



WASHINGTON STATE DEPARTMENT OF TRANSPORTATION FERRIES DIVISION

SEARCH FOR FOREIGN OR DOMESTIC FERRY FOR WASHINGTON STATE FERRIES' ANACORTES – SIDNEY, B.C. FERRY ROUTE

REPORT ON FERRIES FOR SALE OR LEASE

The Washington State Department of Transportation Ferries Division, operating as Washington State Ferries (hereinafter called "WSF"), issues this Report on foreign or domestic ferries for sale or lease, for possible operation on WSF's Anacortes / Sidney, B.C. ferry route.

Background

During the 2023 legislative session, the Washington State Legislature passed a budget proviso in the Transportation Budget, ESHB 1125, Section 222 (12), requiring WSF to search for a foreign or domestic ferry to operate on WSF's Anacortes / Sidney, B.C. ferry route (the "international ferry route"). The search is due to WSF's allocation of all current vessels in its fleet to the ferry routes in south and central Puget Sound. As such, there is no current WSF vessel available for the international ferry route until approximately 2030. At that time, WSF will have constructed new hybrid electric ferries for its fleet that should enable allocation of a ferry to the international ferry route, subject to Safety of Life At Sea (SOLAS) certification, a U.S. Coast Guard requirement for vessels in international route service.

Currently, WSF has one (1) vessel, the M.V. Chelan, that was previously SOLAS certified, and with required work will be able to be recertified as SOLAS and resume international route service when systemwide vessel availability allows.

In an expansive search to find a vehicle or passenger-only vessel able to operate between Anacortes and Sidney, B.C., WSF engaged the services of Marcon International, Inc. (Marcon) a well-respected, long term marine broker in Coupeville, Whidbey Island. Marcon, an industry leader in maintaining an international list of available marine vessels, also assisted WSF in a similar ferry search for the international ferry route in 2012 - 2013.

Due to a national need for ferries, American companies have not been decommissioning theirs unless necessary. This means the only domestic vessels available are either too old or would require significant time and maintenance on the vessel to get it to a state where it could be operable by WSF.

With no suitable American-built vessels available, WSF turned to foreign-build vessels, with Marcon providing us with several foreign-built vehicle / passenger ferries for sale, including approximately twenty-five (25) Greek ferries, two Danish ferries, and a Japanese ferry. WSF advised Marcon that WSF is seeking a ferry that carries at least eighty (80) vehicles, capable of continuous operations over 14.5 knots, and freeboard of approximately eight feet (8').

Analysis

1. **Jones Act Restrictions**

If WSF uses a foreign built (i.e., non-U.S. Jones Act compliant) vessel on the international ferry route, the vessel could stop in Friday Harbor to drop off passengers but would not be able to board passengers there while enroute from Anacortes to Sidney, B.C. as well as on the return trip. The rationale is that under the Jones Act, foreign built vessels cannot take on passengers at U.S. ports without an intermediate stop at a foreign port.

While WSF is focused on getting to "yes" on a foreign built vessel that could operate between Anacortes and Sidney, B.C., frustratingly all the vessels analyzed need significant modifications for service at WSF terminals, as noted below.

2. **Greek Ferries**

The twenty-five (25) Greek ferries for sale are shown in this photobook. Most of the ferries are marketed at \$3M to \$8M EUROS which equals \$3.28M US Dollars to \$8.73M US Dollars. The ferries would be unworkable on WSF's international ferry route due to the following issues:

- The ferries are generally slow and underpowered (11-12 knots). a.
- b. Looking at the ferries that are ten (10) years old or less, to avoid likely extensive work associated with older vessels, the main machinery would need to be overhauled and/or replaced because the engines used are high-speed diesel engines and can only be overhauled four (4) times to remain reliable at 10,000 hours per overhaul. The expected life of the engine is then 40,000 hours which is 8-10 years. Any new engine would require a Tier 4 environmental rating which would require the installation of exhaust after treatment.

