

Attachment 1

Commander, Naval Installation Command (CNIC) Force Protection Small (FPS) and Force Protection Large (FPL) Harbor Security Boat

SPECIFICATION

REV. –

02 August 2021

042-3 Referenced Documents

The following standards and specifications are referenced in this Specification. Where reference is made to a voluntary compliance or best practice standard, the recommended standards and practices shall be considered mandatory under this Contract. Use the most recent edition unless otherwise noted.

- 33 CFR, Navigation and Navigable Waters
- 40 CFR, Protection of Environment
- 46 CFR Part 164, Materials
- 46 CFR Part 180.70, Ring Life Buoys
- 49 CFR Part 393, Parts and Accessories Necessary for Safe Operation
- 49 CFR Part 571, Federal Motor Vehicle Safety Standards
- ABYC, Standards and Technical Information Reports for Small Craft
- ASME Y14.100, Engineering Drawing Packages
- ASTM A182, Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service
- ASTM A276, Standard Specification for Stainless Steel Bars and Shapes
- ASTM A312, Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes
- ASTM A351, Standard Specification for Castings, Austenitic, for Pressure-Containing Parts
- ASTM B61, Standard Specification for Steam or Valve Bronze Castings
- ASTM B62, Standard Specification for Composition Bronze or Ounce Metal Castings
- ASTM B584, Standard Specification for Copper Alloy Sand Castings for General Applications
- ASTM B928, Standard Specification for High Magnesium Aluminum-Alloy Products for Marine Service and Similar Environments
- ASTM F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs
- ASTM F594, Standard Specification for Stainless Steel Nuts
- ASTM F1166, Standard Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities
- IEEE 45, Recommended Practice for Electric Installations on Shipboard
- IEEE 1580, Recommended Practice for Marine Cable for Use on Shipboard and Fixed or Floating Facilities
- International Electrotechnical Commission (IEC) standard 60529 IP ratings
- International Regulations for Preventing Collision at Sea, 1972 (72 COLREGS) which are contained in "USCG Navigation Rules and Regulations Handbook", U.S. Coast Guard Navigation Standards Branch, U.S. Coast Guard Headquarters, Washington, DC
- ISO 2533:1975, Standard Atmosphere

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- ISO 6185-4: 2011 (Corrected Version 2014), Inflatable Boats – Part 4: Boats with a Hull Length of Between 8m and 24m with a Motor Power Rating of 15kW and Greater
- ISO 11812, Watertight and Quick Draining Cockpit
- ISO 12215, Small Craft – Hull Construction and Scantlings
- ISO 12217-1:2015, Small Craft - Stability and buoyancy assessment and categorization – Part 1: non-sailing boats of hull length greater than or equal to 6m
- MIL-DTL-24779, Anodes, Sacrificial, Aluminum Alloy
- MIL-PRF-24667C, Coating System, Non-Skid, for Roll, Spray, or Self-Adhering Application
- MIL-STD-209K, Interface Standard for Lifting and Tiedown Provisions
- MIL-STD-2035A, Department Of Defense Test Method: Nondestructive Testing Acceptance Criteria, 15 May 1995
- MIL-STD-3009 Lighting, Aircraft, Night Vision (NVIS) Compatible
- MIL-STD-1366E, Interface Standard for Transportability Criteria
- MIL-STD-1474E, Design Criteria Noise Limits
- MIL-T-55164 / A-A-59125, Terminal Boards, Molded, Barriers, Screw, and Stud Types
- NAVSEA DWG 5109421
- NAVSEA T9006-AE-TRQ-010, Laboratory Test Requirements for Evaluating the Mechanical Shock Attenuation Performance of Marine Shock Isolation Seats
- NAVSEA T9074-AS-GIB-010/271, Requirements for Nondestructive Testing Methods, September 2014
- NAVSEA TO300-AU-SPN-010A, Fabrication, Welding and Inspection of Small Boats and Craft, Aluminum Hulls
- NAVSEACOMBATSYSENGSTA Report No. 6660-99 Rev. A, Procedures Manual for Stability Analysis of U.S. Navy Small Craft
- NSWCCD-23-TM-2009/33 Rev B, Hoisting System Design and Certification Process Guidance
- NSWCCD-23-TM-2009/58 Rev B, U.S. Navy Boat Electrical Practices
- NSWCCD-23-TM-2009/61 Rev A, U.S. Navy Boat Example Data Package
- NSWCCD-23-TM-2009/63 Rev D, Small Craft Crew Served Weapons Integration Guidance and Certification Process
- NSWCCD-23-TM-2009/64 Rev C, Small Craft Transportability Design and Certification Process Guidance,
- NSWCCD-23-TM-2009/65 Rev C, Towing Fitting Design and Certification Process Guidance
- NSWCCD-23-TM-2011/05 U.S. Navy Craft Mechanical Practices
- NSWCCD-23-TM-2011/38 Rev A, Mooring Fitting Design and Verification Process Guidance
- NSWCCD-23-TM-2011/39 Anchoring System Design and Verification Process Guidance

