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122m Medium Speed Vehicle/Pax Ferries - ALU122m22kWMG

Drive Thru Design

These three(3) custom built ferries with reported 10 Minute Loading & Discharge Capabilities are now made available to IDO on an exclusive basis by AluminumNow Ltd. These vessels cost $120M US to build and offers are invited in the region of $25M US each.

The vessels can be offer with a strengthen lower deck to allow a large capacity of Buses and Trucks for Approx . $27M US each
Plans will be provided for upper loading ramps which will be portable in Nature

1. GENERAL SPECIFICATIONS

Builder:- Catamaran Ferries International Inc.

Year Completed:- "Explorer"– June 1999, "Discovery" – December 1999 "Voyager" – August 2000

Designer:-- INCAT Designs – Sidney, Australia in collaboration with Robert Allan Ltd. of Vancouver, Canada

Length Overall:-122.50 m **Length Waterline** :- 96.00m **Beam** :- 25.80m

Beam of Hulls:- 6.00m **Draft** :- 3.76m (approx.) in salt water

Certification :- Transport Canada Marine Safety, in accordance with 1994 IMO International Code of Safety for High Speed Craft (HSC), July 1993 (MSC 63/23 Addendum 2, HSC) for voyages in Canadian Home Trade III waters DNV +1A1 HSLCR4 (enclosed waters 20,20) (Can) Car ferry A EO

HSC Category B Craft International Tonnage Certificate Compass installation and adjustment
International Load Line Certificate (ILLC) Health and Welfare Canada; Potable Water Standard
Ship Station Radio Certificate Can/CSA-B44-94. Safety Code for Elevators

Propulsion Power:- 26,000 kW **Electrical Power**:- 4 x 190 kW

Passengers & Crew:- 1000

Total Vehicles :- 250 cars (1.5 tonne each) or 4 buses (18.7 tonnes each) and 200 cars
Main Deck to be modified/Strengthen to carry up to 35 Trailers/Trucks/Busses at medium speeds. Note:- Height of 4 meters.

Gross Tonnage:- 9,022 tonnes **Displacement Tonnage:-** 1885 tonnes

Dead Weight Tonnage:- 518 tonnes **Fuel Oil:-** 70 tonnes

Water :-5800 litres **Lube Oil Storage Tanks :-** 1800 litres

Speed:- Approximately 22 knots fully loaded at 90% MCR

Appendix A

2. STRUCTURAL

Design:-Two slender aluminium hulls connected by a strong bridging structure consisting primarily of major transverse web frames and 2 longitudinal CVK's and a series of minor girders.

Fabrication:-Welded aluminium construction using 5083 H116 and 5383 H116 plates and 6061-T6 sections. Longitudinal stiffeners supported by transverse web frames and bulkheads.

Subdivision:-Each hull is divided into 8 vented, water-tight compartments divided by transverse bulkheads and decks. The bridging structure between the hulls is fully welded to form a separate compartment. Water-tight upper and lower voids are incorporated into the 5 void spaces ahead of the engine room in each hull between frames 20 and 73.

Vehicle Decks:- Main vehicle deck and upper vehicle decks are constructed with straight-line camber with the external aft and side decks flat.

Superstructure:- Welded or bonded aluminium construction with longitudinal and transverse framing. Passenger accommodations and wheelhouse are supported above the T3 strength deck on anti-vibration mounts.

Axle Loads:- (As built prior to modifications) Main vehicle deck 7.1 tonnes centre 2 lanes, 3.16 tonnes outboard lanes. Upper vehicle deck 1.375 tonnes.

Vibration:- Within DNV guidelines for structural vibration limits for High Speed Light Craft with the vessel fully loaded at service speed.

Hull Strain Monitoring:- A DNV requirement for the first vessel of calls, a system designed to automatically measure hull strains, also recording acceleration and wave height.

3. ACCOMMODATIONS

Interior Outfit:- Passenger spaces are finished to a first-class commercial standard using lightweight materials complying with all Canadian, DNV and IMO-HSC regulations.

Interior Decks:- Floor coverings of heavy-duty carpeting and Amtico (simulated hardwood) vinyl in the passenger lounges, Light-weight Color flake in the washrooms, Altro 35 vinyl in the food preparation areas, Pirelli rubber flooring in crew spaces, Wooster stair treads and Bolar gratings on stairway landings. The aluminium vehicle decks are profiled to provide a non-slip surface.