- c. The ferries are all classed by the International Naval Survey Bureau (INSB) which is a Greek classification registry that would not be recognized by the U.S. Coast Guard. The ferries may be SOLAS outfitted, but none of them have been certified as conforming to SOLAS according to the ISNB rules.
- d. The ferries are all fitted with bow ramps for self-unloading at a quay. The self-unloading bow is forward raked (toward shore). All this structure would need to be removed to allow a ferry to approach WSF's Anacortes and Sidney, B.C. Ferry Terminals. There is considerable risk in these vessel modifications, and additional steel would need to be added to enable the ferries to fit-up with the Terminals.
- e. Without more detail, it is uncertain whether the above-described systems or installations would be approved by the U.S. Coast Guard, and that would need to be taken into consideration if WSF was able to modify such a ferry.

3. Greek Ferry Agios Spiridon

The Greek ferry Agios Spiridon is 267' long, constructed in Greece in 2000. Refer to *Appendix A* for photos. The ferry is a shallow draft vehicle / passenger ferry with a capacity of 115 autos. The ferry is marketed at \$4.8M EURO which equals \$5.16M US Dollars. It appears the design loads vehicles at one end and unloads at either end. The Greek ferry terminals are bow-on at one end of the ferry route and stern-to at the other end of the ferry route.

4. <u>Danish Ferry</u> (new construction, 70% complete)

The Danish ferry under construction has an arrangement and size that appear to be a reasonable fit based on the limited information. Refer to *Appendix B* for photos. The ferry is 327.75' long, with a vehicle capacity of 122-156 autos and 45 trucks. The keel was laid in February 2011. There's no explanation why the ferry hasn't been completed.

The ferry is marketed "as-is" for \$6.2M EURO which equals \$6.7M US Dollars. There is no price for a completed ferry. The ferry is a double ender, and the bow could be modified to fit WSF's terminals by removing the door structures at each end. The deck edge could be modified to fit WSF's terminals, but it would be important to get confirmation on the extent of the work. The risk is the modifications needed to the ends and how well the ferry has been protected while being laid-up. The percentage complete is subjective at best and WSF doesn't know the condition and details of the construction to date, including whether the ferry has been designed to SOLAS requirements.

5. Danish Ferry M.V. Fynshav

The Danish ferry M.V. Fynshav is a drive-through vehicle / passenger ferry constructed in Denmark in 1998. Refer to *Appendix C* for photos. The ferry is marketed at \$4.5M EURO which equals \$4.84M US Dollars. The ferry does not meet WSF's needs for the international ferry route. Although the ferry carries 90 vehicles, they load from the stern at one port and exit the bow at the destination. On the return trip, vehicles enter the bow and exit the stern. The stern will not fit WSF's Anacortes and Sidney, B.C. Ferry Terminals and the bow door opens out which would collide with the ramp support structure at the Terminals. The ferry is twenty-five years old and is slow at 13 knots. Also, the ferry is SOLAS certified but with a reflagging may need to be upgraded.

6. <u>Japanese Ferry Tsubasa</u>

The Japanese ferry Tsubasa is a large 323' vehicle / passenger cargo ferry constructed in Japan in 1995. The ferry has staterooms, a very large integrated stern ramp, and a bow ramp behind bow doors. Refer to *Appendix D* for photos. The ferry is considered too large and has vehicle loading / unloading design elements that are inappropriate for WSF's Anacortes and Sidney, B.C. Ferry Terminals.

Conclusion

The vehicle / passenger ferries that are currently on the worldwide market for sale do not have a design meeting WSF's needs for the international ferry route, even after considering some level of modification to enable such service. We estimate those modifications, while difficult to quantify from far away, would cost \$3-5 million for design and \$20-50 million for the work. The timeline for the retrofitting would be 18-36 months once we have a Coast Guard-approved design and approval to proceed. Our Vessels team believes this would be a risky process as we wouldn't know the condition of the vessels we were purchasing. This was the same conclusion when WSF reviewed foreign-built ferries for sale in 2013.

Marcon did not offer any foreign built ferries that meet WSF's vessel parameters and are available for lease.

Additionally, as the legislature considers these options, we estimate it would cost \$3-\$4 million dollars to transport an open deck ferry via a heavy lift, semi-submersible cargo ship from Europe or Asia to Puget Sound. A large ferry with a closed bow and stern may be able to be transported via towboat or self-power, which should cost considerably less.

