

# EXHIBIT B – ACCOMMODATION VAN SPECIFICATION

## INTRODUCTION

### General

This document is the specification for the construction of three Portable Accommodation Modules (“Accommodation Vans”) to be used aboard the Regional Class Research Vessels (RCRVs) owned by the National Science Foundation and operated by Oregon State University, the University of Rhode Island, and the Gulf Coast Oceanographic Consortium.

Vans shall meet and conform to the applicable requirements of Title 46, Code of Federal Regulations, sub-Chapter “U”, the American Bureau of Shipping’s “Guide for Portable Accommodation Modules”, and the “Research Vessel Safety Standards” promulgated by the University-National Oceanographic Laboratory System (UNOLS.)

### Owner Furnished Drawings and Information

The drawings and technical information attached to this specification are for REFERENCE ONLY and reflect the most current vessel construction information at the time of Request for Proposal.

### Intended Purpose

These vans are intended to be transportable by common carrier between RCRV operating institutions and US or foreign ports. The vessels are USCG inspected and ABS-classed. Each OSU-supplied RCRV is equipped with a vestibule designed to mate up to a maximum of two vans (accommodation or separate laboratory van, but not two accommodation vans simultaneously). Personnel access and all required electrical, plumbing and communications connections shall be on the van end mated to the vestibule shell. Each vestibule location has all the services available. Vestibules are in a “sheltered location” as defined by ABS.

## 1. Construction

### 1.1. Size

The van exterior shell shall be the size of an ISO standard 20’ dry container (ISO 6346 Type 22G1), configured for standard container securing systems, and suitable for transport by ground or sea freight. Due to the configuration of the vestibule, a Type 25G1 (“high cube”) can not be used.

### 1.2. Weight

#### 1.2.2. General

Weight of the van is an important consideration. All available techniques shall be used to reduce tare weight to maximize payload, and overall deck loadout.

#### 1.2.2. Gross Weight

The van shall be designed for a maximum gross weight of no more than **20,000 lbs**, with a maximum occupancy of four (4) personnel.

### **1.2.3. Tare Weight**

The tare weight shall include all structural, mechanical, electrical, and electronic elements of construction. All furnishings, decoration, and other internal outfit shall be considered as payload weight.

Once completed, the “box” (less outfitting items) shall be weighed to determine the tare weight. Gross, payload, and tare weight shall be clearly indicated (see 2.5.4).

## **1.3. Inspections, Certifications, and Approvals**

### **1.3.1. General**

All construction plans and bills of material shall be submitted to, and approved by, the Owner’s Representative prior to construction.

### **1.3.2. United States Coast Guard**

All construction plans shall be submitted to the USCG for approval prior to construction. The builder is responsible for any USCG approval. Copies of all correspondence with USCG shall be provided to OSU.

### **1.3.3. American Bureau of Shipping (ABS)**

All construction plans shall be submitted to ABS for approval prior to construction, and the van surveyed during and after construction and outfitting, as determined necessary by ABS. If the van is to be constructed to the standards of another classification society (e.g. Det Norske Veritas-Germanischer Lloyd), the Contractor shall verify ABS acceptance of those standards prior to construction. The builder is responsible for all ABS-related inspections and certifications. Copies of all correspondence with ABS shall be provided to OSU.

## **1.4. ISO**

The details of construction must be adequate to withstand the rolling and pitching of a ship at sea, vibration, and lifting with a crane by the ISO corners, and transport via commercial carrier as break-bulk or top-stow cargo.

## **1.5. Workmanship**

Materials, equipment, and workmanship involved in the construction shall be new and of a quality conforming to “first-class marine practice” for use on vessels in ocean service; that is, to a standard or level which leads to: 1) long service life, 2) lower maintenance cost, 3) ease of operation by shipboard personnel, 4) increased reliability in service, 5) availability of spare parts and or service from the manufacturer. Where materials, equipment, computer operating systems, or other item model numbers or designations have been superseded or discontinued since submission and approval of the builder’s final proposal, current or replacement model numbers or designations shall be utilized, provided the characteristics associated with the new model number or designation are the same as or superior to those associated with the superseded model number or designation,

## **1.6. Welding**

All external construction seams shall be 100% continuously welded to reduce possible areas for corrosion.

