Protokoll fört vid enskild föredragning

Infrastrukturavdelningen
Produktionsbyrån

Beslutande	Föredragande	Justerat
Minister Mika Nordberg	Bitr. avdelningschef Niklas Karlman	Omedelbart
…...……………...…......…........…..	…...……………...…......…........…..	

Ärende/Dnr/Exp. Beslut

Nr 1
Upphandling av D-båt för oljeskydd samt SAR-verksamhet
ÅLR 2016/989

Beslöts begära in anbud för D-båt enligt anbudsförfrågan daterad 9.2.2016. Det beräknade värdet för upphandlingen överstiger det av Europeiska kommissionen fastställda tröskelvärdet om 209.000 euro.
I enlighet med 1 § 2 mom. landskapslag (1994:43) angående tillämpning i landskapet Åland av lagen om offentlig upphandling tillämpas därför rikets lag om offentlig upphandling (FFS 348/2007) på upphandlingsförfarandet.

Upphandlingen genomförs i form av ett öppet förfarande. Upphandlingen med tillhörande anbudshandlingar kommer att publiceras på webbplatsen HILMA (http://www.hankintailmoitukset.fi/sv/) och på landskapsregeringens hemsida http://www.regeringen.ax/upphandlingar.pbs).

Moment 974500

Ålands landskapsregering

Datum: 9.2.2016
Dnr: ÅLR2016/989

ANBUDSFÖRFRÅGAN

D-båt för oljeskydds- och SAR-verksamhet.

Infrastrukturavdelningen

Ålands landskapsregering

Datum: 9.2.2016
Dnr: ÅLR2016/989

Upphandling av D-båt för oljeskydds- och SAR-verksamhet

Innehållsförteckning

Ålands landskapsregering

Datum: 9.2.2016
Dnr: ÅLR2016/989

01 Objekt

Ålands landskapsregering inbjuder härmed till anbudsgivning på en oljeskyddsbåt kategori D (D-båt) enligt bifogad specifikation.

02 Omfattning

02.1 Avsikten är att teckna avtal med en leverantör som uppnår ställda skall-krav
02.2 Uppdraget omfattar att projektera, tillverka och leverera en D-båt
02.3 Leverans skall ske enligt rubrik **09** (Leverans) nedan
02.4 Planerad tidsplan för upphandlingen:

2016	Aktivitet
9.2.2016	Annonsering av upphandlingen
14.3.2016	Sista dag att ställa frågor
18.3.2016	Sista dag för svar
7.4.2016 klockan 15.00	Sista dag och klockslag att lämna anbud
Vecka 15	Utvärdering
Vecka 16	Tilldelningsbesked – Delgivning av beslut om val av Leverantör
Vecka 20	Väntetid på 21 dagar + 7 dagar om delgivning av beslut sker via post.
Vecka 21	Avtalsteckning

03 Upphandlande myndighet

Ålands landskapsregering (FO-nummer: 0145076-7)
Pb 1060
AX-22111 Mariehamn
Åland

04 Form av upphandling och publicering av upphandlingsannons

Det beräknade värdet för upphandlingen överstiger det av Europeiska kommissionen fastställda tröskelvärdet om 209 000 €. I enlighet med 1 § 2 mom. landskapslag (ÅFS 1994:43) angående tillämpning i landskapet Åland av lagen om offentlig upphandling tillämpas därför rikets lag om offentlig upphandling (FFS 2007/348) på upphandlingsförfarandet. Upphandlingen genomförs i form av ett öppet förfarande. Upphandlingsformen medger inte förhandling. Anbud kommer således att antas utan föregående förhandling, varför det är av stor vikt att alla krav och villkor enligt denna anbudsförfrågan följs och att bästa pris lämnas i anbudet.

Ålands landskapsregering

Datum: 9.2.2016
Dnr: ÅLR2016/989

Upphandlingen har den 9.2.2016 annonserats på webbplatsen HILMA på adressen www.hankintailmoitukset.fi/sv/. Från HILMA skickas annonserna vidare för publicering till Europeiska unionens officiella tidning (S-serien) samt databasen TED. Anbudsförfrågan inkl. bilagor finns samma dag att hämta elektroniskt på LR:s webbplats: www.regeringen.ax/upphandlingar.pbs

05 Kontaktperson under anbudstiden

Frågor om upphandlingen samt frågor om förfrågningsunderlaget ställs skriftligen till:
Biträdande avdelningschef Niklas Karlman
Tfn: +358 18 25 132
Mobil: +358 40 523 1592
E-post: niklas.karlman@regeringen.ax

06 Avtalsform

Allmänna avtalsvillkor för offentlig upphandling av varor ”JYSE 2014 Varor” tillämpas, språket är svenska.

07 Förfrågningsunderlag

07.1 Förfrågningsunderlaget består av följande specifika handlingar:

1. Denna anbudsförfrågan, daterad 9.2.2016 inklusive bilagor.
2. Allmänna avtalsvillkor för JYSE 2014 Varor (bifogas ej).

07.2 Anbudsgivare är skyldig att före anbudets avgivande kontrollera att samtliga handlingar i förfrågningsunderlaget har levererats.

07.3 Frågor avseende förfrågningsunderlaget ställs till kontaktperson för upphandlingen.

07.4 Frågor under anbudstiden lämnas skriftligt via e-post till kontaktpersonen för upphandlingen, senast 14.3.2016.
Samtliga frågor och svar på dessa kommer att publiceras, senast 18.3.2016 på http://www.regeringen.ax/upphandlingar under rubrik gällande D-båt.
Endast skriftliga svar är bindande för landskapsregeringen.
Anbudsgivarna bör därför kontrollera uppgifterna på hemsidan.

Ålands landskapsregering

Datum: 9.2.2016
Dnr: ÅLR2016/989

08 Avtalshandlingar

08.1 Såsom avtalsvillkor tillämpas JYSE 2014 Varor.
Avtalshandlingarnas inbördes rangordning är enligt följande:

1. Anbudsförfrågan inklusive eventuella kompletteringar
2. Anbudet inklusive bilagor
3. Avtalet
4. Allmänna avtalsvillkor JYSE 2014 Varor

08.2 Handlingarna kompletterar varandra.

09 Leverans

Leverans skall ske enligt Incoterm 2010 DAP till Möckelö vägstation, vid kaj, Verkstadsgränd, på Åland och skall ske senast 12 (tolv) månader efter gjord beställning.

10 Krav på anbudsgivaren

10.1 Krav på teknisk förmåga, kapacitet och kvalitet
Anbudsgivaren skall svara för en hög servicenivå, lyhördhet för beställarens önskemål, god anpassningsförmåga och punktlighet vid leveranser.

