

From: ENG Committee  
To: ARM Committee

ENG3-11.1.8  
20 November 2015

## **Liaison Note**

### **ENG NAVGUIDE Update Progress**

#### **1 Introduction**

ARM Liaison Notes ARM1-11.1.8 and ARM2-11.1.7 outlined the preferred way of updating the NAVGUIDE.

#### **2 Discussion**

ENG notes the ARM committee's request to update the IALA NAVGUIDE on the IALA Wiki and to have a standing work item for updating the NAVAGUIDE on an as required basis.

ENG NAVGUIDE update action plan outlined in Annex 1 details progress to date and timing for completion of the ENG sections of the NAVGUIDE.

ENG also proposes to reorganise some sections within Chapter 3 Aids to Navigation to assist with the flow and readability of the document. Section 6.5 on audible aids to navigation is also proposed to be moved to Chapter 3 – Annex 2 details the proposed changes.

Peter Dobson - [peter.dobson@thls.org](mailto:peter.dobson@thls.org) has been appointed ENG point of contact/coordinator for NAVGUIDE updates.

#### **3 Action requested**

ARM is requested to note the following:

- ENG NAVGUIDE update action plan – Annex 1.
- ENG NAVGUIDE Chapter 3 reorganisation plan – Annex 2.
- ENG point of contact/coordinator for NAVGUIDE updates is Peter Dobson - [peter.dobson@thls.org](mailto:peter.dobson@thls.org)

## ENG Navguide Update Plan

ANNEX 1

Chapter		Working Group	Expected sessions for completion							Comments
Chapter 3 - Aids to Navigation			ENG1	ENG2	ENG3	ENG4	ENG5	ENG6	ENG7	
3.1	Visual Aids to Navigation	1 and 2		x	x					Moved to section 3.2 and renamed to Visual Aids to Navigation Design Theory
3.1.1	Signal Colours	1			x	x				Moved to section 3.2.1.1
3.1.2	Visibility of a Mark	1			x	x				Moved to section 3.2.2.1
3.1.3	Meteorological Visibility	1		x	x					Moved to section 3.2.1.2
3.1.4	Atmospheric Transmissivity	1		x	x					Moved to section 3.2.1.3
3.1.5	Atmospheric Refraction	1			x	x				Moved to section 3.2.1.4
3.1.6	Contrast	1			x	x				Moved to section 3.2.1.5
3.1.7	Use of Binoculars	1			x	x				Moved to section 3.2.1.6
3.1.8	Range of a Visual Mark	1			x	x				Moved to section 3.2.2.2
3.1.9	Geographical Range	1			x	x				Moved to section 3.2.1.7
3.2	Aids to Navigation Lights	1 and 2			x	x				Moved to section 3.3 and renamed to Visual Aids to Navigation Technology
3.2.1	Gas Lights	1 and 2			x	x				Moved to section 3.3.2 and 3.2.3
3.2.2	Electric Lights	1 and 2			x	x	x	x	x	Moved to section 3.3.2 and 3.2.3
3.2.3	Photometry of Marine Aids to Navigation Signal Lights	1				x	x	x		Moved to section 3.2.3.1
3.2.4	Rhythms/Character	1				x	x	x		Moved to section 3.2.3.2
3.2.5	Fixed Aids to Navigation	2			x	x				Moved to section 3.4.7.4
3.2.6	Floating Aids to Navigation	2			x	x	x	x		Moved to section 3.4.7.5
3.2.7	Sector Lights and Leading (Range) Lines	1		x	x					Separated into two sections 3.4.7.1 for Leading Lines and 3.4.7.2 for Sector Lights
3.2.8	Integrated power supply lanterns	2			x	x				Moved to section 3.3.3