Planning,			ntact John Vezir vezinaj@wsdot	

Appendix A: Photos of Greek Ferry Agios Spiridon





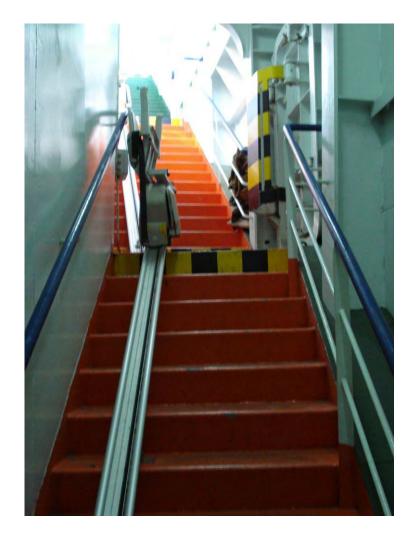
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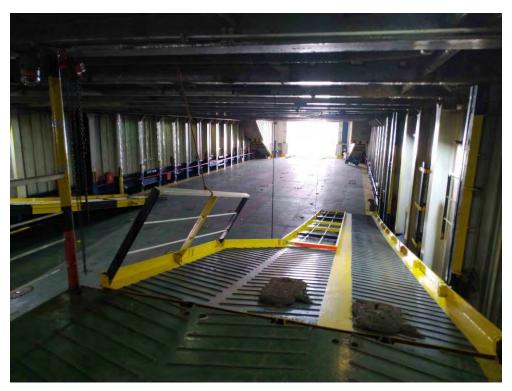
















Appendix B: Photos and Diagram of Danish Ferry (new construction, 70% complete)