## **1.7. Fire Rating**

The van shall have a Class “A” fire rating as defined by USCG regulations. The level of this rating (A-60, A-30, A-15, or A-0) shall be determined by the Classification Society standard and/or USCG requirements; to conserve weight, the rating should be no higher than necessary to match the specific construction and configuration of the RCRVs.

## **1.8. Recessing**

All appendages to the van shall be recessed or removable such that no part extends beyond the sides, top, ends, or bottom of the van, to facilitate transport by common carrier.

## **1.9. Arrangement**

The van shall be arranged to accommodate four persons in a shared compartment, with an included toilet/shower “wet module”.

## **1.10. Doors and Hatches**

### **1.10.2. Personnel Door**

A door for personnel access shall be provided at one end of the van. The personnel door shall be at least 28” wide (clear opening), with a height as large as practicable but not to exceed 90” measured from the bottom of the ISO corner fitting to the upper edge of the door panel, and open outward. The door shall be thermally insulated, and shall be fitted with a marine grade door handle with integral stainless steel lockset. The door shall be recessed such that no hardware from the door protrudes beyond the envelope of the van.

### **1.10.2. Escape Hatches**

One escape hatches shall be provided in the overhead or at the end of the van opposite the personnel access door, with a minimum clear opening of 20” x 20”. If a deck wrench or other tool is required to open the hatch, a bracket for stowage shall be located adjacent to the hatch, and the tool’s intended use shall be clearly labeled with an engraved placard. Ladders or other adequate means of egress shall be provided.

## **1.11. Exterior Finish**

Unless otherwise specified by the Owner, the color of the van shall be white. White, other light colors, or special paint additives, are preferable because of their ability to reflect heat in the climates described below.

The paint system used shall be marine grade and applied according to paint manufacturer’s recommendations. The surfaces shall be adequately prepared before application of primer. The exterior shall be coated with a marine-grade primer (epoxy or other) suitable for the material

used. The finished top coat(s) shall be semi-gloss and easily cleaned. Lighter weight coatings, such as a vinyl wrap, should be considered.

## **1.12. Interior Construction**

### **1.12.1 Bulkheads/Overhead Sheathing**

The interior bulkheads of the van shall be finished in a smooth non-absorbent material, resistant to wear, impact and staining. The material must be easily cleaned with detergent and water. All joints and seams shall be properly trimmed. Outfit and decor shall be developed in consultation with and to the approval of the Owner's Representative.

### **1.12.2 Bunks**

Four bunks with mattresses shall be supplied. Bed boxes shall be a minimum of 39" wide, 80" long, and shall be provided with 6" high density foam core mattresses with not less than a 36 ILD compression factor, oriented longitudinally in the space. There shall be a minimum of 27" clearance above each mattress. Privacy curtains shall be provided for each berth, and shall fully enclose the outer perimeter of the berth. Overhead lights and vent terminals shall not be in the area enclosed by privacy curtains. Berths shall be equipped with removable sea rails. Removable access ladders shall be provided for each upper berth.

### **1.12.3 Storage**

A minimum of one wall locker and one storage drawer per person shall be provided. Stowage for four (4) Type 1 Personal Flotation Devices and four (4) immersion suits shall be provided, two per compartment. All drawers and lockers shall be provided with positive latches in the closed position. Northampton or Submarine style bunks should also be considered to add additional storage.

### **1.12.4 Workspace**

A fold-down writing desk with seat shall be provided. Trash receptacles shall be provided in the main compartment and the toilet/shower space.

### **1.12.5 Safety**

One 5-lb ABC (dry chemical) fire extinguisher shall be installed in the main compartment.

## **2. Engineering**

### **2.1. General Configuration**

All shipboard electrical, plumbing, and communications connections shall be installed on the personnel door end of the van.

