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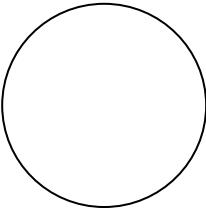
Lightweight survey report

M/S Sanna
3YZA

Harstad
31. mai. 2024

NSK Ship Design AS

Sjøgata. 5
NO-9405 Harstad
Norway
Ph. + 47 77 00 18 00

	Date of approval:	
	Man hours:	(hours)
		Surveyor

Report on inclining test and lightweight survey

Name of ship: M/S Sanna
Yard and yard no : GS Marine - BNR 37

Signal letters : 3YZA

Carried out, place and date: 21.05.2024 Fore Båt og Motorservice - Reipå

SUMMARY OF RESULTS :

Lightship weight : 35.324 tonnes
Longitudinal centre of gravity, LCG : 9.126 m from ap
Transversal centre of gravity, TCG : 0.001 m

	Wegih (t)	LCG (m)
Lightweight survey	35.324	9.126
Lightship data from inclining test from 2015	34.660	9.221
% Deviation	1.92 %	0.44 %

Person responsible (name and company)
NSK Ship Design v/Vidar Storli Olsen

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Signature

1. GENERAL INFORMATION :

Owners (name and adress) :	Lovund Skyss AS Lovund 8764 LOVUND
Report date :	31.05.2024
Carried out, date:	21.05.2024
Person responsible:	Vidar Storli Olsen
Company:	NSK Ship Design
Attending surveyor:	Jens-Bjørnar Roaldsen
NMA station:	Bodø

2. SHIP PARTICULARS

Lenght over all (LOA):	22.30 (m)
Lenght between perpendiculars (LBP) :	21.80 (m)
Breadth moulded ¹ amidships :	6.00 (m)
Depth moulded amidship (D):	2.500 (m)
Is the deck thickness included in D ² ?	No
Deck thickness:	60 (mm)

3. OTHER INFORMATION

Sister ships if any (name, bnr, call signal):

Last hull extension or other modifications (year):

Permanent ballast during test:

Permanent ballast tanken on board after the test:

¹ For vessles without shell plating (wooden hulls, GRP etc.) the breadth may be measured to outside hull

² E.g. for vessels without shell plating and/or older vessels that has been scanned

8. TANK CONTENTS FOR DEDUCTION

Tank no. Contents	Sounding	Volume m ³	Density ρ t/m ³	Mass t	LCG m	Longitudinal moment tm	TCG m	Transversal moment tm	VCG m	Vertical moment tm	Moment of inertia i m ⁴	FSMt ρ * i tm
See incl. test condition				3.270	10.227	33.442	0.047	0.154	1.047	3.424		0.0
SUM TANKS		0.000		3.270	10.227	33.442	0.047	0.154	1.047	3.424		0.000

Correction for free surface : $\Sigma (\rho * i) / \Delta =$ 0.000 m

Note ! If the amount of (sea) water ballast /fuel oil exceeds approximately 20% of displacement, the specific gravity shall be verified (all tanks).

Ship as inclined:

Volume (m3): 38.88 Spc.gravity (t/m3): 1.0240 Displ. (t): 39.81 LCG (m): 9.391 VCG (m): 2.388 TCG (m): 0.009 FSMcorr(m): 0.000
 VCGcorr(m): 2.388

Weights to be removed | Weights to be added

Pos	Type	Tank	TankCode	Description	Volume(m3)	DW-Code	Spg(t/m3)	Displ.(t)	LCG(m)	VCG(m)	TCG(m)	IT(m4)	L.Mom(t*m)	V.Mom(t*m)
1				Total inclining weights		TIW	1.0000		4.600	3.290				
2	T	6	0%	SEPTIC		SEP	1.0000		9.207	0.873	2.427			
3	T	7	0%	GRÅVANN		SEP	1.0000		9.886	0.878	2.433			
4	T	12	0%	FW - VANNTANK		FW	1.0000		4.020	0.005				
5	T	13	100%	FW - forut 17.469	0.395	FW	1.0000	0.395	18.207	0.381			7.19	0.15
6	T	9	100%	BRENNOLJE SB	1.568	FO	0.8600	1.348	9.547	1.150	1.100		12.87	1.55
7	T	10	100%	BRENNOLJE BB	1.568	FO	0.8600	1.348	9.397	1.150	-1.100		12.67	1.55
8				Hydraulikkolje i System	0.200	HYD	0.8900	0.178	3.950	0.968	0.860		0.70	0.17
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Graph input

Displ. (t): 3.27 LCG (m): 10.227 VCG (m): 1.047 TCG (m): 0.047 Sum(IT*Spg) (t*m): 0.0

