

UNOLS Standardized Van Design

(September 2001)

Effort Undertaken to:

- Enable Economic Transport by common carrier – “containerized cargo”
- Standardize design element for benefit of scientific user
- Facilitate group purchase – potential cost savings
- Make interchangeable throughout fleet – not ship specific
- Improvements in safety through uniformity of design

Features to Make Interchangeable:

- Variable power inputs: 208-460Vac, single phase for lab vans
Shore power connection
3-phase for machinery and refrigerated lab vans only
- Two personnel doors and escape hatch – ensure two means of escape always available.
- Based on 20-foot ISO shipping container “foot print”

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Review and Approval Process:

- There are currently no international standards which dictate the construction requirements for scientific vans. SOLAS requirements are for ships.
- Classification Society standards do exist, but are not regulatory mandates.
 - American Bureau of Shipping (ABS) – “Rules for Certification of Cargo Containers, 1998” **CARO ONLY**
 - Det Norske Veritas (DNV) - “Offshore Containers” (No. 2.7-1, 1995) **Cargo**
 - “Offshore Service Containers” (No. 2.7-2, 1995) **Occupied Containers**
- Directed by international authorities to rely on USCG for ruling on scientific vans on inspected vessels.

Basis for Design Specifications and US Coast Guard Review:

- US Code of Federal Regulations, Subchapter U, 195.11 – “Portable Vans and Tanks”.
- Other industry regulations avoided (Passenger Vessels, MODU’s).
- ABS and DNV standards used for guidance.

~Goal: Clarification of existing regulations as opposed to creating new~

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Results of Formal US Coast Guard Review (Letter dated May 24, 2001):

- Only Power, Chemical Storage, and Accommodations Vans are required to be USCG inspected.
- Laboratory Vans are **NOT** considered “accommodations”.
- ABS High Speed Vessel Rules/side and aft deckhouse design pressures (2.0 psi for plate, 1.5 psi for stiffeners) considered acceptable minimum standard for portable **accommodations** vans on sea-going vessels. Must be secured in a “Sheltered Location” (i.e. not encounter significant wave action as with a side or aft deckhouse)
- Most portable vans **NOT** required to have specific “Fire Rating” **themselves**.
- **Allowed to take into account the “van/ship system” when considering the overall fire rating of the boundary.** Location and van type determine the required fire rating of the “boundary”.
- **Accommodations** vans must be of “incombustible materials” **all around**.

SEE TABLE 1

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Consequences of US Coast Guard Review:

Structure

A standard 20-foot ISO container DOES NOT meet the bulkhead pressure requirements for accommodations van.

- Container must be stiffened with 1.5 x 1.5 x 1/8" angle on every inward corrugation (11" O/C)
 - ~Provides room for thermal insulation and means of bolting mounting channel (Uni-strut)
 - ~Minimal addition of weight or cost.

Structural Fire Protection

- Goal: Contain the spread of fire (ship to van/van to ship)
- Aluminum suitable incombustible material for **most** van types (See TABLE 1).
- Standard container must have wooden deck removed and steel deck inserted (minimum 14 Ga) or "belly plate" added and wooden deck treated with fire retardant coating.
- Worst Case scenario for Sub-Chapter U vessel is "A-30" – accommodations space next to lab over 500 square feet.
- Flame testing undertaken through USCG certified lab.
 - Stiffened **steel** container panel tested to "A-0" (**PASSED**)
 - "Van/ship system" (including air space between) to "A-30" (**Steel and Aluminum**)
ENABLE ANY VAN TO BE PLACED ANYWHERE ON BOARD.
 - **Aluminum** van as designed does NOT meet "A-0" requirements on its own (OK for lab and accommodations vans per TABLE 1).

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UNOLS considering adopting accommodation van structural standards for all vans “normally occupied by personnel” regardless of inspection requirement – i.e. Lab vans.

Per US Coast Guard Letter: “[for lab vans]...design and material selection must [consider] forces and environmental conditions to which the vans ... will be exposed.”

Where To Go From Here?

- Inventory of existing vans and assess condition.
- Refurbish or replace as necessary – focus on safety issues (structure, flammability, egresses) as opposed to “interchangeability issues”
- “Grand fathering” period required for vans in acceptable condition.
- Phase out sub-standard vans.
- Build all new vans to the latest UNOLS spec – both ship and science owned.
- Current vendor (Sonic Barrier, LTD) estimates a 10-15% savings on group purchases once detailed drawing phase is complete this year.
- Establish Van “Pool” for UNOLS fleet (?)