Anbudsgivaren skall ha erfarenhet av entreprenader av liknande art och omfattning som denna upphandling avser.

Anbudsgivaren bekräftar uppfyllande av ovan ställda skallkrav genom att till anbudet bifoga minst två referenser gällande nybyggnad av båt enligt yrkesbåtsdirektivet, med längd över allt om minst 9.0 (nio) meter, under åren 2013-2015.

11 Kontroll av anbudsgivare

11.1 UTESLUTNING AV ANBUDSGIVARE KOMMER ATT SKE:
- Om Ålands landskapsregering får kännedom om att någon av förutsättningarna i 53 § lag om offentlig upphandling föreligger. Detta gäller även för eventuella underleverantörer i alla led.

11.2 UTESLUTNING AV ANBUDSGIVARE KAN KOMMA ATT SKE:
- Om Ålands landskapsregering får kännedom om att någon av förutsättningarna i 54 § lag om offentlig upphandling föreligger. Detta gäller även för eventuella underleverantörer i alla led.

11.3 Ålands landskapsregering förbehåller sig rätten att kontrollera att anbudsgivare fullgjort sina åligganden vad gäller skatter och socialförsäkringsavgifter.

11.4 KONTROLL AV ANBUDSGIVARES LÄMPLIGHET:
- Anbudsgivares lämplighet kommer att kontrolleras enligt 56 §, och gäller de leverantörer som inte uteslutits enligt 53 och 54 §§, lag om offentlig upphandling.

11.5 Anbudsgivaren skall i anbudet redovisa att skatter och andra lagstadgade avgifter betalats i vederbörlig ordning samt att betalningsanmärkningar inte finns. Utredningarna får inte vara äldre än två (2) månader.

12 Betalning

12.1 Efter felfri levererad vara kan faktura skickas och leverantören erhåller köpeskillingen inom 30 dagar.

12.2 Förskott utbetalas inte.

13 Tvister

Eventuella tvister med anledning av avtalet skall, ifall konflikter inte annars kan biläggas och någon av parterna så vill, föras till avgörande i Ålands tingsrätt.

14 Övriga uppgifter

14.1 Eventuella förfrågningar under anbudstiden är inte bindande för beställaren, ifall beställaren inte skriftligen svarar på dessa via hemsidan enligt rubrik **07.4.**

14.2 I förfrågningsunderlaget eventuellt framkommande bristfälligheter och motstridigheter skall skriftligen anmälas i samband med inlämnande av anbud, också i det fall då anbudsgivaren inte särskilt ställer en förfrågan om detta.

14.4 Beträffande mellan landskapet Åland och Finland existerande skattegräns, hänvisas till skatteförvaltningens skatteanvisning om den åländska skattegränsen i mervärdesbeskattningen, utgiven den 1 januari 2010.
Eventuella gränsformaliteter och kostnaderna för dessa sköts av entreprenören.

15 Anbudet

15.1 Regler för lämnande av anbud:

15.1.1. Anbudet skall anges enligt bifogat anbudsformulär.
15.1.2. Uppgift om vem som besvarar förfrågningar angående anbudet lämnas.
15.1.3. Anbudspriset skall anges exklusive lagstadgad mervärdesskatt.

15.2 Givet anbud skall gälla i sextio (60) dagar efter anbudstidens utgång. Om besvärsprocess inleds, förlängs anbudets giltighetstid automatiskt i enlighet med domstolens beslut.

15.3 Beställaren godtar inga krav på ersättning för upprättande av anbud.

15.4 Anbud skall inlämnas i slutet kuvert till:

Ålands landskapsregering
Registraturen
Pb 1060
AX -22111 MARIEHAMN

(Besöksadress: Strandgatan 37, Mariehamn)

Kuvertet skall vara märkt "Anbud D-båt" och skall vara registraturen tillhanda senast 3.3.2016 kl. 15.00 för att beaktas i upphandlingen.

16 Anbudsutvärdering

16.1 Högsta antagbara anbudspris är 580.000 (femhundraåttio tusen) euro exkl. moms.

16.2 Anbudsutvärderingen kommer att ske i två steg:
Steg 1, syftar till att klargöra att i punkt 10 ställda krav är uppfyllt. Endast de anbudsgivare som uppfyller ställda krav går vidare till steg 2.
Steg 2, jämför anbudspriserna.
För jämförelse av anbudspriserna används följande beräkningsmall:
- För båt besiktad för havsområde II är jämförelsetalet = anbudspriset.
- För båt besiktad för havsområde III är jämförelsetalet = anbudspriset x 0.95.

T.ex. en båt för område III med anbudspris 500.000 euro får jämförelsetal=475.000 euro. Anbudet med lägsta jämförelsetal antas. Vid lika jämförelsetal (närmaste hela euro) antas anbudet för båt för havsområde III.

16.3 När beslut om leverantör fattats kommer Ålands landskapsregering att lämna upplysningar till varje anbudsgivare om beslutet och skälen för det samt bifoga en besvärsanvisning.

Ålands landskapsregering

Datum: 9.2.2016
Dnr: ÅLR2016/989

17 Avslutad upphandling

Beställaren får som huvudregel inte ingå avtal förrän 21 dagar har gått från det att tilldelningsbeslutet skickats till anbudsgivarna (s.k. väntetid). Om Beställaren delger anbudsgivarna per post utökas väntetiden med ytterligare 7 dagar.

Ett bindande avtal förutsätter att ett skriftligt avtal har upprättats.

Mariehamn den 9.2.2016

Niklas Karlman
Biträdande avdelningschef

BILAGOR 1. Anbudsformulär
2. Specifikation (Outline Specification)

Ålands landskapsregering

Datum: 9.2.2016
Dnr: ÅLR2016/989

ANBUDSFORMULÄR BILAGA 1

Upphandling D-båt

Anbudspris (kan anges för endera eller båda havsområden)

D-båt enligt förfrågningsunderlag för havsområde II: €_____

D-båt enligt förfrågningsunderlag för havsområde III: €_____

Bifogas två referenser enligt punkt 10.1 Ja ☐ Nej ☐

Pris(er) anges exklusive mervärdesskatt.

Eventuella tilläggsuppgifter om anbudet ges av:

_____ _____
Namn E-post

_____
Telefon/mobil

Ort _____ Datum _____

Anbudsgivare _____
Adress _____
_____
_____

Underskrift: _____
Namnförtydligande: _____
Tel: _____
Mobilnr: _____ e-post: _____

BILAGA 2

OUTELINESPECIFICATION

for

Environmental Protection Fast Response Unit
EPFRU

Class-D

Revision
2016-02-09

09.02.2016

CONTENT Page

GENERAL

Equipment types mentioned in the specification are mentioned in order to specify the quality of the equipment. The Shipyard can propose other types by showing the equivalent to the buyer before purchasing. When choosing equipment manufacturers it should be taken in account that they have a representative in Finland or Sweden to enable good guarantee and spare part service and reliable after sales support.