### **2.2. Electrical**

### **2.2.1. Wiring**

All wiring shall be in accordance with “Subchapter J” of 46 CFR (Parts 110-113), “Shipboard Wiring Requirements”, IEEE Standard 45-2002, “IEEE Recommended Practice for Electric Installations on Shipboard”, and applicable SOLAS requirements.

Shipboard wiring methods shall be used for all cables. Cables should be surface mounted and routed in between, over, or under the mounting channel. All fixtures, boxes, and devices must be corrosion resistant and intended for marine/commercial use. Major equipment, such as HVAC units or water heater, shall be on separate circuits. All electrical components must be located at least 18” above the deck of the van.

Separate power inlets shall be provided for the ungrounded ship’s power and grounded-neutral shore power connections. Inlets and mating connectors shall be Meltric DSN “Decontactor” series, or equal, of the correct voltage and amperage rating for each type of power supply. Inlets shall not have identical pin configuration. Two (2) 50-foot power cords shall be provided for each van. Cords shall be 3 or 4 conductor as required, SOOW or equivalent rubber covered portable cord, sized to match the electrical service, and fitted with mating connectors for the two power inlets. The free ends of the cords shall be left un-terminated.

### **2.2.2. Power Requirements**

#### **2.2.2.1. Ship Supply**

The van shall be designed for a 480VAC, 60Hz, single-phase supply (2 poles and ground), maximum 30A, when in use aboard ship.

The interior distribution in the van will be 208/120 VAC, 60Hz, with the neutral grounded to the van structure at the main circuit breaker. The van shall include a step-down/isolation transformer of a suitable rating to isolate and convert the ship’s 480VAC to the 208/120 VAC for the interior.

Power shall be distributed via a single distribution panel equipped with circuit breakers properly sized for all installed services and outlets. A properly sized main disconnect breaker shall be provided in the panel. GFCI circuit breakers may be used in lieu of GFCI receptacles for 208/120 VAC services. Breakers shall be of the “plug-on” type. Panel shall be sufficiently sized to provide all specified service, with a minimum of 20% expansion capacity, at the time of construction.

The primary side of the transformer shall be ungrounded. The secondary of the transformer shall have a grounded neutral. All structural metal parts of the van, all electrical panels and enclosures, any metal plumbing lines, HVAC units, etc, will be bonded together and to the electrical system neutral.

#### **2.2.2.2. Shore Supply**

The van shall include a separate shore power connection for use with a 208/115VAC, 60Hz, single-phase, grounded-neutral shoreside power system. An appropriate selector or disconnect shall be provided to isolate the shore power connection from the ship power transformer.

### **2.2.3. Climate Control**

The van shall be equipped with a heating/air conditioning system capable of maintaining a temperature of 72F in the main compartment, in ambient air temperatures of -4F to 100F. The HVAC system shall be provided with a condensate drain.

### **2.2.4. Toilet/shower Ventilation**

The toilet and shower module shall be provided with an externally-exhausting ventilation fan, with the control switch installed inside the module at the entrance.

### **2.2.5. Lighting**

All lighting shall be LED.

#### **2.2.5.1. Main**

The main compartment shall be provided with two independently-switched circuits for overhead lighting. One lighting circuit shall be white, approximately 3200K color temperature at approximately 160lux; the second circuit shall be red light at approximately 110lux to allow for night use when needed.

#### **2.2.5.2. Toilet/shower**

The toilet and shower compartment shall be provided with a single overhead light, approximately 3200K color temperature at approximately 160lux, with the control switch installed inside the module at the entrance.

#### **2.2.5.3. Berths**

Each bunk shall be provided with a reading light (approximately 200lux) at the head, equipped with a single 120VAC receptacle.

#### **2.2.5.4. Washbasin**

The washbasin shall be provided with a single lighting fixture above the mirror, equipped with a single 120VAC receptacle.

#### **2.2.5.5 Emergency**

The main compartment shall be provided with a battery-operated, bulkhead-mounted emergency light, normally charged when the van is powered. Emergency light shall be placed to best illuminate means of egress from the compartment.