Insulation:- The accommodation areas fully insulated with R8 insulation contoured to the ship's structure to avoid condensation traps.

Seats:- Café-style light-weight tables and chairs arranged in 4 passenger lounges. Tabletops have a variety of coloured vinyl laminates. Chairs are finished with a high quality wear-resistant fabric in a number of different designs.

Windows:- Frameless bonded windows, consisting of clear tempered safety glass, are used in both the accommodation areas and the wheelhouse. The glass in the 4 skylights is tinted.

Wall Coverings:- Hexlite 110 aluminium core honeycomb panels with decorative vinyl laminates.

Ceilings:- The Hydro-Aluminium ceiling system consists of a combination of linear and open grid-systems with white and mirror finishes. Special features include skylights and a sail-cloth ceiling above the observation deck snack bar.

HVAC:- Reverse cycle HVAC system capable of maintaining 22°C at 25% RH with an outside temperature of 32°C at 50% RH and maintaining 20°C with an outside temperature of minus 10°C. Passenger space – make-up fans and fans for 'purging' the passenger cabin provide 8 air changes per hour. Vehicle deck ventilation is capable of 10 air changes per hour in navigational mode and 20 air changes per hour in loading mode. Toilet and service space extraction fans provide 30 air changes per hour.

Sewage System:- EVAC vacuum collection system complete with salt water flushing, 1,350 litre collection tank and chlorination / dechlorination treatment unit. (IMO and Coast Guard approved.)

Women's Washrooms:- The forward washroom includes 6 WCs, 3 Surell hand-basins with large wall mirror and electric hand dryers. The midship washroom includes 5 WCs, 4 Surell hand-basins with large wall mirror and electric hand dryers. All vanities have Surell counter tops.

Men's Washrooms:- The forward washroom includes 3 WCs, 5 urinals, 3 Surell hand-basins with large wall mirror, and electric hand dryers. The midship washroom includes 3 WCs, 4 urinals, 3 Surell hand-basins with large wall mirror and electric hand dryers. All vanities have Surell counter tops.

Handicapped Toilets:- The common-use handicapped toilet is installed at midship on the starboard side of the passenger deck, contains 1 WC with hand rails, emergency call switch, automatic door-opener, wall-mounted hand-basin with lever handle centre set, and paper towel dispenser.

Crew Facilities:- The crews' mess is located aft of the wheelhouse on the port side and includes lockers for 21 crew, table with 8 chairs, sideboard with sink, microwave, refrigerator, and coffee machine. The officers' mess is located behind the wheelhouse on the starboard side, and includes: 1 table with 8 chairs, sideboard with sink, coffee machine and fire-locker complete with 2 fire suits.

Ship's Office:- The ship's office is located amidships on the starboard side and includes: 3 workstations complete with desks, shelving, filing cabinets, video display control rack, safe and video monitoring of gift shop and arcade.

Shop/Kiosk:- A gift shop is located at the centre of the forward end of the main passenger deck. The shop has Amtico simulated hardwood flooring, mirrored ceilings, first-class display shelving, security cameras, exit scanners, and 4 external display cases. Both entrances have vertical security grilles.

First-Aid Room:- The first-aid room is located on the port side of the passenger deck behind the wheelhouse and includes a bed, WC and hand-basin.

Other Areas:- Children's playroom, video arcade, business/study carrels, engineers' work shop, bicycle racks and pet facilities.

Noise Levels:- Noise levels do not exceed 75 dBA in passenger areas, and 65 dBA in the wheelhouse.

Vehicle Access:- Vehicle access is via ship-based hydraulically actuated bow and stern ramps working in conjunction with shore-based ramps. Clear width of bow and stern ramps is 5.2m between curbs. Vehicle lane width is a minimum of 2.6m. Main vehicle deck clear height underneath structural fire protection is 4.0m. The bus lane length is 60m, and is located port of centre line of vessel. The remaining main vehicle deck lane length is 595m. Upper vehicle deck clear height underneath insulation is 2.1m, and total lane length is 655m.

Passenger Access:- There are 3 separate passenger deck accesses from the main vehicle deck: stairwells port, starboard aft and centre forward. A total of 4 shore accesses for walk-on passengers are located on the port and starboard sides of the passenger deck.

Elevator:- An elevator is fitted at the centre of the main vehicle deck providing access to each level of the vessel. Wheelchair access is fitted to the elevator platform at the main vehicle deck level.