1 GENERAL DESCRIPTION AND BASIC CHARACTERISTICS

1.1 General description of boat type

The boat shall be constructed as "Patrol boat" (CCR 8.3) and class D-boat according to SYKE-guidelines.
The boat shall be of aluminium single hull and single full deck type intended for fast transportation of personnel and supplies in environmental protection and oil spill recovery operations within the Finnish archipelago domestic traffic area II (III). The boat shall also be built to serve as a "*Search and rescue unit*" (SRU) in *Search and rescue operation* (SAR) within the Baltic-sea traffic area II (III).
Below the boat will be called for "Environmental Protection Fast Response Unit" (EPFRU).

1.2 General description of layout

A closed wheelhouse to be situated on the forward/mid part of the boat above deck, with seats for three crew members and a bench for three passengers or to be used for a stretcher. There shall be an amidships access from aft deck through wheelhouse and to forward saloon. The saloon shall be on the forward part of the boat, below deck, with a pantry, toilet and seats for passengers. A forepeak, intended as a store, shall be situated in the forward part of the hull. On the after part of the boat shall a flat deck area be situated intended for deck cargo and with a small hydraulic crane intended for cargo handling and in oil spill recovering operations.
In full loaded condition with stipulated cargo on deck (SYKE) there shall be full access around both sides of deck. Deck shall be planned as a safe and practical work place for SAR and oil spill recovery operation.
The boat shall be constructed for navigating in light ice condition according to SYKE-guidelines.

The tendering yard shall propose a final layout of the specified vessel to fulfil the given criteria in this specification.

1.3 Machinery and propulsion

- One or two medium/high speed diesel engines for propulsion (TIER II).
- One or two water-jet aggregate for propulsion connected to a reversible gear intended for backwashing of water-jet aggregate. If multi engine installation is chosen there shall be two independent gears for each water-jet aggregate.
- One bow thruster (only if single engine concept is applied).
- Engine attached impeller pump(s) intended for supply of and evacuating of water (SAR-pump).
- Bilge emptying system.
- Two separate fuel tanks.
- Engine room ventilation system.
- Accommodation ventilation system.
- Heating/defroster system for wheelhouse and saloon.

1.4 Dimensions and speed

Length over all (L_H)	10,1 – 11,9 metres
Breadth (B_H)	3,2 – 4,0 metres
Air draught	max 3,20 m with folded mast
Service speed	
full loaded condition (D-boat)	min 20 knots
Service speed	
operating loaded condition (SAR)	34 knots (SAR)
Top speed	
operating loaded condition (SAR)	+38 knots
Max. total enginepower	750 kW

1.5 Free heights

Free height inside wheelhouse mid-section min 2000 mm.
Saloon at pentry min. 1900 mm

1.6 Capacities

Number of persons:

Crew	2 persons
Passengers	10 persons
Total (CL)	12 persons
Load capacity (m_{MTL})	1730 kg
Load capacity (m_{MTL})	= 12 pass.x110 kg
	Byer's delivery 250 kg
	Deck cargo 160 kg (SYKE)

1.7 Tank capacities

Diesel Oil	capacity for 200 M at service speed (SAR),
Fresh water min.	50 lit.
Sewage	50 lit.

2 DESIGN PARAMETERS

2.1 Ambient conditions

Operating air temperature -10... +50°C
Operating sea water temperature -2...+25°C
All materials used shall be able to be stored in temperatures between -40... +60°C
All materials in contact with seawater shall withstand a salinity of 5%.

2.2 Electric voltage

Main electric voltages on board shall be 24 VDC for all systems.
There shall be a 230 VAC supplemental system for engine-, wheelhouse- , saloon-heating and battery charging.
Shore supply shall be three phase 400 VAC / 230 VAC

2.3 Noise levels

Noise level in wheel house, at pilot and co-pilot head level, not to exceed 72 dB(A) at full speed in calm sea.
Noise level in saloon not to exceed 80 dB(A) at full speed in calm sea.

2.4 Vibrations

Vibrations levels to be considered in construction and design.
No equipment is allowed to be clattering due to vibrations from engine vibrations and sea clutter.

3 RULES AND REGULATIONS

3.1 Regulations

The boat shall be registered and built in accordance with Finnish Transport Agency regulations.

The boats hull, machinery, equipment and outfitting to be constructed, but not limited, shall also be in accordance with below mentioned rules and recommendations with amendments published on the date of signing contract and coming into force before delivery:
- Finnish environment Institute (SYKE) requirement and functions for class D-boat, construction load D1 (table 3 page 13 SYKE), https://helda.helsinki.fi/handle/10138/41898.
- Finnish Transport Safety Agency regulations (TRAFI) domestic area II (III).
- VTT Technical Research Centre of Finland, design category B, below CCR (SJÖFARSTVERKETS YRKESBÅTSREGLER. Version 2009.1).
- VTT Technical Research Centre of Finland (CCR) additional note "sjöräddnings- och patrullbåtar" part.35 item 2.

In matters where CCR and SYKE rules stipulating different demands, the rigorous demands shall be followed.

The boat shall be CE-certified and a CE-certificate shall be provided to the byer upon delivery. Certificates verifying inspections, approvals and to compliance with the above rules and recommendations shall be provided upon delivery to the byer.

4 HYDROSTATICS AND DYNAMICS

4.1 Speed and service range (SYKE)

Service speed and range at full loaded condition (D-boat) shall be 20 knots and 100 M in accordance with SYKE (Table 6).

4.2 Speed and service range (SAR)

Speed requirements operating loaded condition (SAR) shall be:

Top speed	min. 38 knots
Service speed at 75 % power	min. 34 knots

Operation range 200 M at service speed.

4.3 Stability and Trim

Stability to fulfil CCR requirements.

The vessel to have no initial list and no or slight initial trim in speed trial SAR loaded conditions.
Verification and documentation of freeboard, stability and damage stability to fulfil requirements in CCR shall be provided upon delivery to the byer
Verification and documentation to be submitted to and approved by buyers and authorities before start of construction of the vessel.

Freeboard and stability to be in accordance with CCR sect.4 Table 4.1a criteria 3A.
Special attention to stability shall be taken to safe deck crane operation and deck crane load requirements (SYKE table 5).