### **2.2.6. Convenience receptacles**

#### **2.2.6.1. Berths**

Each bunk shall be provided with a duplex 15A 120VAC/USB-A receptacle (Legrand model # 1597TRUSBAAWC4 or equal) set into a recessed pocket sufficient to hold a mobile phone or other small electronic item for charging. The pocket shall have a sea rail or lip sufficient to prevent items from sliding out.

#### **2.2.6.2. Desk**

The desk shall be provided with a duplex 120VAC/USB-A receptacle.

#### **2.2.6.2 Overhead**

One duplex 120VAC receptacle shall be installed at or near a central point in the overhead.

### **2.3. Communications**

Connections for dial telephone and public address systems, fire detection, ship's intranet, and ship's entertainment system shall be provided at the service end of the van. All external connectors shall be IP67 rated.

#### **2.3.1 Fire/smoke detection**

The main compartment shall have a smoke detector mounted to the overhead. Detectors shall be Siemens model OP921 or fully compatible equivalent. External connection to the ship's system shall be Amphenol type C16-1, 3 contacts + PE. A 10-foot cable terminated at both ends shall be supplied.

#### **2.3.2. Dial telephone and public address**

The main compartment shall be provided with a dial telephone connection, type RJ45 Cat 6, at the desk area, and a flush-mounted loudspeaker in the bulkhead or overhead. Loudspeakers shall be Vingtor-Stentofon/Zenitel model CL200T or fully compatible equivalent. External connection to the ship's system shall be Amphenol type C16-1, 3 contacts + PE. A 10-foot cable terminated at both ends shall be supplied. (Telephone units will be Owner-supplied.)

#### **2.3.3. Ship's network**

Two RJ-45 Cat7a jacks shall be provided at the desk. An additional RJ-45 Cat7a jack shall be installed in the overhead adjacent to the electrical receptacle. External connection to the ship's network shall be RJ-45 Cat 7a.

#### **2.3.4. Ship's entertainment system**

One coaxial connection (Type F, male) to the ship's entertainment system shall be provided. External connection to the ship's system shall be BNC.

### **2.4. Plumbing**

The plumbing services shall be located on the service end of the van, and shall be positioned as low as practicable to allow proper drainage of the plumbing fixtures.

The area shall be sized to accommodate the connections listed and allow hoses to be easily connected. All connections shall be NPT threaded, fitted with ¼-turn isolation valves, and fitted with cam-and-groove couplers with attached caps or plugs as appropriate.

Black water outlet: 2”

Gray water outlet: 2”

Hot potable water inlet: ¾”

Cold potable water inlet: ¾”

## **2.4.1. Fixtures**

### **2.3.1.1. Washbasin**

The main compartment shall be fitted with a washbasin, provided with hot and cold water. Hot and cold water shall be combined in a single tap with manual, two-handle, non-spring-loaded controls. A medicine cabinet with mirror shall be mounted above the basin. Two baskets for soap shall be provided. Two towel rods, minimum 18” wide, shall be installed adjacent to the basin.

### **2.3.1.2. Shower**

The shower shall be provided with hot and cold water, and equipped with a shower spray unit with a hose at least 48” long that can be used as a fixed shower head or as a hand-held shower. The shower spray unit shall be fitted with a restricting device limiting flow to 1.75gpm at 40psi. Control valve shall be the mixing type. The shower shall be provided with two baskets for soap, shampoo, etc. The shower area shall be fitted with a curtain rod and shower curtain. Two towel rods, minimum 18” wide, shall be provided in the area outside the curtain. The toilet/shower module shall have two (2) deck drains, one in the shower pan and the other in the floor. The door to the module shall be fitted with a deadbolt lock operated from the inside, with exterior provision for unlocking via hex key or similar.

### **2.4.1.3. Toilet**

The toilet/shower module shall be fitted with a single vacuum toilet, compatible with the ship’s Evac “OnlineVac 52” vacuum collection and holding system, Evac “Optima-5” or equal. A recessed, covered compartment sufficient to hold two (2) rolls of toilet tissue shall be installed adjacent to the toilet.