Paint:- Hulls above waterline, topsides and superstructure are primed and top-coated white. Hulls below the waterline are coated with primer and silicone-based non-toxic (fouling release) paint. Exposed interior structure, all concealed areas, void spaces, tank linings, jet rooms and foredeck are not painted.

Signage:- Signage to Classification Society's specifications.

4. SHIP CONTROL SYSTEMS

Steering/Reverse:- The KaMeWa electronic steering, speed and reversing control system is integrated into the main engine and water jet controls and is programmed to automatically control engine speed when the reversing buckets are deployed.

Control:- Water jet control is from the wheelhouse centre, port and starboard wing consoles.

Bow Thruster:- A diesel engine-driven bow-thruster is fitted at the forward end of the starboard hull to assist manoeuvring during docking.

5. STABILIZATION SYSTEMS

Ride Control:- A 'Maritime Dynamics' active ride-control system controls the trim-tabs to maximise passenger comfort and optimize trim.

Safety:- An emergency trim-tab lifting device is provided at each transom in the event of electrical / hydraulic failure. The trim-tab control system automatically raises the trim-tabs to the full-up position whenever the reversing jet buckets are deployed, in order to prevent deflection of the reverse thrust.

6. ANCHORING, TOWING, & BERTHING

Anchor:- 1 cast Super High Holding Power (SHHP) balanced anchor complete with crown shackle, weight 1359 kg, anchor chain 46mm diameter stud link grade NV K3, 22m long with minimum breaking strength 1290 kN is installed complete with anchor cable 196m long by 45mm diameter Herzog P-7 with HMPE core, minimum breaking strength 1290 kN, specific gravity 1.12. The anchor is stored between the hulls under the aft port side of the main vehicle deck. The cable and anchor chain are stored on a hydraulic anchor windlass and secured in place by a pelican hook.

Towing:- Panama-style fairleads and bollards are installed on the aft mooring platforms port and starboard, main vehicle deck forward port and starboard and upper vehicle deck forward port and starboard. The vessel is capable of being towed by both the forward and aft bollards on the main vehicle deck. A towing bridle is fitted.

Berthing:- Variable speed hydraulic mooring capstans are installed on the port aft mooring platform and on the port forward upper vehicle deck. Each capstan has a 2.5 tonne capacity at a line speed of 20m/min for berthing. The forward capstan has a 3m long pendant control. 500mm aluminium sponsons run the full length of the hulls to protect the hulls and jets during berthing and turning in port. Two-way radio communication is provided at each mooring and anchoring station.

7. FIRE SAFETY

Fire Detection:- An addressable fire detection system covers all high & moderate risk spaces. An alarm panel is located in the wheelhouse. Toilets, stairway enclosures, and corridors are equipped with automatic smoke detectors and have manually operable call points. Engine rooms have smoke detectors and heat detectors. Water jet spaces have heat detectors. Vehicle spaces have heat detectors. The fire detection system is supplemented by a Closed-Circuit Television (CCTV) with cameras located throughout the ship. A split screen monitor and switching arrangements are mounted in the wheelhouse to enable constant, shipwide monitoring.

Structural Fire Protection:- A Classification Society approved structural fire protection system is used to protect the aluminium structure in areas of high fire risk.

Closing Devices:- Ventilation fire-rated closing devices (fire dampers) are controlled from the wheelhouse, locally and automatically, in the event of fire.

Shut-downs:- Emergency shut-down push-buttons, located at the engine room entrances and operable from the wheelhouse, are installed to stop ventilation fans, fuel and lube-oil pumps located in the engine rooms. A similar means of shutting down the accommodation fans and food preparation equipment is provided.

Fire Suppression System:- A Hi-Fog sprinkler system provides fire extinguishing, on the passenger and vehicle decks, in the engine rooms and the bow-thruster compartment (with AFF foam) from pumping modules in the port and starboard #5 Void spaces below the main vehicle deck. Each automatic pumping module is sized for whole-ship operation and is monitored/controlled from the wheelhouse. Systems are charged with glycol to prevent freezing.

Hydrants:- Fire hydrants, distributed throughout the ship, are supplied from the Hi-Fog pumping modules with portable foam carts on vehicle decks.

General Equipment:- Portable fire extinguishers, fire suits and equipment, water-fog applicators, and fire control plans are provided.

8. LIFE-SAVING APPLIANCES & ARRANGEMENTS

Appliances:- SOLAS approved lifejackets complete with light and whistle are provided for 1200 passengers (120% of the compliment) of which 100 are children's lifejackets. Life jackets for all crewmembers are supplied. Lifebuoys, complete with light and smoke signals, flares and pyrotechnics, line-throwing apparatus, and immersion suits are supplied in accordance with SOLAS and IMO-HSC.