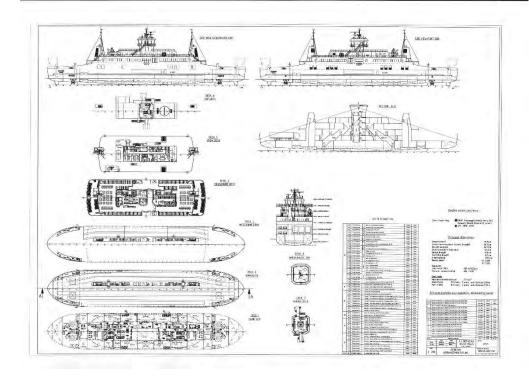








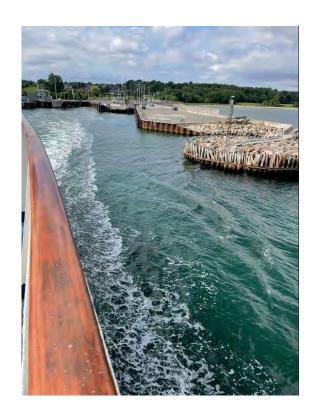




Appendix C: Photos and Specifications of Danish Ferry M.V. Fynshav









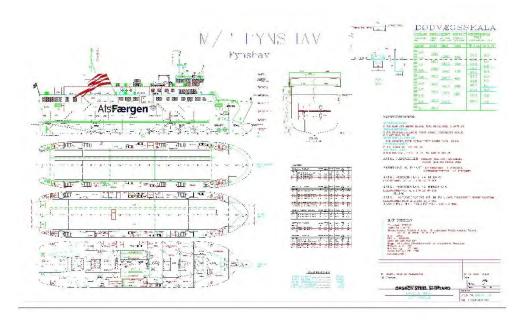


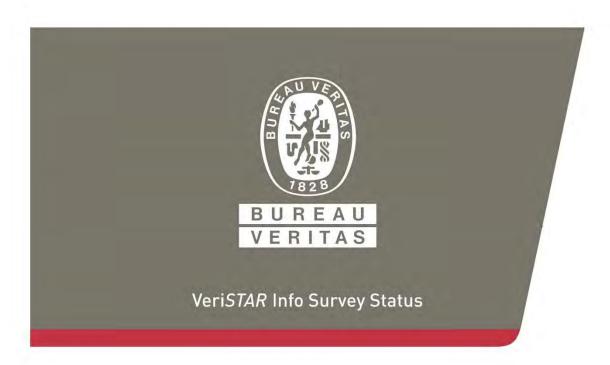












FYNSHAV

Reg. Owner: MOLSLINJEN A/S

BV Reg. Nr: 00473R **IMO Number:** 9183025

Vessel Type: Passenger ferry

Gross Tonnage: 3380

Date of build: 03 Dec 1998

Ship name: FYNSHAV BV Nr: 00473R

Table of Contents

Ship Particulars
Owner / Manager Information
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Extract of Rules Pt A. Ch 2. Sec 2. [3.4]

3.4.1 - Information given in the Certificate of Classification, associated endorsements, Rules and specific documents enables the Owner to identify the status of surveys and Conditions of Classifications.

the status of surveys and Conditions of Class/recommendations.

3.4.2. The ornission of such information does not absolve the Owner from ensuring that surveys are held by the limit dates and pending Conditions of Class/recommendations are cleared to avoid any inconvenience which is liable to result from the suspension or withdrawal of class; see Ch. 2, Sec. 3.

Toute personne qui n'est pas partie au contrat aux termes duquel ce document est délivré ne pourra engager la responsabilité du Bureau Ventas pour les inexactitudes ou omissions qui pourait y être relevées ainsi que les erreurs de jugement, fautes ou négligences commises par le personnel de la Société ou par ses agents dans l'établissement de ce document et dans l'exécution des interventions qu'il comporte.

Extrait du Réglement Pt A. Ch 2. Sec 2. [3 4]

34.1 - Les informations données dans le Certificat de Classification, les endossements associés, le Réglement et les documents spécifiques au navire permettent à l'Armateur d'identifier la situation des visites et des réserves. 3.4 2 - L'omission de ces informations ne décharge pas l'Armateur de s'assurer que les visites sont effectuées aux dates limites et que les réserves en suspens sont levées, afin d'éviter les inconvénients pouvant résulter de la suspension ou du retrait de la classe; voir Ch 2, Sec 3.

Ship name: **FYNSHAV** BV Nr: 00473R

Ship Particulars

Identification

Denmark Ship Type: Passenger ferry Port of Registry: IMO Number: 9183025 **FYNSHAV** Call Sign: **OZPH**

Classification

Class Symbols: I ♥ Hull ♥ Mach Service Notations: Ro-ro passenger ship Navigation Not.: Coastal area Add. Class Not.: Ice III, ⊕ AUT-UMS

Machinery: **™** MACH

2 Main anchors, chain diameter 32 mm, steel quality Q3 (Very high tensile strength steel) Equipment:

Hull

ORSKOV CHRISTENSENS Gross Tonnage 69: 3380 Builder: Net Tonnage 69: 1014 Staalskibsvaerft A/S Overall Length: 68.8 m Country of build: DENMARK LPP: 63.58 m Date of build: 03 Dec 1998 Breadth: 14.8 m Hull Material: Steel 12 watertight compartments Depth: 4.35 m Hull Info: Draught: 6 continuous deck(s) 3.2 m Freeboard: 1157 mm Survey Type: Normal (Hull)

Machinery

Elec. installation: 2 Generators Propelling type: Diesel 2940 kW (3994 HP) Total power: 540 kVA (432 kW) Propelling machinery:

2 M A N-B & W 6 L 28/32 A-DV 2 Generators

Normal

285 kVA (228 kW), 380 V, 50 Hz 4T, 6 cyl, 775 rpm Builder: ALPHA 1 Emergency generator Date of build: 01 Jan 1998 139 kVA (111 kW) Propeller: 2 Controllable pitch Screw Propeller LB Thruster(s): 2 forward thrusters

(oil -closed) 5, 283 rpm Survey Type: Auxiliary Engine(s): 2 Diesel (646Kw/878HP) Emergency Engine(s): 1 Diesel (111Kw/151HP)

Automated Installations

Survey Type: Normal

Control Station

- Local directly control PS and SB propuksion plants in the engine room with starting/stopping and speede adjustment, clutching and pitch control.

