Appendix Revisions

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**IALA Recommendation**

**ENAV-[###] - Appendix 13**

**Efficient Operation and Maintenance of a service**

**[Working Towards] Edition 1**

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**Initial Version**

Revisions to this Appendix are to be noted in the table prior to the issue of a revised document.

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| **Date** | **Page / Section Revised** | **Requirement for Revision** |
| 26.08.2014 | Initial Version |  |
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IALA Recommendation ENAV-[####]

Appendix 13 – Efficient Operation and Maintenance of a service

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**Es konnten keine Einträge für ein Abbildungsverzeichnis gefunden werden.**

Appendix 13 -

**Efficient Operation and Maintenance of a service**

# Introduction

**Defined level of Availability**

Different services may need a different level of availability.

For availability levels, refer to IALA Navguide 2014 (10.3.5), Chapter 8 “Performance Indicators”. The document provides detailed level calculation methods. Levels are Cat. I named “vital” with 99.8% availability, Cat. II named “important” with 99.0% availability and Cat. III named “necessary” with 97.0 % availability. It shall be noted that it no category is stated, still a minimum level of 95% availability has to be met.

The administration may decide, which service requires which of the above levels of availability.

**Established Service strategy**

The following criteria and considerations have to be met in order to not only achieve availability but at the same time manage it efficiently with reasonable resources and costs:

- Performance monitoring of services will be required.

- System configuration is an important aspect in the areas of configuration management and software maintenance.

- Maintenance has to be provided in two areas, pre-emptive maintenance and corrective maintenance. Both may need different resources and materials.

- Pre-emptive maintenance in the scope defined here includes both “condition-based” as well as “planned” maintenance. Developing a pre-emptive maintenance strategy is key not only to achieve high levels of availability but also to achieve these at reasonable costs. Establishment of an effective pre-emptive maintenance strategy will require to perform a failure analysis and FMEA, establish a spare parts policy and planning of a maintenance program.

- Corrective maintenance is still required to handle any failures not covered by the pre-emptive maintenance mentioned above. The spare parts policy and staffing required may be different from the one required for pre-emptive maintenance.

- Training and proficiency are critical items for successful maintenance. In particular extremely low failure rates of some of the modern equipment used present a challenge for staff proficiency.

- Suitable logistics needs to be planned for transport of staff and materials.

**Operations Staff**

Operations staff is key for efficient operation of a service. Particular items to consider are:

* Staffing levels need to be planned properly to cope with normal and exceptional situations.
* Staff training based on qualification and recurring performance monitoring is required.
* Fatigue management is required. Some analysis needs to be done and measures developed. It is strongly suggested to make use of available experiences and solutions with organisations such as military or aviation.
* Ergonomics contributes to efficient operation. As an example, workplaces with adjustable desk height may allow staff to either sit or stand at their convenience. The IMO HCD circular provides good guidance.
* The authority needs to decide on applicable industry standards for safety, workplace design and the environment.