MODEL COURSE

L1.3

MARINE AIDS TO NAVIGATION MANAGER TRAINING
LEVEL 1 - USE OF THE IALA RISK MANAGEMENT TOOLS

Edition 3

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10, rue des Gaudines - 78100 Saint Germain en Laye, France
Tél. +33 (0)1 34 51 70 01- Fax +33 (0)1 34 51 82 05 - contact@iala-aism.org
www.iala-aism.org

International Association of Marine Aids to Navigation and Lighthouse Authorities
Association Internationale de Signalisation Maritime

DOCUMENT HISTORY

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

Date	Details	Approval
April 2013	First issue	WWA Board Endorsed by Council 55
December 2015	Part 1 & Part 2 Minor editorial changes Amendments to content based on feedback and experience	Council 61
June 2019	Addition of the Simplified IALA Risk Assessment Method Minor amendments to content based on technical and operational developments	Council 69

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FOREWORD

The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) recognises that training in all aspects of the management of Marine Aids to Navigation (AtoN) service delivery is critical to the consistent provision of that AtoN service.

Taking into account that under the SOLAS Convention, Chapter 5, Regulation 13, paragraph 2, Contracting Governments, mindful of their obligations published by the International Maritime Organisation, undertake to consider the international recommendations and guidelines when establishing aids to navigation, including recommendations on training and qualification of AtoN managers, IALA has adopted Recommendation R0141(E-141) Edition 4 on Standards for Training and Certification of AtoN personnel.

IALA Committees working closely with the IALA World Wide Academy (The Academy) have developed a series of model courses for AtoN personnel having R0141(E-141) Level 1 management functions. This model course on the use of IALA risk management tools should be read in conjunction with IALA Recommendation R0141(E-141) which contains standard guidance for the conduct of all Level 1 model courses.

This model course is intended to be delivered by The Academy in conjunction with a national member and other appropriate authorities charged with the provision of AtoN services in a particular region. It contains specific guidance on the training of AtoN managers in the use of the IALA Risk Management Toolbox. Assistance in implementing this and other model courses may be obtained from the IALA World Wide Academy at the following address:

The Secretary-General
IALA
10 rue des Gaudines
78100 Saint Germain-en-Laye
France

Tel: (+) 33 1 34 51 70 01
Fax: (+) 33 1 34 51 82 05
e-mail: academy@iala-aism.org
Internet: www.iala-aism.org

PART 1 - COURSE OVERVIEW

1. SCOPE

This course is intended to provide marine aids to navigation managers and other interested parties with the theoretical and practical training necessary to have a satisfactory understanding of the three IALA risk management tools; IALA Waterway Risk Assessment Program (IWRAP Mk2); Port and Waterway Safety Assessment tool (PAWSA), Simplified IALA Risk Assessment Method (SIRA) and simulation.

2. OBJECTIVE

Upon successful completion of this course, participants will have acquired sufficient knowledge and skill to use IWRAP Mk2 within their organisations; organise a PAWSA workshop, organise a SIRA workshop and recognise the use to which simulation techniques can be put in risk management and effective AtoN waterway design.

3. COURSE OUTLINE

This course is intended to cover the knowledge required for a marine aids to navigation manager to understand the use of IALA risk management tools within their organisations. The complete course comprises 7 teaching modules with the emphasis placed on the practical use of IWRAP Mk2.

Table 1 Teaching modules

Module Title	Time in hours	Overview
International and Regional Overview	2	This module describes the role of IALA and its publications; the importance of stakeholder liaison and the obligations placed on States under SOLAS Chapter V.
Introduction to the IALA Risk Management Toolbox	2.5	This module describes risk and risk mitigation measures before giving an overview of the four IALA Risk Management Tools: IWRAP Mk2; PAWSA, SIRA and simulation
IWRAP Mk2	9	This module describes the development, principles and use of IWRAP Mk2 before guiding participants through increasingly complex practical applications based on a specific region
PAWSA	6.5	This module describes the development and use of PAWSA and its 5 Workbooks before demonstrating its use in a regional scenario
SIRA	3	This module describes the development and use of the Simplified IALA Risk Assessment Method (SIRA) in the context of its use in a regional scenario.
Simulation	2.5	This module provides an overview of maritime simulators before showing of simulation techniques can be used in risk management
Complementary use of the IALA Risk Management Toolbox	2	This module describes the interaction between IALA risk management tools in a regional scenario and the human resource and cost implications generated by selected risk mitigation measures
Summary of interaction between Risk Management Tools	1.5	This module uses a panel of experts to review the elements comprising the IALA Risk management toolbox

		with the aim of consolidating an understanding of how they interact
Total Hours:	**29**	Five day course