(speed adjustment an pitch control to be used only in case of emergency and ordered by PS/SB Emergency

- A manoeuvring selector local-/bridge control placed on each main engine.
- Central monitoring in the engine room (placed in main swb room).

Bridge control (from center and PS and SB wings)

- Main engine speed adjustment and clutching.
- Propeller pitch control.
- Emergency stopping of main engines and propellers.
- Restart possible after stop not caused by safety system or emergency stop.
- Power management system for selection of shaft alternator or diesel alternator.

Automatic control of Servitude Auxiliaryes

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FYNSHAV BV Nr: 00473R Ship name:

Automated Installations

- H.T./L.T. cooling -lub.oil/pitch control- and D.O. booster pumps all attached.
- Main eng./Red.gear electric driven lub.oil spare pumps installed.
- Main eng. D.O.booster pumps (el.driven) installed.

Electric production

- Two (2) diesel alternators with automatic starting syncronizing and load sharing.
 Two (2) shaft alternators with preference of b thow thruster supply.

At full away navigation the shaft alternators with can supply main switchboard.

- Main switchboard with power management system for selection of shaft- or diesel alternator and automatic starting/stopping of shaft- diesel alternator and automatic starting/stopping of diesel alternator depending of the load.
- Tripping release of non essential load in case of firepump-, sprinkler- & drencher pump starting.

Automatic control of complementary auxiliaries

- Air compressors.



Ship name: FYNSHAV BV Nr: 00473R

Owner / Manager Information

Registered Owner

Name: Company Number: IMO Number: Address: MOLSLINJEN A/S 18559 0251203

Færgevej 7A 8000 AARHUS DENMARK

Manager

Name: Company Number: IMO Number; Address: MOLSLINJEN A/S 18559 0251203 Færgevej 7A 8000 AARHUS DENMARK



Ship name: FYNSHAV BV Nr: 00473R

Cargo & Ballast Capacities

Ballast Tanks

Tank/Hold Identification	Initial Frame	Final Frame	Position	Last survey	Job Number	Protection	Coating Cond.	Annual Exam.
FP WB tank no. 1	96	110	Centre	29 Oct 2020	FRC0/2020/J5209	Hard coated	Good	No.
DB WB C tank no 2	86	96	Centre	29 Oct 2020	FRC0/2020/J5209	Hard coated	Good	No
DB WB C tank no. 11	6	13	Centre	29 Oct 2020	FRC0/2020/J5209	Hard coated	Good	No

Cargo Holds

Tank/Hold Identification	Initial Frame	Final Frame	Position	Last survey	Job Number
Car deck	0	96	Centre	01 Dec 2020	FRC0/2020/J5241



Ship name: FYNSHAV BV Nr: 00473R

Conditions of Class / Statutory, SGS Status

The Conditions of Class / Statutory, SGS Status below shows the information available in VeriSTAR Info database at the time the report is printed. This may not indicate certificates issued, surveys carried out or conditions of class / recommendations issued but not yet reported to BV Head Office.

Classification

Status: Active and Under Survey Attendance requested or in progress:

 Date of Request:
 Survey Centre:
 Job Number:
 Attendance Type:

 21 Oct 2022
 BV FREDERICIA
 FRC0/2022/J5318
 In-service surveys

Certificates

Classification Class Certificate Load line Load Line Certificate	01 Dec 2020	01 Nov 2022	D	efinitive I	Expired
7.6.3.3.3.3.4.3.4.4.3.4.4.4.4.4.4.4.4.4.4					
Load Line Certificate	06 Nov 2017	01 Nov 2022	D	efinitive I	Expired
AFS convention Anti-Fouling System Certificate	06 Nov 2017			efinitive	