## **2.5. Placards and Labeling**

### **2.5.1. General Labeling**

All electrical devices and services, safety equipment, escape hatches, etc. shall be properly labeled with engraved-type placards, decal of a durable material, or stenciling. All receptacles shall be labeled to the corresponding breaker in the distribution panel.

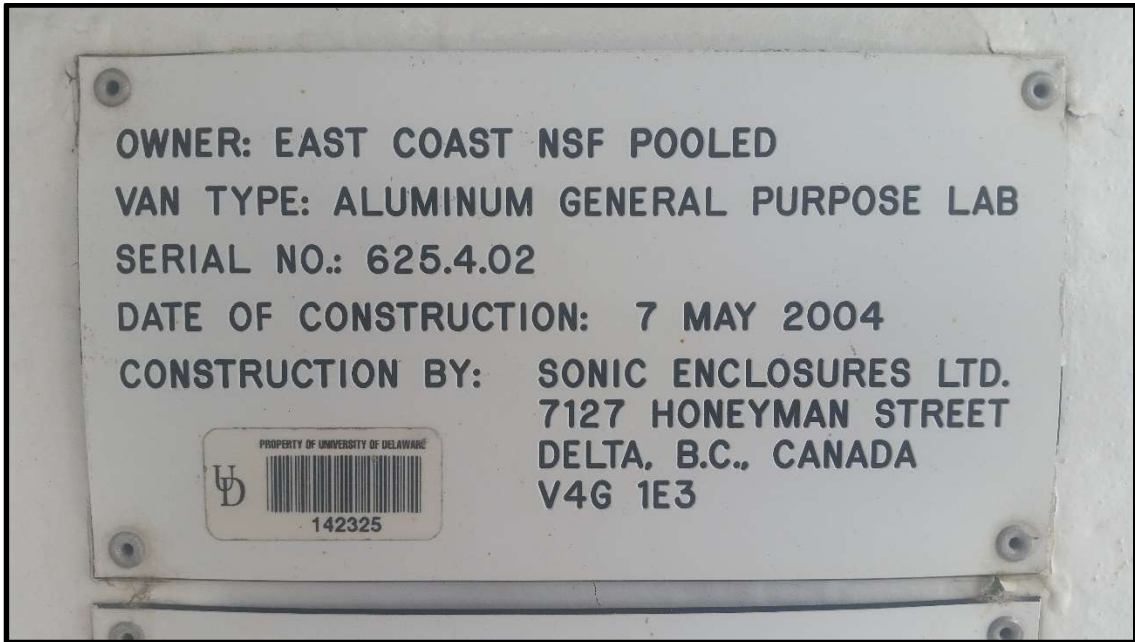


**2.5.2. Builder Plate**

The van shall be fitted with an engraved placard on the exterior of the van giving the following information:

- “Owner: ” *(UNOLS operating institution or other)*
- “Van Type:” *Accommodation*
- “Serial Number:” *XXX*
- “Date of Construction:” *XX/XX/XX*
- “Constructed By:” *(Vendor Name)*

Example Plate:



**2.5.3. USCG Inspection Plate**

The van which are required to be USCG inspected shall also have a stamped stainless steel placard permanently attached in a convenient location. The Coast Guard propeller stamp is to be embedded on the steel placard signifying compliance with the approved plans. The placard shall also include the following information:

- Van Serial Number:* \_\_\_\_\_
- Approval subject to the comments of OCMI \_\_\_\_\_ approval letter dated \_\_\_\_\_.*
- For use on (type of vessel): \_\_\_\_\_*
- Approved for installation in a protected location.*
- Structural fire protection boundary: \_\_\_\_\_*
- Gross Weight of module (van): \_\_\_\_\_*

#### **2.5.4. Purpose and Weights Plate**

All vans shall be fitted with an engraved placard on the exterior of the van giving the following information

PORTABLE ACCOMMODATION VAN  
FOR USE ON REGIONAL CLASS RESEARCH VESSELS ONLY  
TARE WEIGHT = X,XXX LBS  
PAYLOAD=XX,XXX LBS  
MAXIMUM GROSS WEIGHT = XX,XXX LBS  
TOP STOW ONLY