



اَبُو سَيِّدِي تَكْنُوْلُو كِي مَارَا
UNIVERSITI
TEKNOLOGI
MARA

UNIVERSITI TEKNOLOGI MARA
CAWANGAN TERENGGANU KAMPUS BUKIT BESI

MEC299

HULL DESIGN & STABILITY ANALYSIS OF GRP
BEDAR

MOHAMAD NOOR ASNAWI BIN NOOR AZHARI
2020457668

SUPERVISOR:

TS MOHD AZAHARI BIN JOHAN
MARCH - AUGUST 2022

ABSTRACT

Technology is developing every day. This results in a growing forgetfulness about traditional items. This also includes Bedar, a prized piece of Terengganu tradition. In addition, there are other issues including rising expenses, the endangerment of chengal wood, and a shortage of expertise. The project's main goal is to update the hull design so that it will be simpler for future generations to recreate the Bedar Boat. The stability of the hull must also be reanalysed when the hull design is changed. this includes weight estimation, stability analysis for transverse and longitudinal directions, general arrangement drawings, and hydrostatic curves. To ensure the success of this project, the lines plan will first be created using the chosen hull design, in this case, a round-bottom hull. Following that, a 3D model will be created using PolyCAD software based on the lines plan. All of the analysis will be carried out with ease once the model is complete using PolyCAD, Rhino and other software. After finishing this project, we will achieve a simpler method for building Bedar boats utilising modern techniques and analyses. The bedar boat will once more become well-known and acknowledged and will not be lost to the ravages of time.

TABLE OF CONTENTS

1.0 Introduction	8
1.0 Background of study	8
1.1 Problem Statement	11
1.2 Objectives	11
1.3 Significance of study	12
1.4 Scope of work	13
1.5 Expected results	13
1.5.1 Lines plan	13
1.5.2 Hydrostatic curve	14
1.5.3 General arrangement drawing	15
1.5.4 Weight Estimation Analysis	16
1.5.5 Stability Analysis	17
1.5.5.1 Transverse	17
1.5.5.2 Longitudinal	18
2.0 Literature Review	19
2.1 Bedar	19
2.2 Chengal wood	19
2.3 GRP	20
2.4 Hull selection	20
2.4.1 Displacement hull	21

2.4.2	Round-Bottom Hull	21
2.4.3	Catamaran Hull	22
2.4.4	Planing Hull	22
2.4.5	Flat-Bottom Hull	23
2.4.6	Pontoon Hull	23
2.4.7	Conclusion	23
2.5	Stability	25
2.5.1	Intact Stability	25
2.5.1.1	Stable equilibrium	26
2.5.1.2	Neutral Equilibrium	26
2.5.1.3	Unstable equilibrium	27
3.0	Methodology	28
3.1	Flowchart	29
3.2	Preliminary result	32
3.2.1	Hull selection	32
3.2.2	Bedar's 3D model	32
3.2.3	Linesplan	32
3.2.4	Hydrostatic data	33
3.2.5	General arrangement	33
3.2.6	Weight estimation	33
3.2.7	Stability analysis	33
3.2.8	Pugh method	34
3.2.8.1	Material selection	34
3.2.8.2	Hull selection	35
3.3	Gantt Chart	36

4.0 Summary	37
5.0 References (IEEE/APA format)	38