A subject outline for each module is shown in tabular form in Part 2 of this document. This lists the minimum recommended level of competence for each subject element or sub-element.

Table 2 Levels of Competence

Level	Learning Outcome	Instructional Objectives	Required skills
1	The conduct of routine tasks with some supervision	A **basic** understanding of facts and principles	First stage in acquiring competency of a complex skill. Appropriate responses are identified through trial and error
2	The conduct of routine tasks unsupervised and some more complex tasks under guidance	A **satisfactory** understanding of theoretical concepts and principles so that they can be applied in practice	Correctly acquired responses have become habitual. Actions can be performed confidently and efficiently
3	The skilful conduct of many complex and non-routine tasks	A **good** understanding of the subject matter and its interaction with others leading to an analytical distinction between facts and inferences	Complex actions are inherently co-ordinated and performed smoothly, accurately and skilfully
4	The professional conduct of unsupervised technical and managerial tasks	A **detailed** understanding of facts, theories and practical applications which enables problem solving and prioritisation	Acquired skills are developed to the extent that rapid reaction and adaptation to unforeseen situations is second nature

4. SPECIFIC COURSE RELATED TEACHING AIDS AND NOTES

1 This course will be classroom based with presentations delivered using MS PowerPoint®. Although the course is limited to 40 participants, the seminar room should be big enough to permit the participants to sit at desks large enough to operate a laptop computer with room for printed material to hand. Each desk should be provided with a power socket.

2 The seminar room should be equipped with overhead projectors and screens to enable presentation of the subject matter.

3 To enable all participants to receive clear guidance from instructors and to raise questions that can be heard throughout the classroom, lapel or fixed lectern microphones should be provided together with a roving microphone for use by participants.

4 IWRAP Mk2 presentations require participants to have Wi-Fi internet access.

5 It is expected that each participant will have the use of a personal laptop computer with a Windows OS. As IWRAP Mk2 requires participants to select tools regularly from screen menus, each participant should be advised to use a computer mouse.

6 It may be that some participants will have little experience in operating computer models. Consideration should be given to running a two-stream delivery of Module 3 Elements 3.3 – 3.5 to permit participants who are unlikely to use IWRAP Mk2 in practice to gain a satisfactory understanding of its principles without moving to its advanced use.

5. PRE-COURSE READING

Participants should be encouraged to study:

- IALA Recommendation R1002;
- IALA Guideline 1018;
- IALA Guideline 1058;
- IALA Guideline G1123;
- IALA Guideline G1124;
- IALA Guideline G1138.

6. CERTIFICATION

Participants who attend all Teaching Modules can be presented with an AtoN Level 1 Manager certificate which states that they have completed successfully the Complementary Module on the IALA Risk Management Toolbox. It should be noted that such a certificate should **not** be considered a formal Certificate of Competence to operate any of the IALA Risk Management Tools without supervision.

This course may be delivered on a modular basis to provide an enhanced level of knowledge and skill on particular elements of the IALA Risk Management Tools to meet specific national or local requirements. In such circumstances, certification will be issued for the specific modules that have been completed.

7. ACRONYMS

GL	Guideline (IALA)
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IWRAP	IALA Waterways Risk Assessment Program
OS	Operating System
PAWSA	Ports and Waterways Safety Assessment tool
Rec	Recommendation(s) (IALA)
SIRA	Simplified IALA Risk Assessment Method
SOLAS	International Convention for the Safety of Life at Sea (SOLAS), 1974 (as amended)
VTS	Vessel Traffic Services
WWA	World Wide Academy (The Academy)

8. DEFINITIONS

The definitions of terms used in this model course can be found in the International Dictionary of Marine Aids to Navigation (IALA Dictionary) at http://www.iala-aism.org/wiki/dictionary.