Liferafts:- 8 Life Saving Appliance (LSA) 150-person life rafts, 4 deployable Marine Evacuation System chutes (MES), and 2 rescue boats, complete with launching and retrieval davits, provide for evacuation of 1200 persons. Transport Canada approved.

Arrangements:- Safety cards, fire-fighting and escape plans are posted in the control stations and throughout the passenger lounges.

Rescue Boats:- 2 Zodiac H-472, each with 1 - 40 hp Mercury outboard motor, are provided, one on each side of passenger deck.

Rescue Boat Davits:- 2 aluminium alloy, SOLAS type 42, 1,000 kg SWL MOB cranes complete with electric hoist with manual back-up are installed.

Communication:- A 5-station, all-master, telephone type intercom is installed with points at each MES station, the wheelhouse and elsewhere in the passenger and observation decks, machinery spaces and at the fuelling station.

9. MACHINERY

Main Engines:- 4 MTU 20V1163 TB3 resiliently-mounted marine diesel engines, rated at 6500 kW each.

Water Jets:- 4 KaMeWa 112 SII steerable, reversible water jets complete with internal thrust bearings.

Transmission:- 4 Renk ASL 53 gearboxes.

Shafting:- Engine output shaftlines: (1 - long shaftline, outboard and, 1 - short shaftline, inboard in each hull,) Geislinger 4 filament-wound carbon-epoxy CFRP shaftlines complete with membrane couplings, shaft-support bearings and bulkhead seals.
Gearbox output shaftlines: 4 steel shaftlines complete with flexibox couplings, Hi-Lock fittings muff style, shaft-support bearings and stern-tube seals.

10. AUXILLIARY SYSTEMS & SHIP SERVICES

Cooling System:- Engines, generators, reduction gears and hydraulics are cooled by raw water through heat exchangers.

Starting Systems:- The main engines are air started 40 bar. Each engine room is equipped with an air compressor and receiver. There is normally a closed crossover between the systems. All generators are electrically started and provided with 'dead start' capability.

Fuel System:- 2 integral aluminium fuel-oil tanks, one per hull, of 37,135 litres capacity each are located in hull Void #6 port and starboard. Fuel filling stations are located at both ends of the vessel Filling is via a valved filling main sized to allow a flow rate of 2000 ltr/min at 450 Kpa fitted in a save-all with 'Camlock' type connections. Fuel tank gauging software forms part of the control station monitoring system. A remote level indication displayed adjacent to each bunker station with tank bunkering valve controls.

Lube Oil System:- 2 - 908 litre storage tanks installed at the jet space entrances port and starboard. Each main engine has an independent lube-oil system complete with 350 litre service tank located in the jet spaces.

Exhaust Systems:- Main engine and generator exhaust pipes and silencers are resiliently mounted using stainless steel mesh blocks and resilient hangers. Exhaust pipes are thermally insulated. Main engine exhaust pipes are fitted with pyrometers and connections for checking back pressure immediately after the turbocharger outlet.

Ventilation:- Main engine combustion air is drawn directly from outside the hull through 3 stage water separators. The engine room ventilation system air is drawn through a single stage separator and is designed to maintain the engine room temperature below 45°C when the outside temperature is 32°C. Bow Thruster compartment and Voids #5 and #6 have natural intake and mechanical exhaust.

Fresh Water:- 1 - 5800 litre HDPE tank is fitted in the starboard Void #5 upper and includes high/low level alarm and level indication in the wheelhouse. There are 2 filling stations, one located forward and the other aft. There are 2 fresh water pump sets, one primary and one standby and 9 on-demand hot water heaters. Water to hand-basins is thermostatically controlled to 40°C. Hot and cold water pipes are polyethylene lined aluminium and fittings are gunmetal bronze. Heat tracing is fitted in areas exposed to potential freezing.

Sewage Treatment:- The sewage system consists of 1 - 1,350 litre vacuum collection tank and treatment unit for onboard treatment and discharge overboard. The treatment unit is fitted with a macerator pump, salt water flushing system, chlorination and de-chlorination systems.

Waste Oil/Oily Water:- The system consists of aluminium tanks, located in each engine room
System aft complete with an air-operated transfer pump for transfer to the main vehicle deck aft discharge station. Oily water separator not fitted on Voyager.

