

การศึกษาการทรงตัวของเรือประมงไทย โดยเน้นที่เสถียรภาพ
มุมกว้างของเรือ



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STUDY ON THE IMPROVEMENT OF THAI FISHING VESSEL WITH
REFERENCE TO LARGE ANGLE STABILITY

Mr. Annop Palawatvichai

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จุฬาลงกรณ์มหาวิทยาลัย
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พิมพ์ที่ต้นฉบับบทคัดย่อ วิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว



อำนวยการพิมพ์ : การศึกษาการทรงตัวของเรือประมงไทย โดยเน้นที่เสถียรภาพมุมกว้างของเรือ (STUDY ON THE IMPROVEMENT OF THAI FISHING VESSEL WITH REFERENCE TO LARGE ANGLE STABILITY) อ.ที่ปรึกษา : รองศาสตราจารย์ ดร. อธิพอล ปานงาม, 310 หน้า, ISBN 974-578-260-2

งานวิจัยนี้ได้เสนอวิธีการในการวิเคราะห์การทรงตัวของเรือประมงไทย การวิจัยเริ่มจากทฤษฎีการทรงตัว เรือจนกระทั่งถึงเกณฑ์ที่ใช้ในการกำหนดเสถียรภาพของเรือโดยสถาบันต่างๆ วิทยานิพนธ์นี้ได้เสนอเกณฑ์ในการพิจารณาแบบใหม่ไว้ด้วยโดยการใช้มุมเอียงของเรืออันเนื่องมาจากลมและคลื่นภายใต้สภาวะท้องทะเลแบบต่างๆ ผลการวิจัยจะเป็นประโยชน์ต่อการใช้งานของผู้ควบคุมเรือให้รู้ถึงสมรรถภาพของเรือในแง่ของการทรงตัวของเรือ

การปรับปรุงการออกแบบเรือประมงไทยในแง่ของเสถียรภาพถูกกล่าวไว้ในวิทยานิพนธ์ เส้นโค้งที่จะใช้ในการออกแบบเรือประมงไทยในสภาพปัจจุบันก็ถูกสร้างไว้เช่นกันเพื่อความสะดวกในการใช้งานของผู้ออกแบบเรือ

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ลายมือชื่อนิติ
ลายมือชื่ออาจารย์ที่ปรึกษา มว

พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว



ANNOP PALAWATVICHAI : STUDY ON THE IMPROVEMENT OF THAI FISHING
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The author presents a simplified method of stability analysis applicable to traditional Thai fishing vessels. The work includes a review of stability leading up to the present criteria applied by various authorities. The proposed criteria is included. A new method of analysis heeling angles due to wind and wave at various sea states is presented. The method, upon satisfactory analysis, provides considerable useful tools to the fishingboat captain, in the manner in which he operates his vessel, to be aware of the extreme sea condition his vessel can sustain from stability point of view.

Notes of especially troublesome areas of design and some good design practices which will improve the stability of fishing vessels are mentioned. Design curves for existing fishing vessel are also presented for convenience of designer.

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DEDICATION

THIS WORK IS ENTIRELY DEDICATED TO MY BELOVED MOTHER WHO HAD NO EDUCATION EVEN IN EXTREMIS. SHE IS MY FIRST TEACHER AND IS CONSIDERED TO BE MY REGINA SCIENTIARUM. HER MAGNUM OPUS LIES IN THE FIELD OF JUST NATURAE. IN STATU PUPILLARI, I WOULD LIKE TO SAY

PAX VOBISCU,

REQUIESCAT IN PACE

ศูนย์วิทยุโทรพยากร
จุฬาลงกรณ์มหาวิทยาลัย



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SYMBOLS AND NOMENCLATURE

A	area in general
A_m	midship section area
A_w	waterplane area
AP	aft perpendicular
B	beam or moulded breadth or centre of buoyancy
BM	metacentre above centre of buoyancy
BM_t	Transverse metacentre above centre of buoyancy
BM_L	Longitudinal metacentre above centre of buoyancy
C	wave velocity
C_B	block coefficient
C_M	midship section coefficient, coefficient of wind heeling moment
C_p	prismatic coefficient
C_{wp}	coefficient of fineness of waterplane
CF	centre of floatation
CUNO	cubic number
D	depth of ship
F	freeboard
FP	forward perpendicular
g	acceleration of gravity
G	centre of gravity
GM	metacentric height
GT	gross tonnage
GZ	heeling / righting lever

I_L	longitudinal moment of inertia of waterplane about CF
I_T	transverse moment of inertia
K	keel point
KB	vertical centre of buoyancy above keel
L_w, λ	wave length
LBP	length between perpendiculars
LCB	longitudinal centre of buoyancy
LCF	longitudinal centre of floatation
LOA	length over all
LWL	length at waterline
M	metacentric point
MCT	moment to change trim 1 cm.
m	mass
r, R	radius in general
t	time in general
NT	net tonnage
T_A	draught, fwd
T	draught, general
TPC	ton per centimetre of immersion
Δ	displacement force
∇	displacement volume
V	velocity in general
V_w	wind velocity
WParea	waterplane area
x, y, z	body axes and Cartesian co-ordinated Right-hand system fixed in the body, z-axis vertically down, x-axis forward. Origin at G.

β, ϕ	angle in general
γ	specific gravity
δ	thickness of boundary layer or increment
θ	angle of heel
μ	coefficient of dynamic viscosity
ν	coefficient of kinematic viscosity
ρ	density in general



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