5 PROGRESS OF CONSTRUCTION

5.1 Materials, Workmanship and Standards

When any materials and apparatuses specified in this Specification and Makers´ List cannot be obtained, it shall be allowed to use corresponding materials and apparatuses, approved by the Buyer, instead of the specified ones.
All workmanship and finish shall be of high class in all respects. All material, machinery, equipment, components and all parts specified herein, used in the completed vessel, shall be of high quality and standard bearing in mind that the boat shall be used in SAR operations in all mentioned weather conditions stipulated in this specification.
All material and workmanship shall be free from imperfections of manufacture and from defects. Equipment and machinery manufacturer installation instructions shall be followed.

5.2 Buyers Inspections

Representatives for the buyer shall at any time be allowed access to monitor the progress of construction. Travelling and boarding costs for those inspections will be at buyers expense.

5.3 Protection of the Vessel during Construction and Outfitting

All parts of the vessel, including but not limited, to structure, deck coverings, fittings, outfit, furniture, insulation, paint work, machinery, equipment, systems, appliances and apparatus shall be maintained by the Yard in a satisfactory condition during the entire period of construction and outfitting of vessel.
The Yard shall be responsible for the care of all machinery, equipment and outfitting whether furnished by Yard, subcontractors or suppliers.
Electric, electronic or interior communication and similar equipment shall be at all times adequately protected against electrical induced shock, dust, moisture or other foreign matter and shall not be subject to rapid temperature changes where these may be damaging.
Heat, ventilation or other means shall be applied when necessary to prevent damage, caused by dampness, including continuously energized electric space heaters furnished as a component of equipment. Any item allowed to deteriorate, due to lack of proper care in storage as outlined above, may be subjected to tests at the Yards expense to determinate its condition and, if necessary, replaced at Yards expense.
All preservatives on working parts shall be thoroughly removed prior to operation of the machinery or equipment.

6 TESTS AND TRIALS

6.1 General

The yard shall provide a test management plan and acceptance test procedure covering Factory Acceptance Test (FAT), Yard Acceptance Test (YAT), Harbour Acceptance Test (HAT), inclining test, sea trail test.

The test management plan shall define the individual tests and sequence of test to be performed.
The acceptance test procedure shall define the individual function of system and test parameters to be tested, method of testing and acceptance/rejection criteria. The procedure and parameters to be tested shall be approved by byer. Parameters to be tested shall at least, not limited, to be parameters mentioned in this document.

Supply of fuel oil, lubricating oil, consumables etc. necessary for commissioning and trials shall be for the Yards account. Upon delivery of the vessel, buyer shall be offered to purchase remaining quantities left on board in accordance with market prices.

Appropriate authorities representatives shall be notified before test and trials in due time buy the Yard when required and on yard expenses.

6.2 Factory Acceptance Test (FAT)

The Propulsion machinery(ies), gear(s) and water-jet aggregate(s) shall prior delivery to yard be FAT tested at suppliers factory.
Upon the successful completion of the FAT test, the supplier shall issue a Factory Acceptance Test Certificate (FATC). The FATC shall be signed by suppliers and yard shall provide the byer with FATC before equipment is installed on board by yard.

6.3 Commissioning and Yard Acceptance Test (YAT)

When mounting and installation of engine(ies), gear(s), water-jet aggregate(s), automation, electrical installation and major systems and sub-systems is completed on the vessel at yard, a commissioning and Yard Acceptance Test (YAT) shall be performed.
Buyer shall be notified and submitted with relevant information regarding equipment installation and equipment function not later than twenty-one days before commissioning is performed.
Buyer represents (Two) shall be entitled to be present when above commissioning is carried out on yards travelling expenses.
Time to preform YAT shall be at least, not limited, to two days.

Upon the successful completion of the commissioning, the yard shall issue a Yard Acceptance Test Certificate (YATC). The YATC shall be signed by the yard and buyer represents.

Non confirmation of the byer, whether in writing or not, shall be valid unless the YATC has been signed by the byer.

Signing by the buyer of the above mentioned test certificate shall not in any way prejudice rights and remedies in case of late defectives and function during sea trial and guarantee period.

6.4 Inclining Test

When manufacturing of the boat is finished and fully equipped a check on draught and an inclining experiment to be carried out to verify compliance with CCR.
Inclining experiment shall also include safe operation of deck crane.

Inclining test to be performed with representatives present from buyer and authorities.
Buyer represents (Two) to be on yards travelling expenses.

The result of the inclining experiment, and final data for stability and light weight, to be handed over to the representatives as soon as possible.

Buyer shall be notified not later than twenty-one days before the test is performed.

6.5 Harbour Acceptance Test (HAT)

Before sea trail test a Harbour Acceptance test (HAT) shall be performed.
At HAT shall installation of engine/-s, gear/-s, water-jet aggregate/-s system and sub-system be tested and special attention shall be taken to thus functions and systems that are not possible to test out of water at YAT.

Buyer shall be notified and submitted with relevant information regarding equipment installation and equipment function not later than twenty-one days before commissioning is performed.
Buyer represents (Two) shall be entitled to be present when above commissioning is carried out on yards travelling expenses.
Time to preform YAT shall be at least, not limited, to one days.

HAT test to include, not limited, at least below functions:

- Test or adjustment of navigation equipment and instruments
- Torsional vibration measurement, if found necessary

- Black out test
- Fire detecting and alarm test
- Electric load measurement
- SAR-pump

Upon the successful completion of the commissioning, the yard shall issue a Harbour Acceptance Test Certificate (HATC). The HATC shall be signed by the yard and buyer represents.

Non confirmation of the byer, whether in writing or not, shall be valid unless the HATC has been signed by the byer.

Signing by the buyer of the above mentioned test certificate shall not in any way prejudice rights and remedies in case of late defectives and function during sea trial and guarantee period.

6.6 Sea Trail Test (STT)

A successful Sea Trail Test (STT) shall be performed before delivery of the boat.

STT shall last for at least six hours, where SAR full speed test shall last for at least one hour and SAR service speed shall last for at least four hours.
Speed trial SAR to be performed at condition with all tanks 50% filled, stipulated 250 kg buyers deliveries and 4 persons on board. Measurements at 75% and at 100% power output of main engines.
The stipulated speed requirement (SAR) shall be measured and verified with clean bottom in smooth sea and wind not exceeding 4 m/s.

SYKE speed requirements according to table 6 in loaded condition according to table 5 to be verified with stipulated 250 kg buyer's deliveries on board.

The speed performance data during the speed and manoeuvring tests shall be obtained by on board GPS navigating system and recorded and evaluated.