Bilge System:- Every lower void space is fitted with an electric, 3-phase 240vac submersible bilge pump. The presence of bilge water is indicated in the wheelhouse by means of float-switches in each bilge area. Control of the bilge pumps is from the wheelhouse. In bilge areas where oil contamination can occur, pump control is also located at the compartment access. Engine rooms are fitted with two bilge pumps. One spare portable electric bilge pump is provided with flexible hoses and is stowed in the car deck locker.

Anti-Fouling System:- Hydrosonic Hull Tender systems on all through-hull raw water systems.

Hydraulic System:- A separate hydraulic system for each water jet is installed. Hydraulic power is taken from the PTO pumps and a stand-by electric driven pump normally used for lubrication.
One trim-tab power pack is located in each jet space. The aft ramp hydraulic system, capstan and anchor windlass take power from the trim-tab power pack in the starboard jet room.
The forward ramp hydraulic system and forward capstan are powered by an independent power pack located in the bow-thruster compartment.
An electrically operated, cart-mounted emergency hydraulic power-pack with quick disconnects is stowed on the main vehicle deck and is intended to provide power to the ramps, capstans and windlass in the event of a failure.

11. REMOTE CONTROL, ALARM & SAFETY SYSTEMS

IMACS:- An Integrated Machinery Alarm and Monitoring System (IMACS) enables all of the functions of the propulsion, auxiliary and electrical systems to be monitored and controlled from the engineers' console in the wheelhouse.

Closed-Circuit TV:- A CCTV allows selected areas of the ship to be visually monitored from the wheelhouse.

Automatic Telephone System:- An automatic telephone system links all the control positions on the ship including the wheelhouse, engine rooms, steward's office, and boarding stations.

In-Dock Security System:- An in-dock security system is installed that, with a pushbutton/flashing light/siren arrangement, will enable communication between the wheelhouse and the various vehicle and passenger loading stations.

Emergency Sound-Powered Telephone System:- An emergency sound-powered telephone system with handsets in the wheelhouse, engine rooms and waterjets spaces ensures.

Video Information:- A Video Information System (VIS) is installed, consisting of flat-screen monitors located throughout the passenger areas on which advertising messages, route information and safety announcements can be displayed. The system includes DVD, VCR, and CD, AM/FM tuner.

Intercom:- A 5-station, all-master, telephone type intercom with points at each MES station, wheelhouse and elsewhere in the passenger and observation decks is fitted.

Public Address:- A ship-wide public address loudspeaker system is installed. Automatic interruption of the entertainment system permits important announcements to be made from any of the automatic telephones on the ship and from ships handheld radios.

Alarm:- General alarms clearly audible to all passengers and crew are enunciated through the PA loudspeakers by means of an alarm tone signal activated by a wheelhouse push-button or fire alarm panel

Anti-Theft Security System:- An anti-theft shop security system is fitted at the entrances to the gift shop.

12. ELECTRICAL INSTALLATIONS

Generators:- 4 Caterpillar - 190 kW (nominal) marine, continuous-rated, self-excited, brushless diesel engine-driven alternator complete with class-F windings are installed in the engine rooms. The generators have 110% one-hour overload capacity.

Power Distribution:- 600V, 60 Hz., 3 phase, 3 wire, no neutral.

Switchboards:- The two main switchboards, located in each engine room are equipped with 600Vac, 240Vac and 120Vac distribution systems with a power management system. Switchboards can be operated in paralled or as stand alone.

Power Distribution:- Power distribution panels located throughout the ship are fed from the main switchboard at 600V, 240V and 120V via engine room transformers.

Essential Power Distribution:- Essential services are supplied from distribution panels that are, in turn, fed from emergency and essential load centres. The 240V and 120V load centres receive, via automatic transfer switches, power supply from each switchboard ensuring that even with the loss of one switchboard, power to the essential systems is maintained.

Shore Power:- 2 - 300 amp, 600V, 60Hz, 3 phase, connections paralleled onto the ship's electric power system.

UPS Power:- Battery-maintained Uninterruptible Power Supplies located in the bridge superstructure deliver power at 120VAC 24V/12VDC for the essential equipment IMACS, navigation, communication, engine and waterjet control.

Lighting 120VAC:- Lighting in non-passenger areas is fluorescent. In passenger areas the lighting consists of fluorescent fixtures, recessed pot-lights, neon, and special decorative fixtures. Fixtures in engine rooms and vehicle decks are vapour proof to IP56 standards. External areas are illuminated with quartz floodlights controlled from the wheelhouse.

