

**Restoration Project Vessel Specification**

The vessel shall be built for the use of EPA's research and monitoring activities. Passenger capacity including crew should be for 17 persons for short hours' cruises in the different locations in the Maldivian Sea. The vessel should be fitted with two outboard engines of 250 HP and with forward remote-control drive. The vessel should be capable of cruising at an average speed of 35 knots with the passengers at sea conditions equivalent to Beaufort Number 3. The bulkhead compartments should be made watertight in 4 different locations for buoyancy (To make it unsinkable). The draft of the vessel should be less than 0.8 meters and the hull construction, the framework and the roof top should be made with all fiber glass. There must be a diving bench with scuba cylinder holders at port and starboard side.

A unique construction method should be adopted through avoidance of use of metallic parts so that there is no corrosion on any part of the vessel, the minimum requirement is SS 316. As the vessel is intended for research and monitoring, space on both sides of the vessel should also be allocated to hold scuba tanks.

The bidder shall provide a Hull warranty for manufacturing defects for a period of 2 years. (minor gel cracks and normal wear and tear excluded).

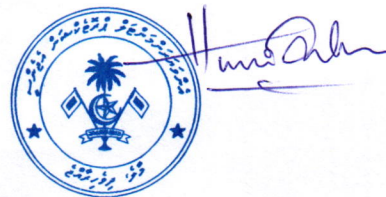
There should be a scuba tank rack behind the seats at the front and one at the back. The superstructure and seats are to be made of Fiber-reinforced polymers (FRPs) to avoid the possible corrosion and decay of the structure, seating, and fittings.

The vessel shall comply with the rules of construction as applicable under the MINISTRY OF TRANSPORT AND CIVIL AVIATION. In the vessel, there should be a marine toilet. There should be at least 3 compartments underneath the deck and should provide the storage capacity in Liters. The compartments are to be made accessible for inspection by means of hatch openings above all the compartments.

The deck is to be maintained watertight. The vessel is to be provided with a well deck and adequate freeing ports at the deck level on the bulwark so that there is no accumulation of flood water on the main deck. There shall be provision to use a manual pump to pump out flood water from the bilge compartments. The vessel is intended for normal fair-weather operation.

**General features**

1. The vessel shall be built as an inland vessel to the Ministry of Transport and Civil Aviation class and should comply with all applicable statutory rule requirements.
2. The vessel should be of a proven hull form and construction should be with approval Ministry of Transport and Civil Aviation.
3. Vessel general arrangement (GA) plan should be made in accordance with the general concept layout and needs to be approved by EPA before starting the manufacturing work.



4. Polyester ISO base resin with equal or high chemical & mechanical properties to be used in construction (Fully cured\* unfilled casting).
  - Tensile Strength: 80 MPa
  - Tensile E-modulus: 3600 MPa
  - Elongation at break: 4%
  - Flexural Strength: 120 MPa
  - Flexural E-modulus: 3800 MPa
  - Heat deflation temperature: 75°
5. ISO NPG GELCOAT to be used in construction.
  - Tensile Strength: 45 to 55 MPa
  - Elongation at Break: 2% or higher
  - Heat deflation temperature: 75° or higher
6. FIBERGLASS MAT is to be used in construction.
  - Approved by any classification society under IACS.
7. Passenger seating should be made up of fiber glass molded seats fully non-metallic, designed ergonomically with aesthetic looks, secured by bolts to the main deck and laid out for maximum passenger seating and viewing comfort.
8. The vessel should accommodate scuba tanks storage according to general arrangement (GA) plan.
9. Neat roof edge gutters should be provided so that rainwater is led to the aft ends of the roof.
10. The closed cabin front and back doors should be lockable.
11. The windows on the sides should be open, large, and lockable, providing lighting and ventilation to the passengers and for viewing comfort.
12. Remote control engine and steering control are to be provided from an optimally located Driver's cabin at the forward end of the vessel. The driver's position should have a clear all-around view.
13. Anchoring and mooring arrangements shall be provided as per Class requirements.
14. The entire hull construction and equipment's on-board including safety regulations, standards of all outfit items, provision of freeing ports as applicable, should be in conformation with the rules and regulations of the Ministry of Transport and Civil Aviation.
15. Lifesaving appliances should be in conformation with the Maldivian sea transport rules.
16. Final certificate must be obtained from Ministry of Transport and Civil Aviation. After the sea trial of the vessel an inclining test and preparation of trim and stability book should be done and handed over to Environmental Protection Agency.
17. Before handing over the ship for acceptance, "AS FITTED" drawings and "AS BUILT" specifications should be submitted to the Environmental Protection Agency. The drawings should show the final General Arrangement, and as built specifications should show the hydrostatic calculations, trim and stability booklet, Tank capacities.
18. The following certificates and documents as applicable shall be obtained by the vendor and forwarded to EPA at the time of delivery of the vessel.