- NSWCCD-80-TR-2014/038, Weight Management Process Guidance for Boats and Craft
- NSWCCD-83-TM-2020/10, Essential Cybersecurity Components (ECSC) Data Collection and Documentation
- OPNAVINST 5100.19 NAVY SAFETY AND OCCUPATIONAL HEALTH PROGRAM MANUAL FOR FORCES AFLOAT
- RR-C-271D, Chains and Attachments, Carbon and Alloy Steel
- SAE J1273, Recommended Practices for Hydraulic Hose Assemblies
- SAE J1508, Hose Clamp
- SAE J1527, Marine Fuel Hoses
- SAE J1942, Hose and Hose Assemblies for Marine Applications
- UL 489, Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures
- UL 1426, Standard for Electrical Cables for Boats
- WSTDA T-1, Recommended Standard Specification for Synthetic Web Tie Downs

042-4 Alternate Items

Where boat components and equipment are specified by brand name or manufacturer and model number or equal, such identification is intended to be descriptive, not restrictive, and is intended to indicate the required characteristics of the product.

The Government will not accept alternative items for brand name or manufacturer and model specified in the following Sections:

- 236-2 Outboard Engines
- 313-1 Batteries
- 422-1 Integrated Electronic Navigation Package
- 433-1 Intercom System
- 441-1 VHF Marine Band Radio
- 441-2 VHF/UHF Multiband Radio
- 450-1 Infrared Thermal Imaging System
- 529-2 Electric Bilge Pump
- 600-5 EPIRB

Except as listed directly above, the Contractor may propose the use of other products which are equal to the specified make and model products. The following general requirements shall form the basis for determining the equality of alternate products unless additional specific or alternate requirements are designated within the applicable sections of this Specification:

- The major attributes of form, fit, function, interface, and material of an alternate item shall not degrade the performance of the system within which it is used; nor the boat as a whole. The alternate item shall require no more space or volume than the designated item for installation, operation, or maintenance. The alternate item shall weigh no more than the designated item. The connection fittings required to incorporate the alternate item into a system shall be identical to those necessary to incorporate the specified item. The principles

Trailer components (except goal posts) shall not be removed to meet this requirement.

The GVW (see **Section 070**) shall be 15,000 lbs or less to be within prime mover capacity.

084-1b Road Transport (FPL)

Boat and trailer combination shall meet all requirements for restricted “over-sized” over the road transport on Continental United States (CONUS) Highways (i.e. “CONUS Minimal Restrictions” per NSWCCD-23-TM-2009/64 Rev C.

Boat and trailer combination shall not exceed the following dimensions:

- Height – 180 inches (15 ft)
- Width – 144 inches (12 ft)
- Length – 720 inches (60 ft)

Items may exceed the height envelope if hinged or are otherwise collapsible for transport.

Hinged or collapsible items shall lower for transportation using not more than two persons with hand tools, without removal or disconnection of installed equipment. When lowered, hinged or collapsible components design shall be suitable for transportation and extended storage without damage or water intrusion to installed equipment or structure. The hinged or collapsible items shall be provided with a means to be secured down in the lowered position. Covers for equipment protection from water damage while in the lowered position shall be provided, as necessary.

Trailer components (except goal posts) shall not be removed to meet this requirement.

The GVW (see **Section 070**) shall be 30,000 lbs or less to be within prime mover capacity.

084-2 Maritime Transport

Boat and trailer shall be designed for marine transport in accordance with NSWCCD-23-TM-2009/64 Rev C, to include onboard stowage.

Combination boat and trailer shall be designed for maritime transport and logistical launch and recovery (e.g. crane, deck cargo) from decks of United States Navy, Military Sealift Command (MSC), and commercial shipping.

084-3 Trailer (Highway)

Trailer shall be provided for each boat and shall have the following characteristics:

- **Frame Material:** Aluminum or hot-dipped galvanized steel construction.
- **Gross Vehicle Weight Rating (GVWR):** GVWR shall be greater than designed GVW defined in **Section 070**.
- **Tires:** Light Truck (LT) series tires.
- **Spare Tire:** Matching and mounted spare tire and wheel.
- **Suitable for Marine Environment:** Brake actuation components shall be capable of total submersion in salt water for short periods of time.
- **Brakes:** The trailer shall be equipped with electric-over-hydraulic brake actuation with stainless steel disc brake components on each axle (including stainless steel rotors, stainless steel brake caliper assembly with stainless steel cylinder and guide pins).