Emergency:- 30% of the installed lighting fixtures are fed from the emergency distribution system. 10% of the emergency lighting fixtures are located at stairways, doors and passageways and have a built-in battery backup which ensures a minimal level of lighting output for a minimum of 4 hours.

Navigation Lights:- Navigational lighting fixtures receive normal and emergency power from monitored circuits with status and control from the wheelhouse.

Searchlights:- Three searchlights are fitted: two forward-facing on housetop for docking purposes and manual aft facing on aft bulwarks. The forward searchlights are controlled from the wheelhouse consoles.

Cathodic Protection:- A microprocessor controlled Impressed Current Cathodic Protection system (ICCP) is installed to protect the water jet tunnels against corrosion. A Sacrificial Anode Monitoring System (SAMS) monitors the condition of sacrificial anodes in the bow thruster tunnel and on the transom by means of a selector switch and Digital Volt Meter (DVM.) All three systems are located in the starboard jet room.

13. NAVIGATIONAL EQUIPMENT

GPS:- 2 x Northstar 941X, GPS/DGPS
Wind Spd/Dir Speed Log Walker combined wind speed and direction and speed log monitoring and display
Whistle
Airchime motor-driven piston whistle with console-mounted "at will" and coded-signal control unit.
Radar
2 - navigational radar's, Raytheon ST Mk 2 ARPA 3425/7XD, interswitch, colour displays, high-performance monitor, and 7 ft high-speed antenna.
2 - docking radar's, 1 Raytheon Pathfinder ST Mk 2 TM2525/7XU, and 1 /7xD interswitch, colour TM display (medium resolution), 7 ft high speed antennas

ECDIS System:- Raytheon Pathfinder ST ECDIS bridge station, 1 - 28 inch colour monitor,

Management System:- 2 - high-resolution 20 inch monitors complete with a set of electronic charts.

Navigational Sounder:- Seachart 3, IMO compliant, 50kHz. echo sounder, digital display, 2 transducers, transducer COS.

Auto Pilot:- Anschutz Nautopilot 2010 digital adaptive autopilot, radius and rate of turn control.

Gyrocompass:- Anschutz gyrocompass standard 20GM and 3-console mounted bearing repeaters.

Magnetic Compass:- Anschutz standard magnetic compass Reflecta Fiberline, binnacle and sonde.

Navtex Receiver:- JRC NCR 300A.

Nauto Cconning System:- Anschutz JBS Display and monitoring system – 4 to 20 inch monitors

Night Vision Equipment:- Current Corporation Light-Enhancement Night Vision
(NOTE: exporting this Complete with Pan/Tilt camera equipment is subject to IR Search Lite Federal Government 9" Monitor approval) 5" Flat Screen Monitor 2 x H/H Remote Controls

Radiotelephones:- 4 - Sailor RT 2048 VHF console mounted radiotelephones.

Receiver:- Kenwood R-5000 communications receiver.

Modem, DSC:- Sailor RM 2042 DSC modem, console mounted.

EPIRB:- Alden, category 1, Satfind 406 Class 1, Emergency Position Indicating Radio Beacon.

SART:- 2 x Alden Search and Rescue Transponder.

Shipboard Radio:- 1 Radio Repeater; 6 Antennas; 8 VHF H/H Radios; 1 Base Station VHF in Repeater Engineers console.

14. WHEELHOUSE ARRANGEMENT

Access:- Access to the wheelhouse is through the crew or officers' lounges or by means of doors from the external wings.

Operation:- There are two forward-facing seats in front of the centre navigation console located at the forward end of the wheelhouse. The centre console contains all of the required navigation, main engine control and internal and external communication equipment. There are secondary consoles at the extremities of the bridge wings where the necessary controls, indications and communications to navigate the vessel are repeated. The engineers' console, with seating for two engineers, is located behind the central control console. All controls, indications and communications necessary to monitor all of the ships systems and the facility to manually override the related automatic systems are located in this console. Also included is a computer workstation with bridge gear diagnostics.

Visibility:- Selected wheelhouse windows are equipped with wipers and heaters. There is a built-in window washing system and demister system.

Communication:- The onboard communication system is operable from the wheelhouse, enabling communication to all machinery, mooring, boarding and passenger spaces. A dedicated in-dock security system providing communication between the wheelhouse and the various loading stations to ensure safe embarkation and debarkation of passengers and vehicles.

