LASHING FORCE CALCULATED REPORT

VESSEL / BARGE NAME: BONTOON 3
LOCATION OF SURVEY: NHON TRACH PORT- DONG NAI- VN
DATE OF SURVEY: 22/10/2023
INFORMATION OF THE VESSEL

Lpp (m)	B (m)	GM (m)	V (Knot)	B/GM
100	12	2	3	6

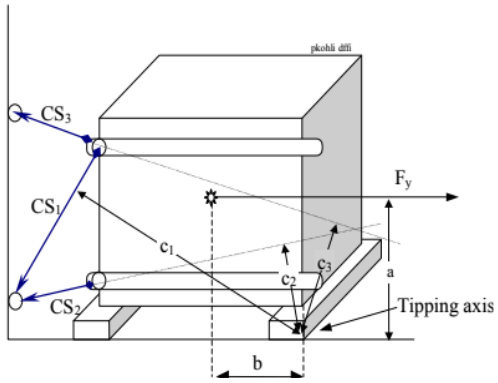
PACKAGE NAME: TOWER SECTION 1

Position (DH/DL/TD/LH)	L from Aft	Mass (tone)	Dimension L (m)	Dimension W (m)	Dimension H (m)	Tipping C (a)	Stableness (b)	friction coefficient (μ)
On Deck, High	0.9	84.5	13.2	5.57	6.63	2.2	2.785	0.3

LASHINGS INFORMATION

Securing Arrangement

(n)	Lashing direction	CS(KN)	α°	L.A.of securing	$CS_n.f_n$	$CS_n.C_n$
2	Port	61.6	73.14	6.9	71.456	850.08
2	Port	61.6	73.14	6.9	71.456	850.08
2	Stbd	61.6	73.14	6.9	71.456	850.08
2	Stbd	61.6	73.14	6.9	71.46	850.08
0	Fwd	61.6	56.36	3.6	0	0
0	Aft	61.6	63.45	4.5	0	0
(n)	Toppers	Dimension (cm)		MSL	$CS_n.f_n$	Weld thickness
2	Longitudinal	(LxWxH) 20x2x20		210.0	420.0	0.5 cm
4	Trasnverse	(LxWxH) 20x2x20		210.0	840.0	0.5 cm
-	-	-	-	-	-	-



Result

Longitudinal, transverse and vertical acceleratins $(a_{(x,y,z)})$	a_x	3.8	a_y	7.4	a_z 9.2
Longitudinal, transverse forces by wind pressure $(F_{w(x,y)})$	$F_{w(x)}$ (WxH)		36.93	$F_{w(y)}$ (LxH)	87.52
Longitudinal, transverse forces by Sea sloshing $(F_{s(x,y)})$	$F_{s(x)}$ (Wx2)		11.14	$F_{s(y)}$ (Lx2)	26.4

External Forces (Kn)	F_X	F_Y	F_Z
$F_{(x,y,z)} = ma_{(x,y,z)} + F_{w(x,y)} + F_{s(x,y)}$	237.52	482.85	458.67

Transverse Sliding Port arrangement / Transverse Sliding Stbd arrangement

$$F_y \le \mu.m.g + CS_1.f_1 + CS_2.f_2 + ... + CS_n.f_n$$

F_y	Securing force	Is this Ok?	F_y	Securing force	Is this Ok?
482.85	811.6	**OK**	482.85	811.6	**OK**

Transverse Tipping Port arrangement / Transverse Tipping Stbd arrangement

$$F_y.a \le b.m.g + CS_1.C_1 + CS_2.C_2 + ... + CS_n.C_n$$

$F_y.a$	Securing force	Is this Ok?	$F_y.a$	Securing force	Is this Ok?
1062.27	4008.77	**OK**	1062.27	4008.77	**OK**

Longitudinal Sliding Fwd / Longitudinal Sliding Aft

$$F_x \le \mu(m.g - F_z) + CS_1.f_1 + CS_2.f_2 + ... + CS_n.f_n$$

F_x	Securing force	Is this Ok?	F_x	Securing force	Is this Ok?
237.52	531.08	**OK**	237.52	531.08	**OK**

Advanced method

Cargo Control's Surveyor

ON BEHALF OF CARGO CONTROL

Hoàng Văn Hùng