analysis (FMEA) Report must describe the approach, methodology and analysis conducted to identify the following:1. Criteria for maintenance planning, logistics support analysis, test planning, inspection and checkout requirements.
2. Information with respect to maintainability design features that require corrective action.
3. Information with respect to failure modes requiring corrective maintenance.
4. Information for the Reliability-Centered Maintenance (RCM) process.
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| 1. **REFERENCES**

Attachments: NilReferences: This DID must be read in conjunction with the appropriate paragraphs of the Statement of Work, Subcontract Data Requirements List and any references cited in the DID. |
| 1. **FORMAT**

The following formatting guidelines must be considered when preparing the deliverables.1. Unless a specific template is provided by VSY, the deliverables may be prepared in Supplier’s format upon review and approval by VSY.
2. The format shall not impose any restriction on searching, editing, copying, or printing.
3. The information shall be provided in English and in French, if available.
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| 1. **CONTENT**
2. The FMEA report must include a description of the integrated approach and methodology the Contractor used for the analysis. The failure analysis must be conducted at the systems level and be used to determine the level of additional analysis if required.
3. The FMEA must be reported by systems, subsystem and equipment for critical systems to demonstrate that a single failure in active equipment or loss of an associated sub-system will not cause loss of all propulsion and/or steering capability as required by appropriate Class Notation.
	* 1. These systems include but are not limited to:
		+ Propulsion systems.
		+ Electrical power supply systems.
		+ Steering systems.
		1. Typical sub-systems include associated control and monitoring arrangements, data communications, power supplies (electrical, hydraulic or pneumatic), fuel, lubricating, cooling, etc.
		2. Analyses in accordance with IEC 60812, Analysis techniques for system reliability – Procedure for failure mode and effects analysis (FMEA) or IMO MSC Resolution 36(63) Annex 4 – Procedures for Failure Mode and Effects Analysis, would be acceptable.
4. The FMEA Report need not be developed as one document. It may be divided into volumes and sections, provided that the head document links all sub-documents together as a cohesive whole.
5. As a minimum, the FMEA Report shall:
	* 1. Identify the level of analysis.
		2. Summarize the FMEA results.
		3. Integrate results of separate equipment FMEA Analyses into higher level system FMEA reports.
		4. Document the data sources and techniques used in performing the analysis.
		5. Include a system definition narrative, resultant analysis data and worksheets. The worksheets supplied as part of FMEA Report shall be organised in descending order aligned to the indenture levels of the equipment.
6. As a minimum, each FMEA Study shall include the following:
	* 1. Reference to Configuration Item (CI) List in the Technical Data Package (TDP).
		2. End Item Description and Function.
		3. Failure Mode and Cause Description.
		4. Failure Effect on Item.
		5. Failure Effect on Next Higher Assembly (if applicable).
		6. Failure Effect on System (if applicable).
		7. Failure Detection Method.
		8. Effect on Operation (i.e. 1 = catastrophic to 4 = minor).
		9. Effect on Safety (i.e. 1 = catastrophic to 4 = minor).
		10. Severity Class (i.e. 1 = catastrophic to 4 = minor).
		11. Failure Mode MTBF.
		12. Assumptions and remarks.
7. The FMEA Report shall include all information required for general understanding and shall define all special terms and acronyms used. The report must contain, as a minimum, the following:
	* 1. A description of failure modes taken into account;
		2. An assessment of equipment failure criticality on system/subsystem functionality and criteria used; and
		3. For critical failures, the approach taken to minimize the failure probability.
		4. For each piece of equipment analysed the report shall identify all required maintenance tasks. The tasks shall be broken down as follows:
* Type of maintenance task (preventive, predictive, corrective);
* Task frequency (e.g. recommended, estimated);
* Applicable condition monitoring feature;
* Results of RCMA, if applicable; and
* Description of maintenance actions required by Classification Society.
* The equipment tasks summary must include basic equipment identification data.
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