- 18.1. Classification certificate issued by MINISTRY OF TRANSPORT AND CIVIL AVIATION.
- 18.2. Builder's certificate issued by the builder.
- 18.3. Inclining experiment data and stability book containing intact and damaged stability.
19. Under mutual agreement, there shall be periodic inspection by the EPA's representative of the vessel during construction at critical stages such as plug inspection, hull lay-up, outfit and tests and trials.
20. The following tests and trials shall be conducted prior to acceptance.
- 20.1. Inclining experiment when the vessel is completed in all respects.
- 20.2. Speed trials and engine performance trials for endurance.
- 20.3. Turning trials, stopping ahead and stern trials.
- 20.4. Hull vibration, noise control check.
21. On board spares and tools should be provided as per the equipment manufacturer's recommendations for daily and routine maintenance.
22. The vendor shall guarantee that the vessel is maintained to be free from manufacturing and Workmanship defects of the hull, installations, equipment's, fittings, and all other items. All such defects That occur during the warranty period are to be rectified free of cost to the EPA, the cost of spares etc. are also to be borne by the vendor.
23. Top of dashboard should be painted black to avoid reflection.
24. EPA logo, vessel name and registration numbers should be painted as per drawing.

**Specific Information**

Material	Fiberglass Construction (Hull Below waterline should be 10 layers/3 sets with balsa (80 density); Hull Above waterline freeboard should be 6 layers/2 sets)
Overall vessel length	11-12 meters
Beam	3 - 4 meters
Depth at mid-ship	< 1.5 meters
Draft	< 0.8 meters
Layout	Single deck seating
Passenger Capacity	Minimum 17 Total Passengers (14 Passengers, 3 Crew)
Engine power	2 x 250Hp
Engine type	Outboard Engine
Average Speed	35 Knots
Fuel Capacity	Minimum 800 liters
Fresh water capacity	Minimum 300 liters



**Required standard vessel equipment and accessories.**

1. 1 x Hydraulic steering system with power assist
2. 1 x Wind screen wiper
3. 1 x RC search light
4. 1 x Navigation lights set (include 4 NOS spare filaments)
5. 1 x Magnetic Compass
6. 1 x GPS Chart plotter System 7" (with Radar Dome)
7. 1 x Marine VHF set with antenna (AIS, DSC, VHF)
8. 2 x USB charging port
9. 2 x USB-C charging port
10. 2 x Electric AC wall sockets
11. 1 x DC to AC 300-500W power inverter
12. 1 x Electric trim tab system
13. Bonded glass windscreen on fiberglass reinforced frame and side windows with glass in glass sliding glaze doors).
14. UV resistant marine grade PVC coated base cloth with fasteners.
15. 4 x Cabin Lights (minimum 4 lights)
16. 4 x Deck Lights (minimum 4 lights)
17. 1 x Manual Bilge pump
18. 1 x Automatic electric bilge pumps DC 12V in required compartments (Pump capacity: 2000-3000 gph)
19. 1 x Fresh water pump DC 12V (Deck washing, engine flushing and toilet)
20. Hatch cover with marine grade SS316 pull rings and hinges.
21. Fiberglass hardtop (double sided gelcoat finishing) and installed with fiberglass reinforced supports.
22. Antifouling and undercoat
23. 1 x SS316 detachable boarding rail at bow entry with SS316 mounting sockets on port and starboard side for easy switching.
24. 4 x Marine grade SS316 rod holder (minimum 4)
25. Marine toilet system with electric discharge pump DC 12V
26. Luggage compartment
27. Anchor locker
28. Stowage for batteries (minimum 2)
29. Stowage below pilot seats
30. Stowage under the side seats
31. 1 x Aluminum petrol tank
32. 1 x GRP water tank
33. 1 x Switch panel 12 gang
34. Seats with cushions
35. 1 x SS deck filler for fuel