Expired Cxpires in it

Surveys / Audits / Inspections

Classification Surveys

Survey name		Last	Due Date	Range (from, to)	Postponed	Status
Hull - Renewal	8	06 Nov 2017	01 Nov 2022	01 Aug 2021 - 01 Nov 2022	. 200	Overdue
Hull - Annual for Renewal	\$	06 Nov 2017	01 Nov 2022	01 Aug 2022 - 01 Nov 2022		Overdue
Hull - Annual		03 Nov 2021		Control of the contro		
Annual survey of structure		03 Nov 2021				
Hull - Intermediate		01 Dec 2020				
Bottom Survey in Dry Dock	8	27 Nov 2019	01 Nov 2022	01 Nov 2022		Overdue
Machinery - Renewal	\$	06 Nov 2017	01 Nov 2022	01 Aug 2021 - 01 Nov 2022		Overdue
Machinery - Annual for Renewal	8	06 Nov 2017	01 Nov 2022	01 Aug 2022 - 01 Nov 2022		Overdue
Machinery - Annual		03 Nov 2021				
Portside Tailshaft Survey			27 Nov 2024	27 Nov 2024		
Starboard Tailshaft Survey			27 Nov 2024	27 Nov 2024		
PS Tailshaft - Complete		27 Nov 2019				
PS Tailshaft - Modified		06 Nov 2017				
SB Tailshaft - Complete		27 Nov 2019				
SB Tailshaft - Modified		19 Feb 2015				
Automation - Renewal	8	06 Nov 2017	01 Nov 2022	01 Aug 2021 - 01 Nov 2022		Overdue
Automation - Annual for Renewal	8	06 Nov 2017	01 Nov 2022	01 Aug 2022 - 01 Nov 2022		Overdue
Automation - Annual		03 Nov 2021				
Statutory Surveys						
Survey name		Last	Due Date	Range (from, to)	Postponed	Status
Load Line - Renewal	8	06 Nov 2017	01 Nov 2022	01 Aug 2022 - 01 Nov 2022		Overdue
Legend:						

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Overdue



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Ship name: FYNSHAV BV Nr: 00473R

Surveys / Audits / Inspections

Statutory Surveys

Survey name Last Due Date Range (from, to) Postponed Status

 Load Line - Annual
 03 Nov 2021

 Anti-Fouling System - Renewal
 06 Nov 2017

 Anti-Fouling System - Occasional
 29 Oct 2020

Legend:

Overdue Overdue in less than 1 month Within the range

Conditions of Class / Statutory Recommendations

Conditions of Class - Hull

Coc. NrDescription of Condition of ClassDue DateStatusFRC0/2021/J5101-H1CBuckled brackets, two off fr. 90-92 iwo Bow Thruster Room. To be01 Nov 2022Overdue repaired by limit date.

Legend:

Overdue Overdue in less than 1 month Limit date in less than 3 months
Overdue Overdue in less than 1 month
District date in less than 3 months

Class Memoranda

IssuedDescription of Memoranda02 Sep 2004Compliance with applicable provisions of SOLAS consolidated Edition 2001 Reg. II - 2/15.2.9 to II-2/15.2.11 satisfactorily checked.06 Nov 2017Soft indents PS bilge area fr. 42-44 and 49-50 max depth 25 mm13 Apr 2021Slight soft indent SB side fr. 87-96 iwo Bow Thruster Room not affecting vessels Class.

Statutory Memoranda

None



FYNSHAV BV Nr: 00473R Ship name:

Planned Inspection Items

Class Items

Hull

Item Nr Type VS* Inspection Item FRC0/2021/J5101-H1C 13 Apr 2021 Coc 2

Due Date Buckled brackets, two off fr. 90-92 iwo Bow 01 Nov 2022 Thruster Room. To be repaired by limit date.

Action Date

Statutory Items

None

- - 1 Inspection/test/report by authorized person and confirmation of action taken through www.veristar.com by the indicated due date. Documentary evidence to be kept on board. Verification/confirmation by BV Surveyor during next attendance onboard
 - 2 Inspection by BV Surveyor by due date

Legend:

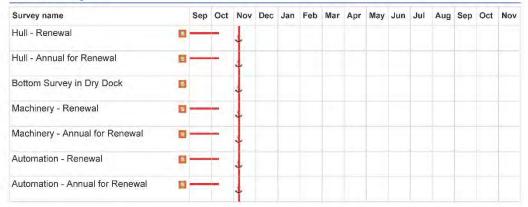
- Recommendation overdue
- Recommendation overdue in less than 1 month
- Recommendation with limit date in less than 3 months
- A Recommendation with action taken To be confirmed
- Conditions of Class overdue
- Conditions of Class overdue in less than 1 month
- G Conditions of Class with limit date in less than 3 months
- Conditions of Class with action taken To be confirmed
- Observation overdue
- Observation overdue in less than 1 month
- Observation with limit date in less than 3 months
- ▲ Observation with action taken To be confirmed



