CHAPTER 1

INTRODUCTION TO THE MANUAL

CONTENTS

1 PURPOSE AND APPLICATION

1.1 This Applied R&M Manual for Defence Systems is presented as an aid to both the Ministry of Defence and Industry in the engineering of reliability, maintainability and availability at all stages of the lifecycle of a system, type of equipment or instance thereof [*].

1.2 The Manual has been completely updated and re-issued, some 20 years after its first issue, in order to address:

a) The changes in current practice during the intervening period;

b) The development in techniques along with the changing technology of new systems and equipment types;

c) Maintainability and availability as well as reliability which the original Manual covered; and

d) Systems in general (i.e. not limited to guided weapons).

1.3 The Manual is aimed primarily at R&M specialists in both the Ministry of Defence and Industry. It is hoped that others, such as project managers, design managers and engineers, production managers and engineers, research staff etc, will find areas of the Manual of interest and use. The structure of the Manual is designed to facilitate access to the relevant level of detail for each reader. Parts A and B present the aims of R&M engineering both in general and on an activity-by-activity basis and show how R&M activities fit within the overall set of processes associated with a system lifecycle. This should aid the R&M specialist in understanding the reason for the activity and the non-specialist in understanding what should be expected of the R&M work, its usefulness in relation to the whole process and what support it needs for optimum usefulness. Parts C and D are more the realm of the specialist and describe techniques used to perform the activities and the background theory.

2 LAYOUT

2.1 The basis for the layout of the Manual is the structured analysis of the 'R&M activity' presented in PtACh4. This is based on the concept of an R&M activity associated with each system. This activity consists of a number of specific lower level activities whose relevance depends on the system, its size and its role. Each of these specific R&M activities can be performed in a number of ways, referred to as techniques. These techniques are in turn supported by basic theory. Figure 1, to this Chapter, presents this decomposition and association as a 'route-map' to the Manual.

[*] The activities, techniques and theory presented in this Manual apply generally to operational systems, supporting systems, types of equipment and instances thereof. Examples of these range from a fleet of ships to a pair of boots and can include more abstract items such as a chain of command. The term 'system', as used throughout the Manual, includes the full range of items to which these activities, techniques and theory may be applied.

2.2 The split into activities, techniques and supporting theory plus a general section provides the four parts into which the document is divided. The full list of Parts and their Chapters can be found in the pages at the start of the Manual.

2.3 Many chapters are supported by leaflets which give information amplifying the material in the chapter. This is by means of references[†], worked examples, tables of data, or discussion of the use and availability of computer aided engineering support on the subject[‡].

3 AMENDMENTS

3.1 This Manual consists of several initial sheets followed by the chapters and their leaflets in part and chapter number order. The initial sheets record the issue status and approval of each chapter (including its leaflets). Should modifications be made to one or more chapters, then the initial sheets will be amended and reissued to record the approval and new content status of the Manual.

3.2 Where modifications are made to previous issues vertical lines will be used in the outside (away from the binding) margin in order to indicate where a change has occurred. This includes the initial sheets where the issue status will change in the list of chapters.

4 COPYING

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5 REFERENCE TO THIS PUBLICATION

Reference to the publication in correspondence, technical reports or other documentation should quote its title, “Applied R&M Manual, for Defence Systems (GR-77 Issue 2009), and DES JSC TLS POL REL, MoD Abbey Wood South, Bristol together with the part and chapter or leaflet number, issue number and paragraph number (where relevant).

6 SPECIFICATIONS AND RELATED DOCUMENTS

A reference to a specification, publication or other document is specific to a given issue of that item. If the reference has been updated, it will be necessary to locate the relevant area of the latest issue and assess the effect of any modification on the task being undertaken.

7 SUGGESTIONS

It is inevitable that a document of this kind must be kept under review and that the need for improvement will emerge during its use. It is hoped that users will make contributions to the

[†] References and relevant publications are normally listed in Leaflet 0 to each Chapter.

[‡] Computer aided engineering is also discussed in general in PtACh4.

manual, with additional information, suggestions for improvements to the existing contents or other matters in connection with the document, to the following address:

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