<b>Chapter 3 - Revised Aids to Navigation</b>									
<b>3.1</b>	<b>Operational Requirements</b>	2				x	x		Added to Chapter -Introduction Required
<b>3.2</b>	<b>Visual and Audible Aids to Navigation Design Theory</b>	1 and 2		x	x				Was section 3.1 - renamed from Visual Aids to Navigation
<b>3.2.1</b>	<b>Visual Perception</b>	1				x	x		Brief Introduction required
3.2.1.1	Signal Colours	1			x	x			Was section 3.1.1
3.2.1.2	Meteorological Visibility	1		x	x				Was section 3.1.3
3.2.1.3	Atmospheric Transmissivity	1		x	x				Was section 3.1.4
3.2.1.4	Atmospheric Refraction	1			x	x			Was section 3.1.5
3.2.1.5	Contrast	1			x	x			Was section 3.1.6
3.2.1.6	Use of Binoculars	1			x	x			Was section 3.1.7
3.2.1.7	Geographical Range	1			x	x			Was section 3.1.9
<b>3.2.2</b>	<b>Daymarks</b>					x	x		Brief Introduction required
3.2.2.1	Visibility of a Mark	1			x	x			Was section 3.1.2
3.2.2.2	Range of a Visual Mark	1			x	x			Was section 3.1.8
<b>3.2.3</b>	<b>Lights</b>	1				x	x		Brief Introduction required
3.2.3.1	Photometry of Marine Aids to Navigation Signal Lights	1				x	x	x	Was section 3.2.3
3.2.3.2	Rhythms/Character	1				x	x	x	Was section 3.2.4
3.2.3.3	Meteorological Optical Range	1			x	x			Was part of section 3.1.9/3.2.4
3.2.3.4	Visual Range	1			x	x			Was part of section 3.1.9/3.2.4
3.2.3.5	Luminous Range	1			x	x			Was part of section 3.1.9/3.2.4
3.2.3.6	Nominal Range	1			x	x			Was part of section 3.1.9/3.2.4
<b>3.2.4</b>	<b>Miscellaneous</b>	1				x	x		Brief Introduction required
3.2.4.1	Audible Signals	1			x	x			Was section 6.5 through 6.5.3
3.2.4.2	Illumination of Structures	1				x	x	x	Expand Section - Currently a brief mention in section 3.2.2
3.2.4.3	Retroreflective materials	1				x	x	x	New Section
<b>3.3</b>	<b>Visual Aids to Navigation Technology</b>	1 and 2			x	x			Was section 3.2
<b>3.3.1</b>	<b>Daymarks</b>	1				x	x	x	Expand Section - Currently a brief mention in section 3.2.4
3.3.2	Light Sources	1			x	x	x	x	Was section 3.2.2
3.3.3	Optics	1			x	x	x	x	Was section 3.2.2
<b>3.3.4</b>	<b>Light Control Systems</b>	1				x	x	x	Added to Chapter
<b>3.4</b>	<b>Maritime Buoyage System (MBS)</b>	2			x	x	x	x	Was part of section 3.2.6
<b>3.4.1</b>	<b>Lateral Marking System</b>	2				x	x	x	Added to Chapter - Introduction Required
3.4.2	Cardinal Marking System	2			x	x	x	x	Was part of section 3.2.6
3.4.3	Isolated Danger Marks	2			x	x	x	x	Was part of section 3.2.6
<b>3.4.4</b>	<b>Safe Water Marks</b>	2				x	x	x	Added to Chapter - Introduction Required
3.4.5	Special Marks	2			x	x	x	x	Was part of section 3.2.6
3.4.6	Emergency Wreck Marking Buoy	2			x	x	x	x	Was part of section 3.2.6
<b>3.4.7</b>	<b>Other Marks</b>	2				x	x	x	Added to Chapter - Introduction Required
3.4.7.1	Leading Lines/Ranges	1		x	x	x			Was part of section 3.2.7
3.4.7.2	Sector Lights	1		x	x	x			Was part of section 3.2.7
3.4.7.3	Lighthouses	2			x	x	x		Was section 3.2.5
3.4.7.4	Fixed Aids to Navigation - Beacons	2			x	x	x		Was section 3.2.5
3.4.7.5	Floating Aids to Navigation - Buoys	2			x	x	x	x	Was section 3.2.6
3.4.7.6	Auxiliary Marks	2				x	x	x	Added to Chapter - Introduction Required