9. REFERENCES

In addition to any specific references required by the Competent Authority, the following material is relevant to this course:

- SOLAS V Chapters 12 and 13;

- IALA Recommendation R1002 on Risk Management for Marine Aids to Navigation;
- IALA Recommendation E-142 on Maritime Data Sharing 'IALA-NET';
- IALA Recommendation A-126 on the use of the Automatic Identification System (AIS) in Marine Aids to Navigation Services;
- IALA Recommendation O-138 on the use of GIS and Simulation by Marine Aids to Navigation Services;
- IALA Recommendation O-139 on the Marking of Man-Made Offshore Structures;
- IALA Guideline 1018 on Risk Management;
- IALA Guideline 1058 on the Use of Simulation as a Tool for Waterway Design and AtoN Planning;
- IALA Guideline 1069 on the Synchronisation of Lights;
- IALA Guideline 1079 on Establishing and Conducting User Consultancy by AtoN Authorities;
- IALA Guideline 1082 on and overview of AIS;
- IALA Guideline 1123 on the use of IWRAP MK2;
- IALA Guideline G1124 – The Use of Ports and Waterways Safety Assessment (PAWSA MKII) Tool;
- IALA Guideline G1138 – The Simplified IALA Risk Assessment Method (SIRA);
- IALA NAVGUIDE;
- IWRAP Mk2 Theory Handbook;
- IWRAP Mk2 Exercise Handbook;
- IALA IWRAP Wiki (accessible through the IALA website).

PART 2 - DELIVERY OF THE MODEL COURSE

MODULE 1 INTERNATIONAL AND REGIONAL OVERVIEW

1. SCOPE

This module describes the role of IALA and its publications; the importance of stakeholder liaison; the obligations placed on States under SOLAS Chapter V and the maritime situation in the region under consideration.

2. LEARNING OBJECTIVES

To gain a **satisfactory** understanding of the function of IALA and its outputs; a **good** understanding of the obligations set out in SOLAS Chapter V and a **basic** understanding of sources of vessel traffic information and the maritime character of the region under consideration.

3. DETAILED TEACHING SYLLABUS FOR MODULE 1 – INTERNATIONAL AND REGIONAL OVERVIEW

Table 3 Detailed Teaching Syllabus - Module 1

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
1			**INTERNATIONAL AND REGIONAL OVERVIEW**				
	1.1		**Introduction to IALA and International Obligations**				
		1.1.1	Introduction to IALA and the IALA World-Wide Academy	2		IALA NAVGUIDE Chapter 1	1
		1.1.2	Obligations under SOLAS Chapter V 12; 13	3		SOLAS Chapter V	
		1.1.3	IALA Recommendations and Guidelines related to risk management	2		www.iala-aism.org	
		1.1.4	Identification and inclusion of stakeholder groups	1		GL 1079	
	1.2		**Regional Overview**				
		1.2.1	Maritime overview of the region	1	IALA-Net inputs,		2
		1.2.2	Regional trends in maritime traffic				

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
		1.2.3	Vessel traffic analysis and availability of AIS data		Local information and data	Rec A-126; GL 1082	
		1.2.4	Other sources of maritime traffic information			Rec E-142	
		1.2.5	Availability of regional electronic chart data			GL 1057	
		1.2.6	Introduction to test area under study				

MODULE 2 INTRODUCTION TO THE IALA RISK MANAGEMENT TOOLBOX

1. SCOPE

This module describes risk and risk mitigation measures before giving an overview of the three IALA Risk Management Tools: IWRAP Mk2; PAWSA and simulation.

2. LEARNING OBJECTIVES

To gain a **satisfactory** understanding of risk and risk mitigation measures and the composition and function of the IALA risk management toolbox.