- **Brake Lines:** Stainless steel brake lines with smooth regular bends (2 inch minimum radius). Flex hoses, where necessary, shall be stainless or kevlar, and have a minimum rating of 3,000 psi.
- **Storage:** Lockable (i.e. hasp for padlock), on-trailer stowage for tools and tiedown straps.
- **Ladder:** Forward ladder extending to bow of boat shall be integrated into the trailer. Ladder shall include two hand rails extending above the bow of the boat to assist in embarking and disembarking.
- **Winch:** Hand winch with Dyneema Rope and closed end hook. Entire system shall be designed to the same load as the bow eye with a minimum safety factor of 1.5 on yield strength of materials.
- **Jack Stand:** Jack stand (foot or roller) (plus one spare).
- **Coupler:** Adjustable height, interchangeable hitch with 3 inch lunette ring and 2 5/16 inch ball receiver (both provided consistent with trailer GVWR).
- **Fenders.**
- **Safety chains:** sized in accordance with federal regulations.
- **Bunks:** Bunks shall be sized to support boat under accelerations for applicable transport modes. Bunks shall not be roller style. Bunk surfaces that contact the hull shall be protected by use of replaceable Ultra High Molecular Weight (UHMW) polyethylene panels secured to bunks using counter sunk holes to prevent scratching of paint or damage to hull.
- **Electrical System:** Trailer electrical system shall be equipped for 12 VDC (with commercial 7-pin round plug with flat connector).
- **Electrical System Materials:** Electrical system components shall be marine grade using ring terminals sealed with heat shrink at all connections.
- **Lighting:** Lighting shall be submersible Light Emitting Diode (LED).
- **Fasteners:** ASTM F593, type 316 stainless steel fasteners, flat washers, and ASTM F594 nylon insert lock nuts throughout for all structural components. For non-structural applications, other grades of type 316 (e.g. UNS S31600) may be used. Fasteners shall not be threaded into aluminum.
- **Component Materials:** Aluminum or 316 stainless steel components used where possible (e.g. fenders, brackets, etc.).
- **Suspension:** Suspension type (e.g. torsional axle) and strength consistent with trailer GVWR.
- **Axle Rating:** Each individual axle should be rated to carry at slow speeds the entire weight of the boat and trailer in the OTR condition.
- **Hub Rating:** Hubs rated at highway speeds for a minimum of 50% of the axle rating.
- **Hubs:** Positive pressure hub system to prevent contamination of hub lubrication.
- **Dimensions:** Loaded trailer dimensions shall be within acceptable limits for all applicable transport modes.
- **Component Capacities:** Axle, wheel, and tire creep load capacities provided with trailer technical information.

- **Tiedowns:** The trailer shall be equipped with tiedown provisions with rated capacities to suit hoisting and tiedown requirements. Tiedown provisions shall be labeled per MIL-STD-209K.
- **Outfitting:** Trailer jack and lug wrench (mounted with provision for a lock) of sufficient size to support tire replacement (e.g. flat tire) with the boat and trailer in the OTR condition.

The trailer shall comply with all applicable federal requirements, including 49 CFR Part 393 and 49 CFR Part 571, excepting that the CFR exclusion of heavy trailers does not apply for all cited CFR requirements.

Offeror to provide specific make and model in Attachment 2.

084-4 Boat and Trailer Tiedown Fittings

Boat and trailer shall have aluminum or stainless steel tiedown provisions (e.g. transom tiedowns, bow eye, side tiedowns, trailer D-rings, etc.). Tiedown provisions not suitable for hoisting with trailer shall be labeled clearly and conspicuously. Labeling of the fittings shall include load ratings of the fittings in lbs. Tiedown provision and adjacent structure shall be sized for maximum applicable load, as follows:

1. OTR Transport: Restraint of boat to trailer using Boat OTR load condition weight (**Section 070**), shall be designed per MIL-STD-1366E and 49 CFR Part 393.102, to provide a minimum safety factor of 1.5 on yield strength, or
2. Trailer Hoisting: Trailer Design Hoisting condition with a minimum safety factor of 5 on ultimate strength for hoisting trailer with boat.
3. Marine Transport: Restraint of boat and trailer using GVW load condition weight (**Section 070**), per MIL-STD-1366E Section 5.1.6 shall provide a minimum safety factor of 1.5 on yield strength. Fittings' design limit loads are as follow: 0.5 times the load in the longitudinal direction and 1.0 time the loads in the lateral direction. For calculations bunk loads can be assumed to restrain the boat in the lateral direction.

If aluminum or stainless steel trailer tiedowns are not available, hot-dipped galvanized components may be used.

The trailer winch shall not be considered in restraint calculations for hoisting, but may be considered for OTR loads. See Transportability Design and Certification Process Guidance NSWCCD-23-TM-2009/64 Rev C for additional details.

See **Sections 085 and 092** for technical analysis and testing requirements.

084-5 Tiedown Straps

Tiedown straps shall be provided that comply with "Recommended Standard Specification for Synthetic Web Tiedowns", Web Sling & Tiedown Association WSTDA T-1, except that:

- Straps are sized for a safety factor of 5 based on maximum boat-to-trailer design load when suspending completed trailer weight beneath boat
- The trailer tiedown strap arrangement shall provide that no single strap failure will result in the trailer being 'dropped' during the hoist. In addition to the marking requirements of WSTDA T-1 all straps used for hoisting the trailer shall be permanently marked identifying the testing activity, contract number, date of testing, boat type, rating and intended usage of the strap (and leg to fitting identifier, i.e. 'FWD PORT') and a unique serial number. The optional label from WSTDA T-1 "not to be used for lifting" shall not be installed.