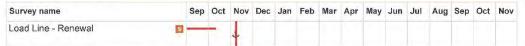
Ship name: FYNSHAV BV Nr: 00473R

1-Year Survey Planner

Class Surveys



Statutory Surveys



Conditions of Class / Statutory Recommendations

Condition of Class / Recommendation desc	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Conditions of Class - Hull															
FRC0/2021/J5101-H1R - Buckled brackets, two off fr. 90-92 iwo Bow Thruster Room. To be repaired by I ()	3		1												



Ship name: FYNSHAV BV Nr: 00473R

Regulatory Information

New requirements applicable

It is reminded that the Marine Environment Protection Committee of the IMO, at its 71st meeting (July 2017) agreed on the phase in of compliance with the standard described in regulation D-2 (i.e. installation of BWMS) for Existing ships (Regulations B-3). For "existing ships" (ships constructed prior to 8 September 2017), the IOPP renewal survey to be taken into account on or after 8 September 2017 as the start of the phase-in of conducting Ballast Water Management that at least meets the standard described in regulation D-2 is: -FIRST RENEWAL SURVEY IF: 1. this survey is completed on or after 8 September 2019, or 2. a renewal survey was completed after 8 September 2014 but prior to 8 September 2017 - SECOND RENEWAL SURVEY IF: the 1st renewal survey following the entry into force of the BWM Convention is completed prior to 8 September 2019, provided that a renewal survey (i.e. IOPP renewal survey) was NOT completed on or after 8 September 2014 but prior to 8 September 2017. NB: Existing Ships which are not subject to hold an IOPP certificate shall comply with the standard described in regulation D-2 from the date decided by the Administration, but not later than 8 September 2024.



Ship name: **FYNSHAV** BV Nr: 00473R

Bureau Veritas Contacts

Connecting Office

BV COPENHAGEN Office:

DK - 1620 COPENHAGEN V Address:

DENMARK Phone: 77 31 10 00 Fax: 77 31 10 01

Email: dnk_csc@dk.bureauveritas.com

Website:

URL:

Contents:

www.veristar.com
Ship status (complete or "to-do" list)
Ship status dashboard and graphic survey planner

Fleet status Survey reports

Conditions of Class & Statutory Certificates issued by BV

Other certificates (uploaded by the owner/manager)

Register of Ships

Full text of BV Rules
On-line request for attendance On-line request for survey check-list On-line request for class attestation Conditions of Class & Statutory news





Move Forward with Confidence

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Corporate website: http://www.bureauveritas.com
Marine website: http://www.veristar.com
Email: veristarinfo@bureauveritas.com



M/F Fynshav Datablad

Rev. dato. 09-11-2022



Registration	
Port of Registration	Fynshav
Call sign	OZPH
IMO No.	9183025
MMSI No.	219000577
DMA Control No.	A 484

Yard	
Yard	Ørskov Christensens Staalskibsværft A/S Frederikshavn
Year of construction	1998
Hull No.	205



Classification

Bureau Veritas

Class Notation: Ro-ro Passenger Ship Coastal Area Ice III + AUT-UMS

Operation and Trade

Company Molslinjen A/S
Service Bøjden- Fynshav

Principal Particulars 1

Length o.a 69.20 m Length p.p. 64.60 m Max breadth 15.20 meter Depth moulded 9,75 m Draught moulded 3,20 m Service draught 3.00 m 3380 **Gross Tonnage** Net Tonnage 1014 Light Weight 1628 t 586 t Dead Weight