15. SERVICES

Food Prep:- The food prep area is outfitted with a dishwasher, dish table, washroom, reach-in refrigerator/freezer, soup kettle, work surfaces, and an area for storage of mobile transport modules.

Servery:- A self-service food counter, complete with hot-wells, soup wells, refrigerated sandwich display, warming lamps and heated shelves is located in the servery. A food counter, 2 combo ovens, pizza oven, conveyor toaster, microwave oven, refrigerated prep table, complete with built-in fire suppression systems, are installed.

Coffee Bar:- A coffee bar is located at the forward passenger lounge complete with espresso machine, other beverage dispensers and dry displays.

Snack Bar:- Another coffee bar is located on the observation deck complete with espresso machines, refrigerator, sandwich display, service counter, beverage dispensers and cash counter.

Open Deck Area:- Bench seats are fitted on the open deck aft of the observation deck.

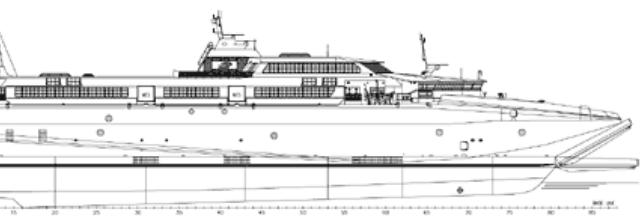
Appendix A Highlighted differences to the three ships (based on specifications, not comprehensive) o the three ships (based on specifications, not comprehensive)

Spec Ref	Line Item	Explorer	Discovery	Voyager
1	Year Completed	June 1999	December 1999	August 2000
1	Owner	BCFC	BCFC	CFI
1	Deadweight Tonnage	516.5	518.9	520.6
2	Hull Strain Monitoring	Per Spec	Not fitted	Not fitted
3	Hull Coating (Below Waterline)	Intersleek	Intersleek	Hempasil
3	Seats	High proportion of 4 seat tables	High proportion of 4 seat tables	Arrangement modified to increase proportion of 2 seat tables
3	Windows (Wheelhouse)	Framed and bolted	Per Spec	Per Spec
3	Crew Facilities	Per Spec	Per Spec	Officers mess includes microwave and fridge
3	Elevator	Handicap access to elevator on main car deck is by ramp	Handicap access is provided by handicap chair lift	Handicap access is provided by handicap chair lift
7	Fire Detection System	Engine rooms have heat detectors only	Per Spec	Per Spec
9	Waterjets (Inlet Duct Fairing)	Fibreglass	Aluminum	Aluminum
9	Waterjets (Inlet Duct Coating)	Duratuff	Belzona	Belzona
10	Fuel System (filling stations)	Per Spec	Deleted bow fuelling station	Deleted bow fuelling station and bow filling main
10	Exhaust Systems (Generator)	Per Spec	Per Spec	Exhaust pipe directed through inboard shipside

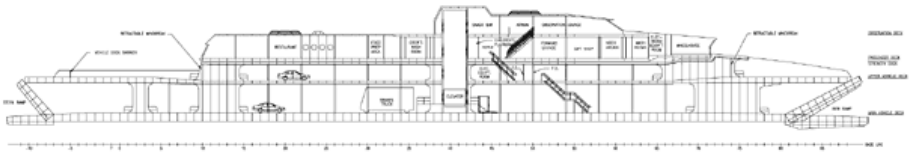
				and water cooled
10	Waste Oil/Oily Water System (Oily water separator)	Separator fitted	Separator fitted	Separator not fitted, collection tank P & S only for discharge to shore
10	Hydraulic Systems	Per Spec	Hydraulic system for aft ramp, capstan and windlass powered by independent power pack. No emergency power pack as systems have built in redundancy.	Hydraulic system for aft ramp, capstan and windlass powered by independent power pack. No emergency power pack as systems have built in redundancy.
11	Video Information	Per Spec VCR Orientated	New System DVD Oriented	New System DVD Oriented
13	Navigational Sounder	Per Spec	Per Spec	Seachart replaced with Raytheon Model No. DE 795

These vessels, if desired, could be modified to carry 35 Trailers at medium speeds.
Note:- Height of 4 meters.

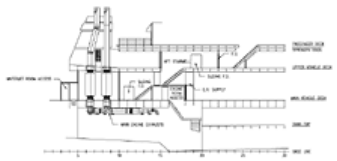
Subject to prior sale and price change without further notice.
All particulars are believed to be correct, but cannot be guaranteed.