3. DETAILED TEACHING SYLLABUS FOR MODULE 2 – INTRODUCTION TO THE IALA RISK MANAGEMENT TOOLBOX

Table 4 Detailed Teaching Syllabus - Module 2

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
2			**INTRODUCTION TO THE IALA RISK MANAGEMENT TOOLBOX**				
	2.1		**Navigational Risk**				
		2.1.1	The definition of risk	2		GL 1018	3
		2.1.2	Introduction to risk mitigation measures				
		2.1.3	Acceptable levels of risk and impact on mitigation measures				
		2.1.4	Introduction to the IALA risk management toolbox	1		GL G1124	
		2.1.5	Regional case study of the use of IALA risk management tools				
	2.2		**IALA Risk Management Toolbox**				
		2.2.1	Comparison of Mathematical and Delphic models	2			
		2.2.2	Data required to run quantitative models				
		2.2.3	Data required to run qualitative models				
		2.2.4	Comparison between PAWSA, SIRA and IWRAP Mk2				
	2.3		**Regional Case Study**				
		2.3.1	Case study of the use of IALA risk management tools	1			4
		2.3.2	Use of IALA risk management toolbox in national decision making				

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
	2.4		**Simulation in Risk Management**				
		2.4.1	The role of simulation in risk analysis	1			5
		2.4.2	Case study of the use of simulation in risk management				

MODULE 3 IALA Waterways Risk Assessment Programme (IWRAP) MK2

1. SCOPE

This module describes the development, principles and use of IWRAP Mk2 before guiding participants through increasingly complex practical applications based on a specific region

2. LEARNING OBJECTIVES

To gain a **basic** understanding of the theory and development of IWRAP Mk2 and a **satisfactory** hands-on understanding of its use in practice.

3. DETAILED TEACHING SYLLABUS FOR MODULE 3 – IWRAP MK2

Table 5 Detailed Teaching Syllabus - Module 3

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
3			**IWRAP MK 2**				
	3.1		**Development and Principles**				
		3.1.1	Development of IWRAP			IWRAPMk2.pdf	
		3.1.2	Basic and commercial licences	1			
		3.1.3	Theory behind the probability model			IWRAP Theory Handbook (pdf)	
		3.1.4	Lateral probability distributions	2			
		3.1.5	Causation factors	1			6
	3.2		**IWRAP Incident Scenarios**				
		3.2.1	Grounding scenarios				
		3.2.2	Collision scenarios	2			
		3.2.3	Area collisions				
	3.3		**Creation of an IWRAP Mk 2 Model**				
		3.3.1	Introduction to the IWRAP Mk 2 toolbar	1			13

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
		3.3.2	Defining an area to be analysed		Hands on exercises guided by IWRAP presenter	IWRAP Mk2 Exercise Handbook Note: The IALA World-Wide Academy programme delivers PAWSA (module 4) and simulation (module 5) before practical IWRAP exercises	
		3.3.3	Gathering and inputting maritime traffic data				
		3.3.4	Use and input of electronic chart data				
		3.3.5	Polygon generation				
		3.3.6	Defining and generation of route legs	1	Hands on exercises (continued)		
		3.3.7	Allocation of traffic to legs				
		3.3.8	Baseline analysis				
		3.3.9	Calibration with historical data				
		3.3.10	"What if" analysis				
	3.4		**Practical Applications of IWRAP Mk 2**				
		3.4.1	Regional example 1 with results	2	Practical exercises		14
		3.4.2	Regional example 2 with results				
	3.5		**Advanced IWRAP Mk 2 modelling**				
		3.5.1	Ferry activities	2	Practical exercise with limited supervision		15 16
		3.5.2	Fishing & leisure craft activities				
		3.5.3	Seasonal variation in traffic volume				
		3.5.4	Day/Night variations in traffic volume				
		3.5.5	One way waterways				

MODULE 4 Ports and Waterways Safety Assessment Tool (PAWSA)

1. SCOPE

This module describes the development and use of PAWSA and its 5 Workbooks before demonstrating its use in a regional scenario.

2. LEARNING OBJECTIVES

To gain a **satisfactory** understanding of the function and use of PAWSA, and a **basic** understanding of the use of Workbooks in a regional scenario.