Loading Capacity

Free Height 4.45 m

Car Capacity 90

Car lane metres 432 m

Truck lane metres 170 m

Trailer deck max axle load

Fire Extinguishing

Engine room Argonite
Passenger/accomodation Sprinkler
Car deck Drencher

Survey

Machinery Special Hull Special

Rules & Regulations

Maritime Authority DMA
Solas 1996
Dangerous Goods Yes
Flag Danish

Principal Particulars 2

Main Engines M.A.N. B&W Alpha
Fuel Specification Gas Oil
Trial speed 14.8 knots
Service speed 13.5 knots
Passenger S/W 400/301
Crew 4-7

Tank Capacities

 Gas Oil
 114.7 m3

 Lub. Oil
 4.6 m3

 Ballast Water
 140.9 m3

 Fresh Water
 26.8 m3

 Sludge
 2.7 m3

Ramps/Doors

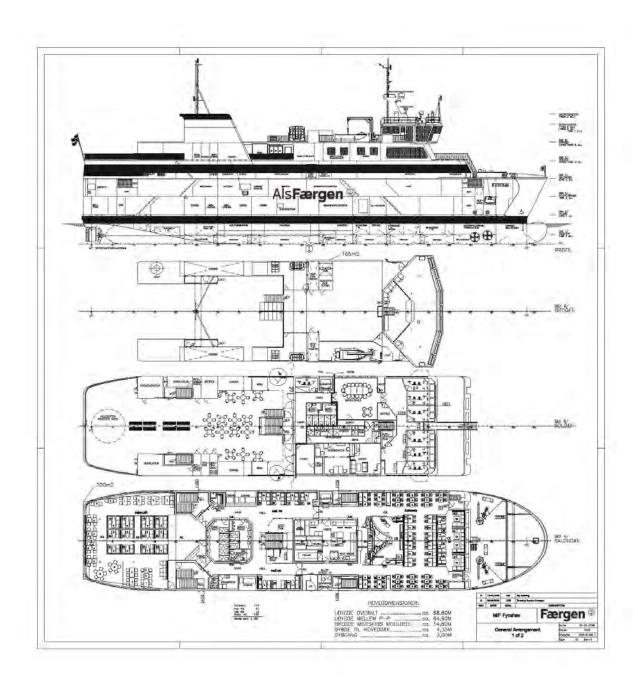
Bow door (H/W) xx /6,85 m Stern door (H/W) xx /8,10 m

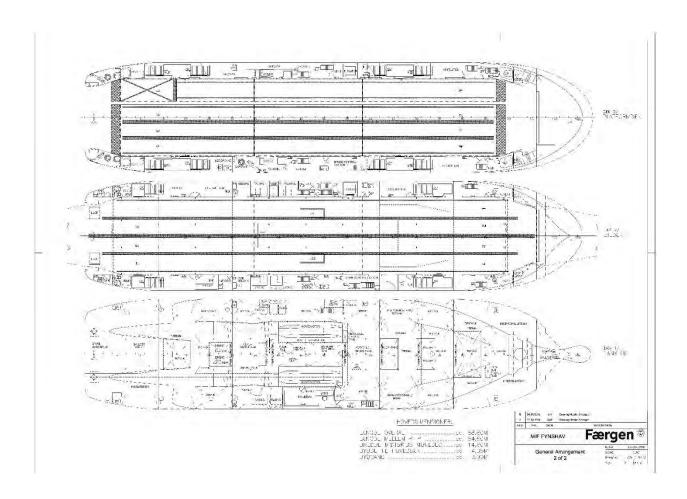
2



Machinery									
Category	No		Make		Type	Output each			
Main engines SB Main engines BB Main engines	2	M.A.N. Alpha		B&W 6L28/32A-D Serie no. 17100 Serie no. 17101		(200	1470 kW		
Auxiliary engines	2		Scania / Somer		DI13 075M Serie no. 68588 Serie no. 68591		228 kW		
Bow Thruster	2		Brunvo	II.	Elect. CPP		350 kVV		
Rudders	2		Becker		N/A		N/A		
Life Saving									
Category		No		Make		Ca	pacity each		
VEC		2		VEMC1, 15-8+2		306	3		
MOB-boat		1 MOB		VIKIN	IG 470GRP				
Life rafts 2*1(VEN (ps)+1(S			VIKIN	G 150 DKS 4*		153 persons			

Life rafts





Appendix D: Photos of Japanese Ferry Tsubasa



