



Background

This task was conducted on behalf of a manufacturer of Aircraft Handlers and General Ground Support Equipment.

The Aircraft Handler was battery powered, Low Profile, and incorporated modular designed sub components.

A range of aircraft interface devices are available and the vehicle is used to manoeuvre an aircraft on an airfield flight pan or a Ship flight deck.

What is R&M?

R&M is a discipline that utilises tools and techniques for establishing, monitoring, assessing, proving and improving the Reliability and Maintainability characteristics of equipment.

If R&M is used during the design process it results in equipment that is **more cost effective**, throughout its life, to operate. This is simply because it is cheaper to remove potential failure modes or causes during design and development than it is to suffer in-service failure or modify in-use equipment.

Aspire Involvement

Aspire was tasked to supplement the in-company resources of the Original Equipment Manufacturer (OEM).

This Case Study relates to the completion of a defined package of R&M work. The packages of work consisted of:

- ❑ Production of a R&M Plan to detail activities being undertaken and provide an outline of the R&M Case content
- ❑ Compilation of a Failure Modes Effects and Criticality Analysis (FMECA)
- ❑ Construction of a Reliability Block Diagram utilising Mean Time Between Failure (MTBF) and failure related data
- ❑ Development of a high level R&M Case, (also utilising Trials Data where available) and the provision of a Summary Report

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Aspire

R&M Case Report

The R&M Case Report was an executive summary of the R&M Case, and presented an **argued claim**, based on evidence and assumptions that the **system would satisfy the R&M requirements**.

The R&M Case Report consisted of the following:

Section 1 - Introduction

An overview of the approach and the aims and objective of the R&M programme.

Section 2 - System Description

The system description covered the following:

- Equipment description
- System boundary
- Usage
- Environment
- Interfaces with other equipment
- Build standard
- Configuration control
- Personnel skill levels and training
- Maintenance policy

Section 3 - R&M Requirements

Aspire identified the R&M requirements from the procuring authority's System Requirements Document (SRD) and through a focussed / tailored approach detailed in the R&M Programme Management Plan clearly demonstrated the contractor's understanding of those requirements.

Section 4 - R&M Risk Areas

As a result of Aspire's tailored and effective program of activities, risk areas associated with the system and the associated risk mitigation strategy were identified.

Section 5 - R&M Strategy

Details of the Strategy for meeting the R&M requirements and the necessary assurance were clearly defined.

Section 6 - R&M Evidence

The evidence gathered from the various R&M activities undertaken was summarised. The R&M Case then brought together all forms of available evidence including the results from extensive numerical analysis and testing.

Section 7 - R&M Claims

A reasoned argument was presented why each of the **requirements will be met in service**, based on the evidence and any assumptions.

Section 8 - Limitations on Use

A definition of the **boundaries on system use** was made, which if exceeded will mean the R&M claim may no longer be valid.

Section 9 - Conclusions and Recommendations

The conclusions drawn from the R&M evidence were summarised and presented as part of the RAM R&M Case Report.

Conclusion

This Case Study provides an example of Aspire's ability to conduct a pragmatic and tailored R&M programme that is both **cost-effective** and **'adds value'** to the overall program.



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