3. DETAILED TEACHING SYLLABUS FOR MODULE 3 – PAWSA

Table 6 Detailed Teaching Syllabus - Module 4

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
4			**PAWSA**				
	4.1		**Development and Principles**				
		4.1.1	Development of PAWSA	2	Participants should be encouraged to read G1124 Annex 1 before Module 4 commences	GL G1124 Annex 1 GL 1079	7
		4.1.2	Use of Facilitator, workshop organiser and data entry staff				
		4.1.3	Risk factors				
		4.1.4	Use of experts and stakeholders				
		4.1.5	Balance of stakeholders and waterway users				
		4.1.6	Workbooks and Decision Support Tools	1			
		4.1.7	Use of Electronic Charts				
		4.1.8	Regional examples of where PAWSA might be used				
	4.2		**PAWSA Workbooks**				
		4.2.1	Book 1 – assessment of team expertise	1			8
		4.2.2	Book 2 - Risk factor rating scales				
		4.2.3	Book 3 – Baseline risk levels				
		4.2.4	Book 4 – Effectiveness of mitigation measures				

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
		4.2.5	Book 5 – Additional mitigation measures				
		4.2.6	Workshop report				
	4.3		**PAWSA Test Cases using a Regional Port (1)**				
		4.3.1	Selection of experts	1	Four teams of 2 experts to be selected from participants. Guided practical exercises		9
		4.3.2	Sources of hydrological and vessel traffic data				
		4.3.3	Practical exercise Book 1				
		4.3.4	Experts review of the test port				
		4.3.5	Practical exercise Books 2 and 3				
	4.4		**PAWSA Test Cases using a regional Port (2)**				
		4.4.1	Review of migration measures – scoring Book 4	1	Guided review of Books 4 and 5		10
		4.4.2	Cost effectiveness of selected mitigation measures				
		4.4.3	Summary of additional interventions – Book 5				
		4.4.4	Review of Test Case				

MODULE 5 Simplified IALA Risk Assessment Method (SIRA)

1. SCOPE

This module describes the development and use of the Simplified IALA Risk Assessment Method (SIRA) in the context of its use in a regional scenario.

2. LEARNING OBJECTIVES

To gain a **satisfactory** understanding of the principles of SIRA, and a **good** understanding of the use of SIRA process in a regional scenario.

3. DETAILED TEACHING SYLLABUS FOR MODULE 5 – SIRA

Table 7 Detailed Teaching Syllabus - Module 5

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
5			**SIRA**				
	5.1		**Development and Principles**				
		5.1.1	Background to and development of the SIRA method	2		GL 1138	20
		5.1.2	Causal relationship between hazards and consequences				
		5.1.3	The 7 stage SIRA process				
	5.2		**Preparation for the SIRA process and use of the workbook**				
		5.2.1	Identification, selection and analysis of zones	3	Charts and publications for selected area and activities related to each stage.		20
		5.2.2	Identification of hazards – 'NETHOW' method				
		5.2.3	Causation factors/root causes				
		5.2.4	Stakeholder identification				
		5.2.5	Development of scenarios				
		5.2.6	Probability (likelihood) and impact (consequence)				
		5.2.7	Determination of the acceptability of risk				
		5.2.8	Identification and evaluation of existing risk control measures				
	5.3		**Conduct of a SIRA workshop**				

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
		5.3.1	Practical arrangements and resources	3	Conduct of SIRA scoring exercise and identification of additions risk controls.		20
		5.3.2	Roles and responsibilities				
		5.3.3	Stakeholder participation				
		5.3.4	Use of case studies and evidential resources				
		5.3.5	Pre-mitigation scoring				
		5.3.6	Identification and evaluation of additional risk control measures				
		5.3.7	Post-mitigation scoring				
	5.4		**Post SIRA workshop actions**				
		5.4.1	Preparation of a report	3	Development of report using template.		20
		5.4.2	Prioritisation of risk control measures				
		5.4.3	Communication of the results of the SIRA process				
		5.4.5	SIRA review and follow up activities				

MODULE 6 SIMULATION

1. SCOPE

This module describes the use of simulators for the investigation of risk for specific ship applications and waterway design including modelling various AtoN within that waterway and other risk mitigation factors.