Measurements to be performed over minimum two runs over a distance of at least two nautical miles
Engine RPM and power, including fuel consumption, are to be measured as an average value during each single run to verify the operation range.
Fuel consumption shall be measured by a calibrated test equipment or equal method upon agreement with the byer.

Buyer shall be notified and submitted with relevant information regarding STT not later than twenty-one days before the test is performed.
Buyer represents (Two) shall be entitled to be present when above test is carried out on yards travelling expenses.

Non confirmation of the byer, whether in writing or not, shall be valid until the byer have accept a successful test.

A new STT shall be performed upon the byer insist to verify corrections of non-confirms and faults from STT.

Upon the successful completion of the sea trail test, the yard shall issue a Sea Trail Test Acceptance Certificate (STTAC). The STTAC shall be signed by the yard and buyer represents.

An acceptance of a successful test of the buyer of the above mentioned test shall not in any way prejudice rights and remedies in case of late defectives and function during guarantee period.

6.7 Manoeuvring Tests

The following tests shall at least be carried out at STT to check the manoeuvrability of the vessel:

- Crash stop test
- Astern endurance test for 5 minutes
- Turning test with maximum turning at full speed, SB/PS turn.
- Rpm/speed test
- Manoeuvring tests of water jets
- Man over board test

6.8 Bollard pull

Bollard pull to be measured and recorded at 75% and 100% of maximum engine power.

6.9 Material Tests

Weldings to be checked by X-rays in accordance with the requirements of the CCR and upon request from byer represent.
NDT of steel parts to be carried out according to the Yards practice and to CCR requirements for observing cracks in welded engine parts, etc.
NDT of shafts and ultrasonic testing of castings according to Yards practice and to requirements of the CCR.

7 EXTENT OF DELIVERY

7.1 Delivery terms

The vessel shall be delivered and handover in Mariehamn to the byer after STTAC is conducted and signed.

7.2 Spare parts

Spare parts shall be supplied according to STT and CCR.

7.3 Buyers delivery

The Buyer has the right to supply his own deliveries at his expense, not exceeding the stipulated 250 kg, but stowed and secured on board by the yard.
The yard shall be responsible for protection, insurance, storing and handling of those articles after delivery to the yard.

7.4 Drawings

At the time of the delivery of the vessel, the yard is to provide buyer with two copies of hull, superstructure, engine-, waterjet- and electrical installation in paper copies and one in electronic format.

7.5 Instruction books

Two sets of original instruction books and one in electronic format in Swedish or English for machinery, deck machinery, nautical instruments, etc. to be delivered.
One set is intended for the vessel and one set for the buyer.
In addition, yard is to supply instruction books in Swedish or English for systems designed and/or built by Yard where no other instructions are appropriate or available.

7.6 Certificates

Certificates and documentation shall be obtained by the yard and submitted to the buyer in duplicate at the time of the delivery of the vessel.
When/if provisional documents are submitted at the time of the delivery, the yard and the buyer to negotiate how to submit the formal documents, which will be for yards account.
Certificates or documents indicating that the vessel is in compliance with the rules and regulations, mentioned in section 4, shall be provided as follows:

- Yard building certificate
- CCR compliance certificate

- Full approval certificates from relevant Finnish Authorities
- CE compliance certificate
- Engine power certificate, tier II
- Survey of radio appliances
- Certificates for:
    - Water jet(s)
    - Navigation lights and compass
    - Nautical instruments
    - Life-saving equipment
    - Other certificates as required by appropriate rules

Yard is to pay all charges for official measurements and certificates as well as CCR, Finnish authorities, supervision and/or other charges and royalties.
Inspections during the building period, as required by all involved authorities including travelling and boarding costs, to be on yard expenses.

8 HULL CONSTRUCTION

8.1 GENERAL

8.1.1 Materials

The aluminium used for the hull construction, including deckhouse, main engine(s) and other foundations, except partition walls, to be of high quality marine standard and in accordance with the requirements of the CCR.

All bolts and nuts/bolts on hinges, etc. in way of weather exposed areas to be made of stainless marine standard.

Self tapping screws and rivets are not allowed in structural bonds and wherever protrusion of such may cause harm.

Accommodation construction material to hold certificates in accordance with EU-approval standards.

8.1.2 Welding

Welding to be executed in accordance with yards practice, which shall fulfil the requirements of CCR.

All welding on shell plating, tanks and parts exposed to weather or wet space to be continuous. Elsewhere intermittent welding may be used according to yards practice fulfilling the requirements of CCR.

The Yard to do its utmost to ensure smooth and flat surface of all visible constructions. The quality of welding to correspond to the painting requirements.

X-rays and other NDT inspections to be carried out according to the requirements of CCR and upon byers request.

8.2 Scantlings

The scantlings to be based on the rules of the CCR and the Finnish Authorities.
Structural details to be in accordance with yards standards.

8.3 Framing

To fulfil the requirements of CCR. Hull to be divided into watertight compartments to fulfil the stability requirements for one compartment damaged stability.

8.4 Access openings

Watertight openings to be arranged on the main deck to allow daily inspections and full service and replacement of all machinery components. Special attention shall be taken to feasibility of engine replacement.

8.5 Manholes

Access and manholes to be arranged to all tanks and closed compartments.

8.6 Leak and strength tests

Leak- and structural tests to be carried out as required by the CCR. Test procedures to be in accordance with yards practice discussed with the buyer and approved by CCR.

8.7 Deck Structure

Strength to fulfil the requirements of CCR and SYKE.

4 pcs lifting eyes to be applied for possibility of lifting the vessel. Lifting eyes to be arranged so fully equipped vessel can be lifted in good balance by a single hook with only slings or chains without use of spreaders.

Cargo fittings of air cargo type (anchor plates) shall be integrated in aft ship each side of deck for fastening of oil containers or sack.

8.8 Fendering

Fender shall be integrated to hull and to be of polyurethane foam core construction with resistant polyurethane skin. Fender to be at least 100 mm thick and reach from weather deck down to max 300 mm from water line around the aft half of the vessel, and extend fully around the vessel with a minimum height of 300 mm. High-density rubber profile shall be fitted along fore stem from directly below PU-fender to 200 mm below water line.
Fender design and arrangement to be agreed with buyer before start of construction.

8.9 Bottom Construction

Bottom to be constructed in accordance with the speed requirements and for the intended traffic area and to comply with the rules and requirements of CCR and Finnish Authorities.

Every compartment to be accessible. Relevant openings to be arranged for drainage to bilge.

Bottom and the area between transom and waterjet to be smooth to allow driving over oil booms and lines without get caugth.

Keel and bow shall be dimensioned to withstand landings on rocky shores, considering the intended usage of the boat.