Lightship

Displ. (t): 36.54 LCG (m): 9.316 Uncorrected VCG (m): 2.508 Corrected VCG (m): 2.508 TCG (m): 0.005

Calculate LightShip Water sp.grav.(t/m3) 1.0240 DA (m): 1.082 DF (m): 0.695 Trim (DA-DF): 0.387 Heel angle (°): 0.0 KMT(m): 5.264

Close



1: 880 mm (Bilbrohylle)

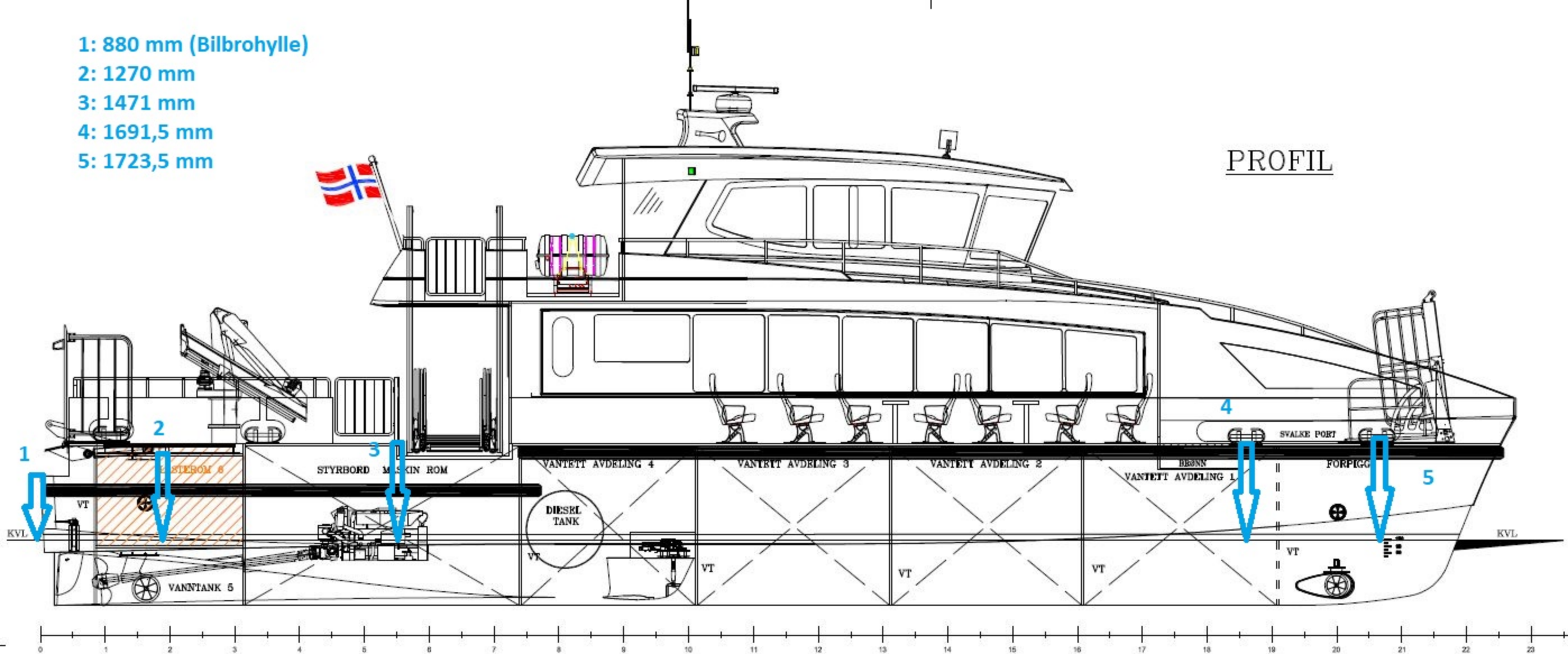
2: 1270 mm

3: 1471 mm

4: 1691,5 mm

5: 1723,5 mm

PROFIL



Drafts | Explanation - formulas | About draft input | Formulas to calculate draft

= 0.000

TA(rad): 0.01650

Used trim angle (rad): 0.01650

Breadth to calculate heel angle (m) 6.000

Calculated DMps(m): 0.920 Calculated DMsb(m): 0.934

Heel angle(°) 0.1 ☐ Use given heel angle

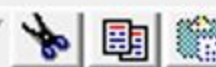
Calculated DA(m): 1.107 Corrected DA(m): 1.107