2. LEARNING OBJECTIVES

To gain a **satisfactory** understanding of the function and use of simulation techniques in risk management and a **basic** understanding how simulation can be used in the effective design of waterways.

3. DETAILED TEACHING SYLLABUS FOR MODULE 6 – SIMULATION

Table 8 Detailed Teaching Syllabus - Module 6

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
6			**MARITIME SIMULATION**				
	6.1		**Overview of Maritime Simulators, Simulation Techniques & Application Area**				
		6.1.1	Definition and application area of simulation	2		Rec O-138	11
		6.1.2	Types of simulators and modes of simulation			GL-1058	
		6.1.3	Classes of simulators and classification /standards			DNV Standard 214	
	6.2		**Elements of Maritime Simulation and Modelling**				
		6.2.1	Modelling of ships motion & forces for manoeuvring characteristics	1			12
		6.2.2	Modelling of environment and AtoN				
	6.3		**Samples for Application of Maritime Simulation**				
		6.3.1	Simulation for specific investigations (lights, AtoN)			GL 1078, GL 1069	
		6.3.2	Simulation for regional port and waterway design			DNV Standard 307	

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
		6.3.3	Scenario design and analysis of results				

MODULE 7 COMPLEMENTARY USE OF THE IALA RISK MANAGEMENT TOOLBOX

1. SCOPE

This module describes the interaction between IALA risk management tools in a regional scenario and the human resource and cost implications generated by selected risk mitigation measures.

2. LEARNING OBJECTIVES

To reinforce a **good** understanding of the obligations on Competent Authorities and a **satisfactory** understanding of risk and mitigation measures. To gain a **satisfactory** understanding of the how the three IALA risk management tools can be used in a specific region and a **basic** understanding of the concept of Sea Traffic Management and the cost implications that might result from adopting selected risk mitigation measures.

3. DETAILED TEACHING SYLLABUS FOR MODULE 7 – COMPLEMENTARY USE OF THE IALA RISK MANAGEMENT TOOLBOX

Table 9 Detailed Teaching Syllabus - Module 7

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
7			**COMPLEMENTARY USE OF THE IALA RISK MANAGEMENT TOOLBOX**				
	7.1		**Review of Current and Future Risk Management**				
		7.1.1	Review of obligations on Competent Authorities	3	Film of a concept of Sea Traffic Management	Rec O-139	17
		7.1.2	Review of risk and mitigation measures	2			
		7.1.3	Concept of Sea Traffic Management	1			
	7.2		**Regional case study of the use of Risk Management Tools**				
		7.2.1	Use of IWRAP to determine change in risk	2	Visit to VTS centre and/or Port operations	Rec O-139	18
		7.2.2	Use of PAWSA to determine change in risk				
		7.2.3	Use of SIRA to determine change in risk				
		7.2.4	Review of identified change in risk				

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
		7.2.5	Risk mitigation measures				
		7.2.6	Qualitative and Quantitative Risk Assessment				

MODULE 8 DISCUSSION ON THE IALA RISK MANAGEMENT TOOLBOX

1. SCOPE

This module uses a panel of experts to review the elements comprising the IALA Risk management toolbox with the aim of consolidating an understanding of how they interact Learning Objectives.

2. LEARNING OBJECTIVES

To reinforce a **satisfactory** understanding of the sequence in which components of the IALA Risk Management Toolbox might be used regionally.

3. DETAILED TEACHING SYLLABUS FOR MODULE 8 – PANEL DISCUSSION ON THE IALA RISK MANAGEMENT TOOLBOX

Table 10 Detailed Teaching Syllabus - Module 8

Module	Element	Sub-element	Subject	Level of Competence	Recommended training aids and exercises	References Rec = Recommendation GL = Guideline	Lecture No.
8			**DISCUSSION ON THE IALA RISK MANAGEMENT TOOLBOX**				
	8.1		**Summary of interaction between Risk Management Tools**				
		8.1.1	Sequence of use of IALA risk Management Tools	2	Discussion led by panel of experts		19
		8.1.2	Regional review: future use of the IALA Risk Management Toolbox				