8.10 Outside Decks

Weather exposed decks to be provided with camber for water drainage, as suggested by Yard.

Decks shall be applied with high friction surface coating as described in section «Paints and Coatings».

All deck hatches and openings to be completely flush with deck. Water drainage to be arranged from hatch recesses. No steps or stairs are accepted on weather deck.

8.11 Superstructure

On each side along superstructure there shall be hand rails combined with track and sliders to fasten safety harnesses to ensure safe passage from aft deck to bow.
Design to be in agreement with the byer.

8.12 Railings

Railings to be arranged in accordance with yards proposal and to fulfil CCR. Railings on aft deck to be foldable or removabl.

8.13 Hull Marking

Water line shall be permanently marked on hull with light welds or similar method.

9 PAINTS AND COATINGS

9.1 General

The buyer will supply the yard with desired colour scheme. All paint deliveries to be for yards account.
All paint work to be in accordance with paint suppliers recommendations.
All paint work shall be done inside a controlled environment.
Damages on paint due to hot work, scratches etc. to be corrected/repaired by the Yard.

9.2 Deck painting

Deck shall be coated with a non-skid system consisting of rubber granulate of appr. 3-1 mm grain size, fixed by a suitable polyurethane compound. Yard to propose buyer with a non-skid paint system for approval.

10 CORROSION PROTECTION

10.1 Magnesium Anodes

Underwater hull shall be protected by means of “bolt on type” magnesium anodes calculated for a minimum period of two years and to follow the recommendations from the manufacturers.

11 OUTFITTING

11.1 Rig

Mast for navigation light, antenna radar scanner etc. shall be foldable easily and safely by one person without tools. The final design of folding system shall be approved by buyers.

11.2 Anchoring

The vessel shall be outfitted with Bruce anchor with chains and lines in accordance with CCM. Anchor stowing on board to be in agreement with the byer.

11.3 Bollards

There shall be 4 pcs oversize bollard along each side of vessel to be provided in accordance with yards standard, design and locations approved by the buyer.

11.4 Towing

A towing arrangement shall be installed on aft deck or on centre of transom. Flush-mounted fixture for bollard or similar is preferred. The towing bollard construction shall withstand force of 5 times (yield strength) boat displacement. Railings to be arranged so towing rope from bollard can move freely.

11.4.1 Wires and Ropes

Vessel to be supplied with mooring ropes as required by SYKE/CCR and one additional Dyneema towing rope. Dyneema towing rope shall be 60 meters, breaking strength min 60 kN with one 30 cm eye-splice at each end. Easily accessible stowage space for towing rope on aft deck.

11.5 Crane

The vessel shall be equipped with a hydraulic crane on aft deck for cargohandeling and in oil spill operations. Crane capacity shall be in accordance with SYKE requirements, SWL 330 kg and maximum lifting moment of 5 kNm. Positioning of the crane on aft deck to be agreed with the buyer.

11.6 Lookout

Platforms, steps or similar arrangement aft of wheelhouse for lookouts in SAR operations.

12 EMERGENCY EQUIPMENT

12.1 Life Rafts

The vessel to be supplied with inflatable, approved life raft(s) for 12 persons
Stowing position of life raft shall be approved by byer.

12.2 Other Life Saving Equipment

The vessel to be fitted with the following life-saving equipment and to fulfil the requirements for navigational area III:

- Crane installation above to service as MOB lifting device
- Life buoys as required by the authorities
- Inflatable life jackets, model approved by authorities and buyer
- Foldable divers ladder

12.3 Emergency Pyrotechnics

As required by authorities.

12.4 Firefighting equipment

As required by authorities. Engine room to be equipped with remotely operated fire extinguishing system.

13 DOORS AND HATCHES

13.1 Watertight Doors

All watertight doors to be of approved design and construction. All hinges and locks shall be of stainless material.

Wheelhouse door shall be of aft part of wheelhouse approved by buyer.
Access to wheelhouse and saloon with stretcher (width 700 mm, length 2200 mm) shall be ensured.

13.2 Watertight Hatches

Watertight flush hinged hatches to be arranged on deck to provide access for daily inspections and access for engine repairs and total exchange of machinery components. All fittings of hatches shall be of stainless material.
Access to saloon shall also be possible from deck.

14 MACHINERY SYSTEMS

14.1 General

The possibility of easy maintenance and transport shall be taken into account in the layout.
The boat to be equipped with a propulsion system, consisting of one or two main engines. Engine(s) coupled through reversible gear(s) to one or two water jets of mixed-flow type with grids. A bow thruster to be installed if only one engine concept is applied

14.2 Propulsion engine(s)

Coolingwater-, fueloil systems and other systems to be independent for each engine.
Engine/-s to be equipped with a 24 VDC generators of sufficient capacity in accordance with electric balance calculations.
Hydraulic pumps for water jet(s) to be fitted on each engine(s).
An emptying system for oil changes to be arranged for main engine(s) and reduction gear(s).

Main engines shall be resiliently mounted with elastic elements on the engine foundations in order to reduce noise and vibrations.
All manoeuvring and monitoring instruments to be placed in wheelhouse, within easy reach from the maneouvring seat, layout to be approved by byer.

14.3 Reduction gear(s)

Reduction/reversible gear(s) to be fitted in order to enable back flushing of water jets.
Proposal by yard and approved by manufacturers of engines and water jets.

14.4 Water Jet(s)

One or two water jet aggregates of mixed flow type, with intake grids, to be fitted to each engine system.

Joystick for steering to be mounted in lefthand armrest, and water-jet manouvering rigthand of the maneouvring seat.
Earthing arrangements of water jets to be fitted.

14.5 Trimming Equipment

One set of hydraulically operated trim flaps or interceptors to be provided and mounted at boat.

14.6 Bow thruster

Boat to be equipped with variable speed bow thruster of sufficient power, if one engine concept is applied.

14.7 Piping

All pipings to be well cleaned in accordiance with machinery and equippment suppliers recommendations. All pipings shall be provided with supports and clamps and marked with colour labels and arrows indicating type of fluid and direction of flow.
All bulkhead penetrations to be of approved modular type.

All Air-, sounding-, filling- and emptying pipes etc. shall be equipped with name plates in swedish approved by byer.

Drain cocks and plugs and cleaning plugs fitted where necessary for drainage and cleaning of pipes. Complete drainage to be assured to avoid freezing damages during winter storage.

All pipe material to be proposed by the yard and approved by the buyer and the authorities. Piping to be installed in such a way that they do not impede any access or maintenance work.

14.8 Fuel Oil Systems

Two inependently tanks, with total capacity sufficient to fulfil the operating range specifications, to be placed below deck as proposed by the yard.