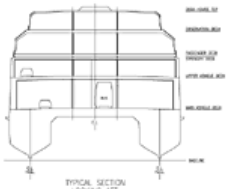
OUTBOARD PROFILE



INBOARD PROFILE



INBOARD PROFILE LWR. CASING



TYPICAL SECTION
LOOKING AFT

GENERAL PARTICULARS

LENGTH OVERALL	122.00 M
LENGTH WATERLINE	96.03 M
BEAM OVERALL	25.80 M
BEAM ON DECK	24.80 M
BEAM PER HULL	6.00 M
DEPTH MOULDED	6.60 M
DRAFT	3.90 M
PASSENGER CAPACITY	1000
CAR CAPACITY	250 AEQ

**FOR ILLUSTRATION PURPOSES ONLY—
NOT FOR CONSTRUCTION**

CFI CATAMARAN FERRIES INTERNATIONAL

CLIENT
BRITISH COLUMBIA FERRY CORPORATION

VESSEL
PASSENGER AND VEHICLE FAST FERRY

TITLE
GENERAL ARRANGEMENT
PROFILE & ELEVATIONS

SCALE	HULL #	DWG. No.	REV
N/A	003	3F-001 SHEET 1 OF 3	B
DATE 3/16/99			

REFERENCE DRAWINGS

DRAWING No.	DRAWING TITLE
2F-001-2	G.A. PASSENGER DECKS
2F-001-3	G.A. VEHICLE DECKS & BELOW

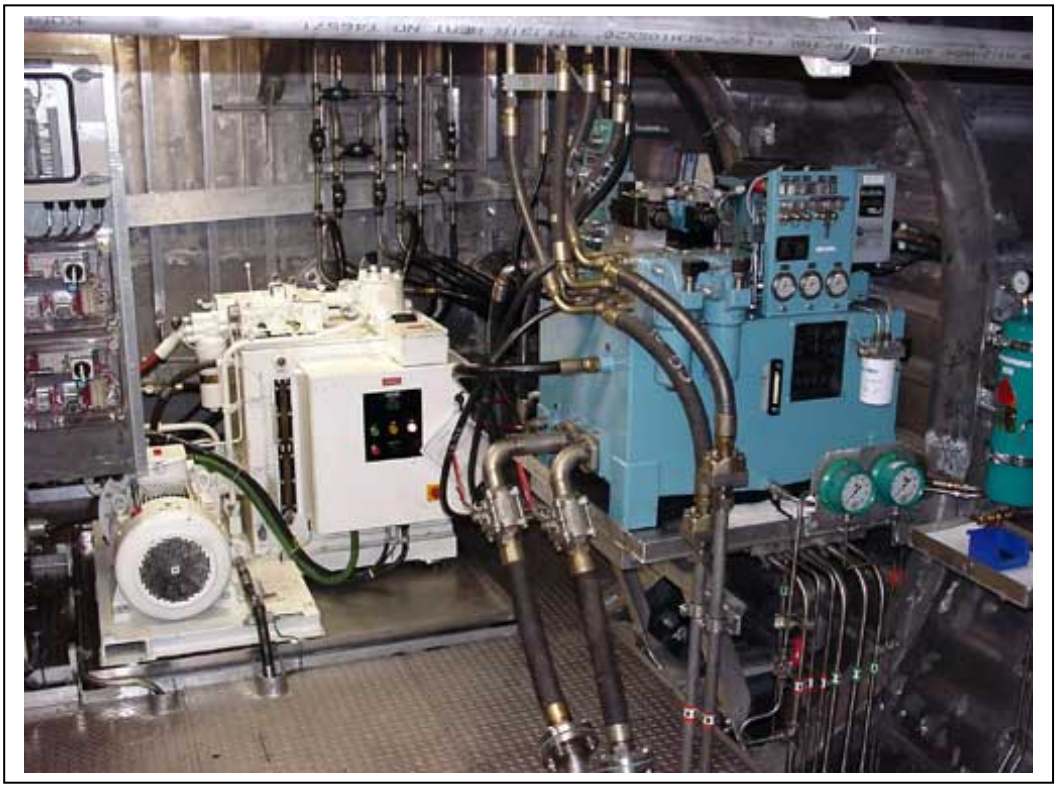

BC FERRIES
DBC
DBC

Main Deck

Upper Deck

Off Loading from Stern

Engineroom Views



Bridge

Construction