<b>Chapter 6 - Other Services and Facilities</b>									
6.5	Audible Signals	1			x	x			Move to section 3.2.4.1
6.5.1	Hazard Warning	1			x	x			Move to section 3.2.4.1
6.5.2	Augmentation of Floating Aids to Navigation	1			x	x			Move to section 3.2.4.1
6.5.3	Range	1			x	x			Move to section 3.2.4.1
<b>Chapter 7 - Power Supplies</b>									
7.1	Types	2				x	x	x	
7.2	Electric - Renewable Energy Sources	2				x	x	x	
7.2.1	Solar Power (Photovoltaic cell)	2				x	x	x	
7.2.2	Wind Energy	2				x	x	x	
7.2.3	Wave Energy	2				x	x	x	
7.3	Rechargeable Batteries	2				x	x	x	
7.3.1	Principal types	2				x	x	x	
7.3.2	Primary Cells	2				x	x		Rearrange section on batteries
7.3.3	Internal Combustion Engine/Generators	2			x	x	x		
7.4	Electrical Loads and Lightning Protection	2			x	x			
7.4.1	Electrical Loads	2			x	x			
7.4.2	Lightning Protection	2			x	x			
7.5	Non-Electric energy sources	2			x	x			
<b>Chapter 8 - Provision, Design and Management of Aids to Navigation</b>									
8.10	Environment	2					x	x	
8.10.1	Hazardous Materials	2				x	x		
8.11	Preservation of Historic Aids to Navigation	2			x	x	x		
8.11.1	Lens Size and Terminology	1 and 2				x	x		
8.11.2	Third Party Access to Aids to Navigation Sites	2				x	x		
8.12	Human Resources Challenges	2				x	x		
8.12.1	Source of Skills	2				x	x		
8.12.2	IALA World Wide Academy	2			x	x	x	x	Move to Section 1 of the Navguide - discuss with IALA WWA Vice Dean

# Navguide Chapter 3 Modification Proposal

ENG3 - WG2

## Current Layout – Chapter 3

### 3.1 Visual Aids to Navigation

3.1.1 Signal Colours

3.1.2 Visibility of a Mark

3.1.3 Meteorological Visibility

3.1.4 Atmospheric Transmissivity

3.1.5 Atmospheric Refraction

3.1.6 Contrast

3.1.7 Use of Binoculars

3.1.8 Range of a Visual Mark

3.1.9 Geographical Range

## Current Layout – Chapter 3

### 3.2 Aids to Navigation Lights

3.2.1 Gas Lights

3.2.2 Electric Lights

3.2.3 Photometry of Marine Aids to Navigation Signal  
Lights

3.2.4 Rhythms/Character

3.2.5 Fixed Aids to Navigation

3.2.6 Floating Aids to Navigation

3.2.7 Sector Lights and Leading (Range) Lines

3.2.8 Integrated power supply lanterns

## General Issues

- 3.1 Visual Aids vs 3.2 Aids to Navigation Lights
  - Not a logical flow/division
  - Items in 3.2 (for instance 3.2.5 Fixed Aids) have nothing to do with AtoN lights
- 3.2.4 Rhythms/Character
  - Many lighting items but also Daymark discussions

The entire chapter is broken into two sections, Visual Aids and Aids to Navigation Lights. The subsections found within are not necessarily related to the parent section, for instance, Fixed Aids is a subsection of Aids to Navigation Lights.

The content in subsection 3.2.4 should probably be split and moved into a “light” subsection and a “daymark” subsection

## General Issues

- 3.2.5 Fixed Aids vs 3.2.6 Floating Aids
  - These two sections are very different in terms of content and scope
  - Ensure that information is in harmony with MBS
- 3.2.7 Sector Lights and Leading (Range) Lines should be separated
  - These are two very different types of aids
  - Ranges are not always lit

Fixed Aids and Floating Aids need not be identical in content, but should be brought more in line with each other. Fixed Aids is currently a very short subsection, and Floating Aids is several pages long.

Sector Lights and Leading (Range) Lines could probably be divided into two subsections.

## General Issues

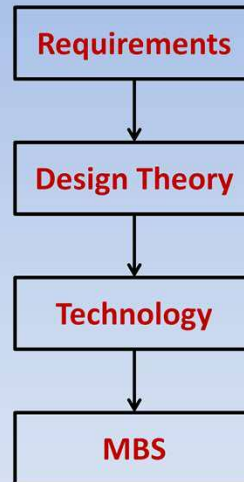
- 3.2.8 Integrated Power Supply Lanterns does not seem to fit as a separate subsection
  - Should be found with Electric Light
- 6.5 Audible Aids to Navigation should be included in Section 3
  - They are aids to navigation

Integrated Power Supply Lanterns is the final subsection in this chapter, and it currently hampers the flow of the chapter being located at the back. It should likely be placed with other subsections on lights.