The tanks to be separately filled from deck. Tank venting pipes openings installed notably higher than filling neck.

Tanks to be provided with manhole, valves, air pipes, etc. as proposed by the yard and approved by byer and authorities.

A crossoversystem to interconnect tanks or to lock out one tank from use, is to be installed.

Duplex filters, with switchover valves, to be situated in fuel supply lines from tanks.

Remote level indicators for fueloiltanks to be placed in the wheelhouse.

14.9 Cooling and preheating Systems

The main engine(s) to be cooled by independent built in FW-systems and SW-cooled coolers in accordance with the standard of the main engine manufacturer.
SW-system to be designed for navigation in light ice (SYKE section 3) condition and in oily water condition, for example with a keelcooler sw-system.
The planned cooling system design shall be approved by engine manufacturer, authorities and buyer.

All cooling water pumps to be engine-driven and mounted on the engine(s).
Necessary filters to be installed to the SW intake(s), installation and design to allow easy inspection and cleaning. A monitoring system, with alarm to detect insufficient SW flow to be installed.

A heat recovering system from propulsion engines shall be integrated with wheelhouse defroster and heat exchangers to fulfil operational criteria specified in section «design parameters».

14.10 Exhaust Systems

Exhaust gas pipes of the engine(s) to be designed to enginge manufacturer specifications.
Exhaust to be led through silencers/spark arrestors to open air as proposed by the yard and approved by the authorities, considering noise levels.

Exhaust System shall be designed so no reverse water flow ingress is allowed to exhaustgas system when working stationary with stern against seas or reversing against seas.

Exhaustgas piping to be provided with expansion bellows as necessary and fitted resiliently.
Non cooled exhaust pipes to be insulated with mineral wool over all length and covered with metal sheeting.
All design of pipe systems, including pipe routes, shall be completed and accepted by buyer prior to start of construction.

14.11 Bilge Water Systems

Bilge emptying shall be done by means of separate electrical pump system for each compartments as proposed by the yard and approved by the authorities. Stationary installed, manual backup pump able to empty water from any compartment to be provided. All bilge pumps and bilge level sensors to be easily accessible for regular inspections and testing. Level sensors connected to alarm system.

14.12 Air and Sounding Systems

All tanks to be provided with air venting pipes in accordance with requirements. Self-closing devices installed to fulfil CCR.
All tanks to be provided with remote reading level measuring to wheelhouse.

14.13 Drain pipes

Proper drainage from main deck and deck hatches to be arranged.
Drain pipes to be arranged from wheelhouse roof.

14.14 Auxiliary pumping

There shall be PTO or belt driven impeller pump(s) with clutch operated from wheelhouse and with flow sensor in line, intended for provision of water supply or for evacuation of water in SAR oprrations. Capacity min. 600 liters per minute.
Pipingsystem to deck to be proposed by yard and approved by byer.

15 HEATING AND VENTILATION

15.1 Accommodation

Ambient conditions according to CCR.
Accommodation spaces to be heated form main engine(s) as suggested by yard (see 16.2).

The ventilation units to run on 24 VDC and to be constructed as proposed by the yard and approved by the buyer. Ventilation to be arranged for maximum efficiency in all areas.

Separate blowing defrosting nozzle system to be arranged for each window in the wheelhouse, window(s) in door excluded.

15.2 Ventilation of machinery spaces

Inlets and other openings to be of sufficient size as dictated by machinery manufacturers and CCR to provide sufficient air flow without forced ventilation during service.

Fan system for evacuating excessive heat after engine shutdown to be provided.
All ventilation openings shall be provided with quic closing system.

16 ELECTRICAL SYSTEMS

16.1 General

The electrical installation to be arranged according to CCR.
Main voltage system shall be 24 VDC.
Electrical distribution to be designed with 24-volt bus based power supply system with integrated functions. Functions for switches, breakers and fuses to be two-poled.

Eart fault monitoring systems with alarm to be installed for all DC systems for detection of insulation faults.

240V Inverter with minimum 2500 W to be installed with one double socket outlet on deck, one in wheelhouse and one in saloon.

All electrical equipment to be of marine standard, designed and located to be readily accessible for repair, removal and maintenance.

16.2 Design and Calculations

The following electric balance calculations to presented prior to building the vessel and to be approved by CCR and other relevant authorities:

- Boat in service, at service speed.
- Boat in service, engaged in oil recovery operations, engine(s) at idle, all systems, hydraulic crane and worklights in service.
- Ship at quay (engines stopped), shore connection connected.

All electrical design and calculations shall be completed and approved by buyer prior to start of construction. This also includes plans for cable routes and electrical cabinets.

16.3 Cable installation

All cables to be approved for their intended use and dimensions calculated in accordance with the requirements.
Cables to be secured with good marine standard workmanship, protected from sharp edges and in accordiance with CCR.
Only modular bulkhead penetrations of approved type are accepted.

All cable installations are to be tested in accordance with CCR.

16.4 Electrical cabinets

Cabinets to be installed in easily reachable locations.

All fuses to be integrated in bus system or of automatic type. Fuses inside cabinets shall be wisible thru transparent cabiner doors.

16.5 Shore Connection

There shall be one shore connection box, 3 phase 400 VAC outsid on deck. Shore connection normally to provide power to battery chargers, engine heaters and basic interior heating in stanby at harbour.
Providing single phase shore connection to phase L1 shall supply battery chargers with power.
Portable shore connection cable, 30 metres and an isolation transformer (SYKE section 4) of sufficient capacity to be supplied.

16.6 Batteries

Separate 24 VDC battery systems to be provided:

- 1 set for starting of main engines
- 1 set for consumers
- 1 set for radio equipment as required by regulations

Batteries to be placed in a gas tight well ventilated containers and charged by means of 230 VAC battery charger with supply from shore connection (combined charger/inverter is accepted) and main engine driven 24 VDC generators.

There shall be circuit breakers for disconnecting of both poles of batteries from consumers when moored without shore connection. All systems to be designed for rapid startup when battery breakers are reconnected.

16.7 Automation

16.7.1 General

Control and monitoring for all main machinery parameters and tankslevel to be centrally arranged in wheelhouse in front of the pilots´ seats.
Control of interior and machinery fans from wheelhouse
Control of heating system from wheelhouse

16.7.2 Alarms

The alarm system to fulfil the requirements of CCR.
The following alarms to be connected to the bus and led to the monitoring system in wheelhouse:
Engine alarms
Fire alarms
Bilge alarms
Tank level alarms (LLA)

Heating failure/low temperature alarm
Shore connection failure alarm
Other alarms as found necessary.

