University of Wismar
University of Applied Sciences
Technology, Business, and Design
Faculty of Engineering
Department Maritime Studies

Bachelor-Thesis

Title
Sailing in a Special Area of The Great Barrier Reef and Torres Strait with Reef Pilot in Restricted Visibility

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Submitted on: 09 July 2024
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TASK DESCRIPTION

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Student: Melati Rahmawati

Subject: Sailing in a Special Area of The Great Barrier-Reef and Torres Strait with Reef Pilot in Restricted Visibility

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Task

To adapt and implement the preparation and manoeuvring techniques that comply with the following regulations and policies: COLREG, Code of Safe Practice, SOLAS, STCW, Company Regulations, Australian Queensland Government Policies, and Master Standing Orders. These techniques are to be used in restricted visibility conditions in the Special Area of the Great Barrier Reef and Torres Strait.

The following aspects should be considered in particular:

1. Analysis of the requirements for Bridge team and Handling Procedures according to COLREGs and Marine Operational Manual, Australian Queensland Government Policies, and how is the existing implementation level of these guidelines in The Great Barrier Reef and Torres Strait during restricted visibility condition.
2. Analysis of the Maneuvering techniques to overcome the risk accident in restricted visibility condition.
3. Prepare of recommendations can be given to vessel crew based on the guidelines and the best practice of MV. Flora Delmas while passing through special area in restricted visibility condition.
4. Define which preparations, procedures, and how to deal that have to be prepared to overcome the problem during restricted visibility in special area.

The supervising Professor reserves the right to widen or narrow down the scope of the task as he sees fit while it is being processed. Contacts with other institutions and companies may only be established in agreement with the supervisors. The publication of the work or parts of it requires prior permission of the supervisors. The work shall be prepared in accordance with the applicable guidelines of Hochschule Wismar for academic and scientific work. At least two consultations with the supervising professor are required as part of the processing.

The final version of the thesis is to be submitted in a generally accepted electronic format (such as PDF or similar) and in four printed copies at the Organization Office in Rostock-Warnemünde, Germany.

Prof. Dr.-Ing. M. Baldauf

ABSTRACT

Navigating the Great Barrier Reef and Torres Strait presents a unique challenge in Restricted visibility conditions. Limited depth of the water heightens the risk of grounding. Additionally, Reduced sightlines heighten the risk of collisions with submerged hazards and other vessels. This study explores manoeuvring techniques for safe passage in these special areas. Through a combination of calculations of (squat, UKC, safe passing distance and safe speed), observations, and interviews with experienced mariners, the research identifies potential obstacles and corresponding manoeuvring strategies. Emphasis is placed on adhering to international regulations (COLREGs) and best practices (SOLAS, STCW) to ensure the safety of both the crew and the fragile marine ecosystem. Effective bridge team communication and familiarity with navigational equipment are crucial for successful manoeuvring during restricted visibility. Strict adherence to company policies further minimizes risks. This research offers valuable insights for mariners navigating these critical areas, promoting both environmental protection and crew safety.

Keyword: Manoeuvre, Restricted visibility, Special areas, Great Barrier-Reef and Torres Strait

FOREWORD

First of all, praise be to Allah SWT for the blessing and mercy given to me during my study so that I finally can finish this thesis "**SAILING IN A SPECIAL AREA OF THE GREAT BARRIER REEF AND TORRES STRAIT WITH REEF PILOT IN RESTRICTED VISIBILITY**". Which is a requirement to obtain an applied bachelor's degree in the D4 Nautical join degree study program of Indonesian State Maritime Polytechnic and Hochschule Wismar.

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Researcher realize that in this thesis is still far from the perfect thesis, therefore with all humility the researcher receives all constructive criticisms and suggestions for this thesis. Researchers hope that this thesis can be useful and provide additional insight and knowledge for readers.

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LIST OF ABREVIATIONS

AIS	= Automatic Identification System
ARPA	= Automatic Radar Plotting Aid
CATZOC	= Category Zone of Confidence
CD	= Critical Distance
COLREG	= Collision Regulation
CPA	= Closest Point of Approach
DSA	= Designated Shipping Area
DSC	= Digital Selective Calling
ECDIS	= Electronic Chart Display Information System
GBR	= Great Barrier Reef
GBRMP	= Great Barrier Reef Marine Park
GMDSS	= Global Maritime Distress Safety Signal
GPS	= Global Positioning System
GUZ	= General Use Zone
HoT	= Height of Tide
IMO	= International Maritime Organisation
MARPOL	= Marine Pollution
MF/HF	= Medium/High Frequency
MV	= Motor Vessel
PSSA	= Particularly Sensitive Sea Area
RNG	= Range
SART	= Search and Rescue Transponder
SPD	= Safe Passing Distance
TCPA	= Time Closest Point of Approach
UKC	= Under Keel Clearance
USG	= Urgency, Seriousness, and Growth
VDR	= Voyage Data Recorder
VHF	= Very High Frequency
VTS	= Vessel Traffic Service