Audible Aids, while not as numerous as visual aids, should be moved into this chapter from chapter 6.

## Proposed Layout – Chapter 3

- 3.1 Operational Requirements
- 3.2 Visual and Audible AtoN  
Design Theory
- 3.3 Visual AtoN Technology
- 3.4 Maritime Buoyage System



The proposed new layout of Chapter 3 would flow from requirements, through design theory, followed by technology, then the Maritime Buoyage System. This would provide a more logical layout, without losing any of the current content.

## Proposed Layout – Chapter 3

### 3.1 Operational Requirements

*A short opening section under development*

Continued on next slide...

A short opening section would be found here, referencing Section 8.4 (Availability objectives). Opening the story of an AtoN.

## Proposed Layout – Chapter 3

### 3.2 Visual and Audible Aid to Navigation Design Theory

#### 3.2.1 Visual Perception

- 3.2.1.1 Signal Colours
- 3.2.1.2 Meteorological Visibility
- 3.2.1.3 Atmospheric Transmissivity
- 3.2.1.4 Atmospheric Refraction
- 3.2.1.5 Contrast
- 3.2.1.6 Use of Binoculars
- 3.2.1.7 Geographical Range

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The physics behind visual aids to navigation are in this section – currently in section 3.1 Visual Aids to Navigation. Photometry and Rhythms and Characters currently in section 3.2 – Aids to Navigation Lights are included in this chapter. Audible Signals have been moved here from Chapter 6. The topics have been organized into Visual Perception, Daymarks, Lights and Miscellaneous.

## Proposed Layout – Chapter 3

### 3.2.2 Daymarks

#### 3.2.2.1 Visibility of a Mark

#### 3.2.2.2 Range of a Visual Mark

### 3.2.3 Lights

#### 3.2.3.1 Photometry of Aids to Navigation Signal Lights

#### 3.2.3.2 Rhythms and Characters

#### 3.2.3.3 Meteorological Optical Range

#### 3.2.3.4 Visual

#### 3.2.3.5 Luminous

#### 3.2.3.6 Nominal

### 3.2.4 Miscellaneous

#### 3.2.4.1 Audible Signals

#### 3.2.4.2 Illumination of Structures

#### 3.2.4.3 Retroreflective Materials

The physics behind visual aids to navigation are in this section – currently in section 3.1 Visual Aids to Navigation. Photometry and Rhythms and Characters currently in section 3.2 – Aids to Navigation Lights are included in this chapter. Audible Signals have been moved here from Chapter 6. The topics have been organized into Visual Perception, Daymarks, Lights and Miscellaneous.

## Proposed Layout – Chapter 3

### 3.3 Visual Aid to Navigation Technology

#### 3.3.1 Daymarks

#### 3.3.2 Light Sources

#### 3.3.3 Optics

#### 3.3.4 Light Control Systems

This section includes the technology used for producing visual AtoN signals. This section is comprised of information from many different sections found throughout current Chapter 3

Scant information is currently contained in the NAVGUIDE concerning Light Control Systems, therefore this section will require further development

## Proposed Layout – Chapter 3

### 3.4 Maritime Buoyage System

#### 3.4.1 Lateral Marking

#### 3.4.2 Cardinal Marking System

#### 3.4.3 Isolated Danger Mark

#### 3.4.4 Safe Water Marks

#### 3.4.5 Special Marks

#### 3.4.6 Emergency Wreck Marking Buoy

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MBS referenced topics are moved from the current floating aids section to this section 3.5. Many of these elements will merely reference ANNEX D of the NAVGUIDE (MBS). However, should ANNEX D prove an insufficient the level of detail required for a specific element, then those details will be included in this section.

## Proposed Layout – Chapter 3

### 3.4.7 Other Marks

3.4.7.1 Leading (Range) Lines

3.4.7.2 Sector Lights

3.4.7.3 Lighthouses

3.4.7.4 Fixed Aids to Navigation – Beacons

3.4.7.5 Floating Aids to Navigation – Buoys

3.4.7.6 Auxiliary Marks

MBS referenced topics are moved from the current floating aids section to this section 3.5. Many of these elements will merely reference ANNEX D of the NAVGUIDE (MBS). However, should ANNEX D prove an insufficient the level of detail required for a specific element, then those details will be included in this section.