Bus system to transfer fire-, bilge-, shore connection- and low temperature alarms as GSM-messages when boat is unmanned (moored).

16.8 Lighting

16.8.1 General

All parts of the vessel to be well illuminated.
Normal lighting with 24 VDC system using LED-lights.
Accomodation lighting to be dimmable.
Lockers and storages shall have fixed LED-lighting where necessary as agreed with buyer.

Qualty of lightings and dimmers selected with special attention to avoid interference with other electronical systems.

16.8.2 Chart lights

Four chart lights with dimming function and flexible arm to be installed in wheelhouse

16.8.3 Outer Deck Lighting

Deck area to be well illuminated. Lighting fixtures to be of LED-type spray tight marine standard using 24 VDC.

16.8.4 Searchlights

Two searchlights, 24 VDC of high quality, manually operated from pilots and co-pilots seatings to be provided on top of wheelhouse. Type and model proposed by yard and approved by buyer.

16.8.5 Bow lights

Two bow lights of LED-type to illuminate shore and for navigational aids.

16.8.6 Navigation lights

Navigation lights 24 VDC LED-type shall be provided in accordance with the rules, including a monitoring system to detect a faulty light.
SB, PS forward, aft, towing, NUC and RAM lights to be installed.
All navigation lights

16.9 Electrical Sockets

Two sockets for 24 VDC to be installed outside of wheelhouse accessible from aft deck.
Two sockets for 24 VDC to be installed outside of wheelhouse accessible from fore deck.
Two sockets for 24 VDC to be installed in wheelhouse.
Two USB charging sockets in wheelhouse.

One socket to be installed outside of wheelhouse, one inside wheelhouse and one in saloon with 230 VAC supply from inverter.

Sockets installed in all compartment areas with supply from shore connection.
All sockets and plugs for 230 VAC to be of European (Finnish) standard.

All sockets to be of appropriate IP-rating. Sockets to be flush mounted where possible.

16.10 Antenna system

Necessary antenna systems for radio- and navigational systems to be installed on top of wheelhouse and in mast, maximum air draft to be considered in design.

17 ACCOMODATION

17.1 General

All materials on board to be flame proof, of CCR approved quality and in accordance with yards standard. Sharp corners and edges to be avoided, no protruding screws or fasteners allowed.

Shades etc. to be approved by the buyer.
Utmost care is to be taken to use the most lightweight possible materials everywhere.

17.2 Wheelhouse

Two separate pilot and co-pilot navigation places to be arranged in wheelhouse. Pilot to be at sb-side in wheel house. All controls for vessel (lights, radios etc.) must be easily reached from both seats.

One seat for additional crew member equipped with chart table. Table designed with storage for charts and utensils.

All seats to be of high quality well damped construction and provided with harness-style seat belts. All seats to be as light weight as possible.

A sofa is also to be arranged in the wheelhouse for passengers and to serve as a base for a stretcher.

Grab rails mounted to the ceiling and where found appropriate to ensure safe passage from deck to saloon.

Storage spaces are to be arranged, where possible, beneath sofa and crew seats as later agreed with the buyer.

Opening between wheelhouse and saloon to be fitted with a hatch or to block light.

Final layout and design of wheelhouse to be agreed upon by buyer.

17.3 Saloon and Pantry

Below deck and with access from wheelhouse a saloon with seating.
A hatch from forward part of saloon to deck with appropriate arrangements to serve as emergency exit.
Lockers and drawers to be arranged in agreement with buyer.
Sink with drain to be arranged, and a simple system for provision of potable water.

17.4 Toilet

One toilet to be provided as a common type and mounted inside locker in saloon as agreed with buyer.

17.5 Lockers

At least one well ventilated storage below deck, for three rescue suits to be arranged as proposed by yard.

17.6 Insulation

17.6.1 General

Thermal-, fire- and noise insulation to be of yards standard and combined where practicable.
Mineral-, glass-wool and similar insulation to be protected by means of panels or similar.
All insulation in accordance with CCR an to fulfil prevailing rules

17.6.2 Noise Insulation

Noise insulation to be arranged where necessary to meet the requirements as set up in section »design parameters».

17.6.3 Lining of ceilings

Lining of ceilings in accordance with yards Standards.

17.7 Flooring

Flooring covering materials in accordance with yards standard and approved by the buyer.

17.8 Lock and Key System

A master key system approved by buyer to be provided for doors, store rooms, etc.
A key-box with code lock to be installed in a protected location outside of the wheelhouse door.

17.9 Windows

Number, dimensions and locations of windows to provide maximum visibility. Front windows of wheelhouse to be provided with window wipers, water spray and tilted to minimize glare and reflections.
Foremost side windows to be of opening type.
Defroster system and sun protectors of roll down type, shall be mounted at all windows.
Window posts to be as few and narrow as possible.
All windows to meet the requirements for this type of vessel.

17.10 Skylight/hatches

Skylight/hatches in wheelhouse roof, which opens for ventilation, final design to be approved by buyer.

18 NAVIGATION SYSTEMS

18.1 General

Minimum in accordance with the requirements for D-type vessel of SYKE and as required by the authorities for domestic area III.

18.2 Scope of supply

Two 19" screens, easily dimmable to near zero backlight
Black box radar unit with 4" scanner, minimum 6 kW
PC-based charting system, with armrest controls

Satellite compass
Depth sounder with own display
AIS-transponder, class A
Two stationary VHF radios, one with DSC
Handheld VHF(s) as required by authorities
One stationary UHF radio
One stationary Tetra/Virve station

18.3 Nautical inventories

2 binoculars
1 clock
2 outside thermometers
2 inside thermometers
Other equipment as required by authorities.

MAKER's LIST

Main engines
Scania, MTU, MAN, Yanmar
Reduction gears
ZF or engine manufacturer's recommendation
Waterjet units
Rolls Royce A3-series
Fuel filtering
Racor
Fuel filling
Camlock
Pumps
Johnson, Jabsco, Wahle
Manual pumps
Wahle
Deck crane
Hiab, Palfinger
Electrical components
Mastervolt, Shipyards supply of quality brand
Battery charges
Mastervolt, Ctek
GMDSS charger
Ctek D250TS
Search lights
Norselight Xenon
Bow lights
CREE WD-6L60
Door locks
Assa Abloy
Navigation equipment
Hatteland monitors, Furuno radar
Communication equipment
Furuno, Sailor, Icom
Chart lights
Sunnex
Fender
PUR Teknik, Hippo
Paint system
Jotun
Sole coverings
In wheelhouse and saloon, Forbo Safestep

Life rafts
Viking

Life wests
Baltic

Sart, EPIRB
Mc Murdo

Survival suits
Ursuk