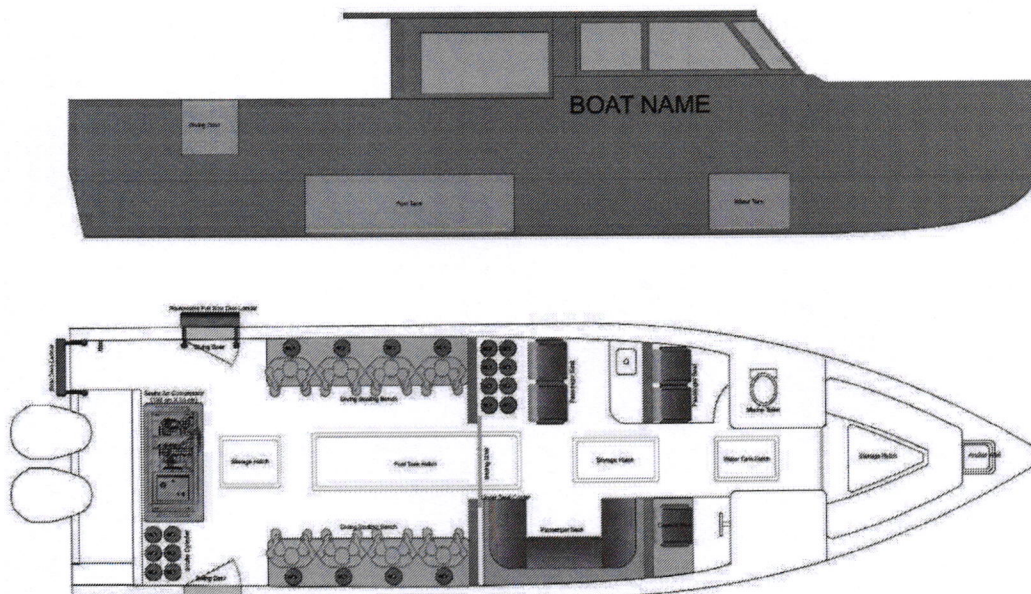


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36. 1 x SS deck filler for freshwater
37. HD rubber fender
38. 1 x Fuel meter with sender
39. 1 x Water meter with sender
40. 1 x Bilge alarm
41. Life jackets and other necessary safety equipment (17 + 5% extra life jackets should be provided)
42. 2 x Fire extinguisher with fiber box built in
43. 2 x Removable diving flag with pole (minimum 2)
44. 1 x Removable country flag with pole
45. 2 x Roof flag holder (minimum 2)
46. 6 x SS cleats 10" (minimum 6)
47. 1 x Bollard minimum 2"x6"
48. 1 x Anchor
49. Anchor chain 6mm x 15ft
50. 1 x Anchor Rope 150ft
51. 6 x Mooring rope 15ft
52. 6 x Polyform fender F4
53. 2 x Life buoy
54. 1 x SS transom ladder
55. Marine grade SS pontoon side mount ladder with wooden steps

**Concept Design**



**ADDITIONAL REQUIREMENT**

- Registration should be completed before the handover.
- The boat shall be insured before delivery.
- Parts catalogue must be provided.
- A service manual is required.
- Specification of the physical vessel must meet the quotation provided by the bidder during the bidding process.
- The vessel must be available for inspection by the EPA employee, or any party assigned by EPA and signed off by EPA before registration. EPA has the right to request to modify as requirement, during the inspection and after delivery if the vessel does not meet the specification.
- The vessel shall be delivered to the respective delivery location and the quoted price must include the delivery cost including all taxes and registration fees.

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