Calculated DM(m): 0.927 Corrected DM(m): 0.927

Calculated DF(m): 0.747 Corrected DF(m): 0.747

Trim (DA-DF)(m): 0.360

No	From AP(input)	From AP(m)	PS draft(input)	PS draft(m)	SB draft(input)	SB draft(m)	Unu
1	4.720	4.720	2.500-1.475	1.025	2.500-1.467	1.033	
2	18.080	18.080	2.500-1.703	0.797	2.500-1.680	0.820	
3		0.000		0.000		0.000	
4		0.000		0.000		0.000	
5		0.000		0.000		0.000	
6		0.000		0.000		0.000	
7		0.000		0.000		0.000	
8		0.000		0.000		0.000	
9		0.000		0.000		0.000	
10		0.000		0.000		0.000	



Volume(m3): 38.88 LCB(m): 9.332 VCB(m): 0.645 TCB(m): 0.016
 Displac.(t): 39.81 KMT(m): 5.431 IT(m4): 186.06 TPC(t/cm): 0.9 MCT1CM(tm/cm): 1.2

Color of PS-points



Color of selected PS-points



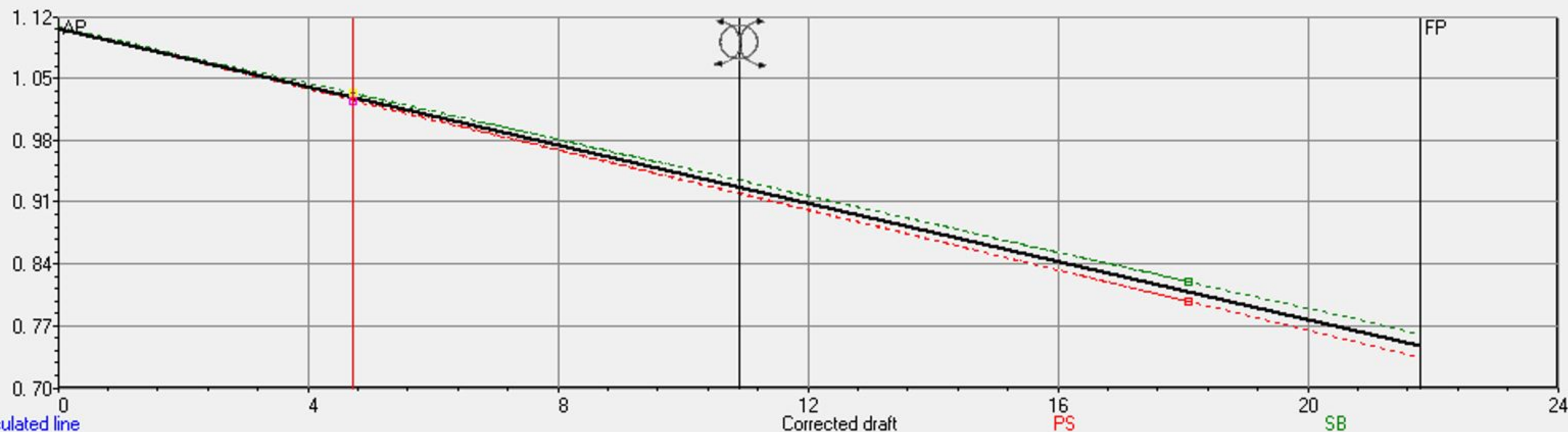
Color of SB-points



Color of selected SB-points



Close



13. CALCULATION OF LIGHTSHIP

Item	Weight (tonn)	LCG ref. AP (m)	Horizontal moment (tm)	TCG ref. CL (m)	Transversal moment (tm)
Ship as inclined:	39.810	9.391	373.856	0.000	0.00
Weights to be taken on board:					
Rekkverk	0.005	3.500	0.018	2.000	0.010
SUM	0.005	3.500	0.018	2.000	0.010
Weights to be taken ashore:					
			0.000		0.000
Personer om bord	0.415	10.000	4.150	0.000	0.000
Stores hoveddekk	0.050	4.000	0.200	0.000	0.000
Brodekk	0.100	12.000	1.200	0.000	0.000
Stores maskin	0.030	8.000	0.240	0.000	0.000
Stores mannskapsinnredning	0.030	12.000	0.360	0.000	0.000
Stores FP	0.030	16.500	0.495	0.000	0.000
Bly forut	0.468	21.000	9.828	0.000	0.000
Bly tankrom	0.098	16.200	1.588	-2.000	-0.196
Tank content from table 8	3.270	10.227	33.442	0.047	0.154
SUB TOTAL	4.491	11.468	51.503	-0.009	-0.042
LIGHTSHIP	35.324	9.126	322.370	0.001	0.052