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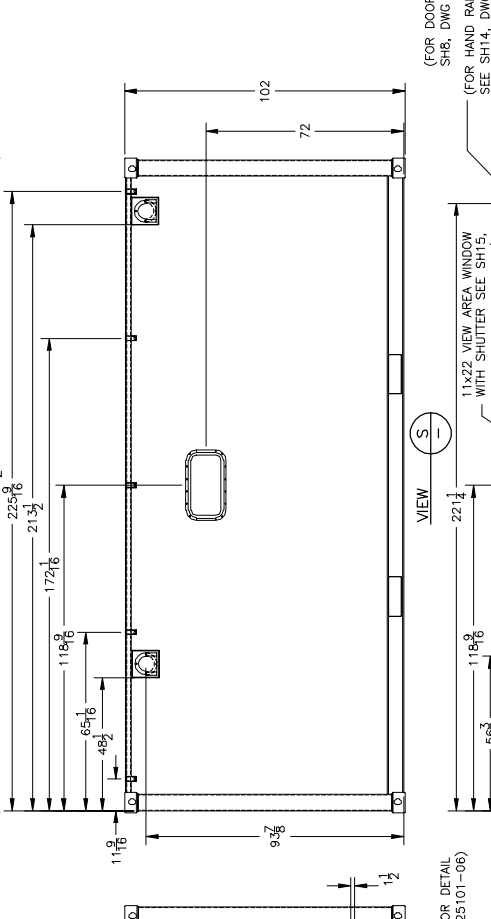
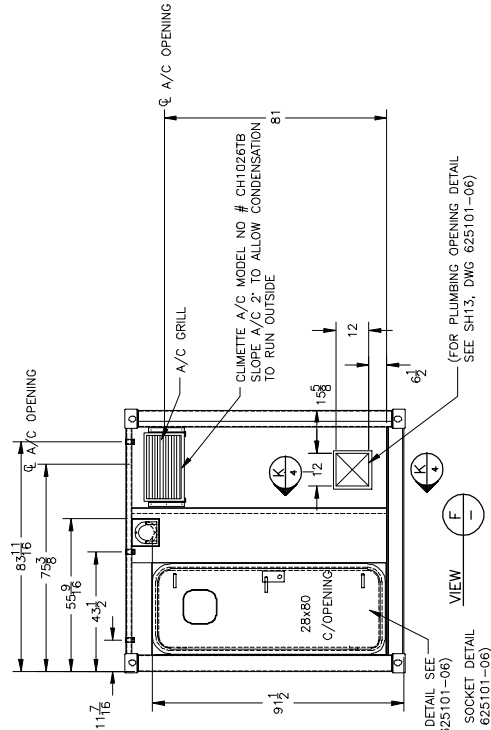
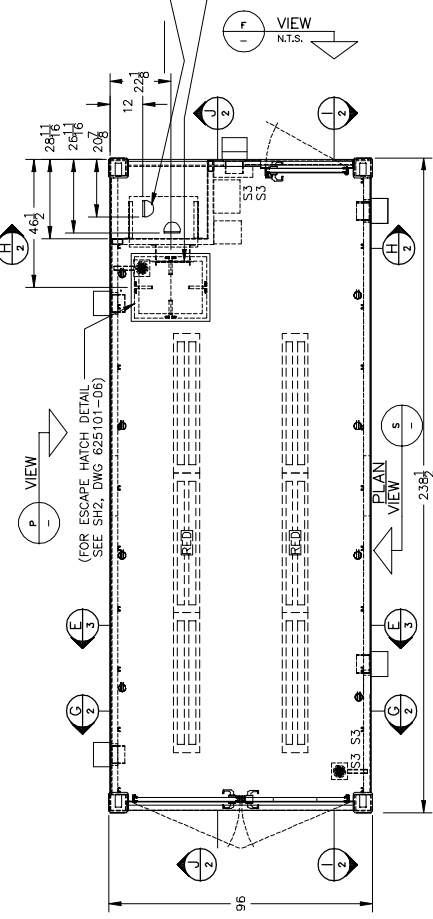
Description of Boundary Classifications (46 CFR 190.07-5):

- “A” Class Boundary means: “...composed of steel or equivalent metal construction ... [and] if subjected to the standard fire test, would be capable of preventing the passage of flame and smoke for one hour.”
- Standard Fire Test: “[A test]...which develops in the test furnace a series of time temperature relationships as follows:”
 - 5 minutes - 1000°F
 - 10 minutes - 1300°F
 - 30 minutes - 1550°F
 - 60 minutes - 1700°F

~Passage of HEAT as compared to simple passage of smoke and flame~

- In simple terms, A-30 would be constructed of steel (or other suitable metal) such that it prevents the passage of smoke and flame for one hour and the temperature on the side being protected does not reach 1550°F after 30 minutes.
- SOLAS furnace test is slightly different.

ZONE/LTR	REVISIONS	DATE	APPROVED
	DESCRIPTION		
	ISSUED FOR APPROVAL		



7973 PROGRESS WAY
DELTA B.C. V4G 1A3
PH - 604 946-8100
FX - 604 946-8867

CONTRACT No. 6251.01

DATE 01/07/13

DRAWN K. MINHAS
CHECK
DESIGN
DESIGN ACTIVITY
CUSTOMER UNOLS

SCALE NTS

RELEASE DATE 01/06/27

SHEET 1 OF 5

REV. A

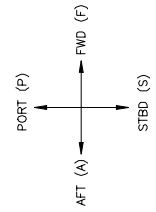
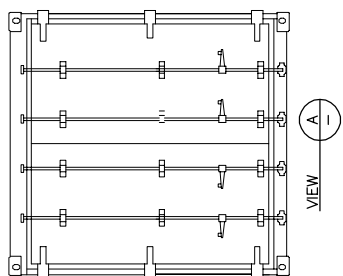
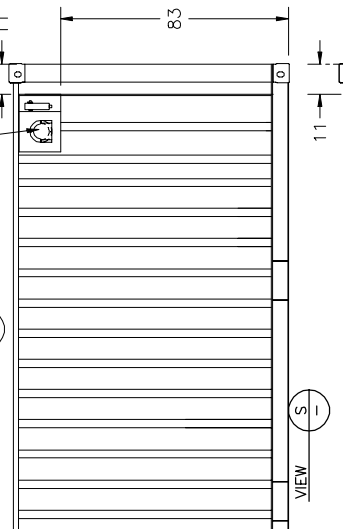
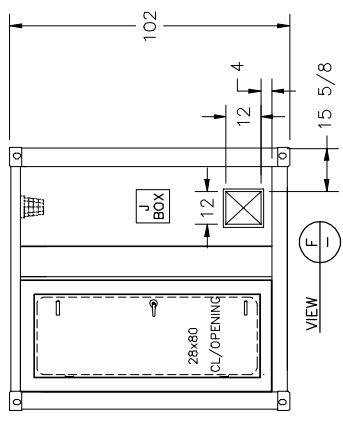
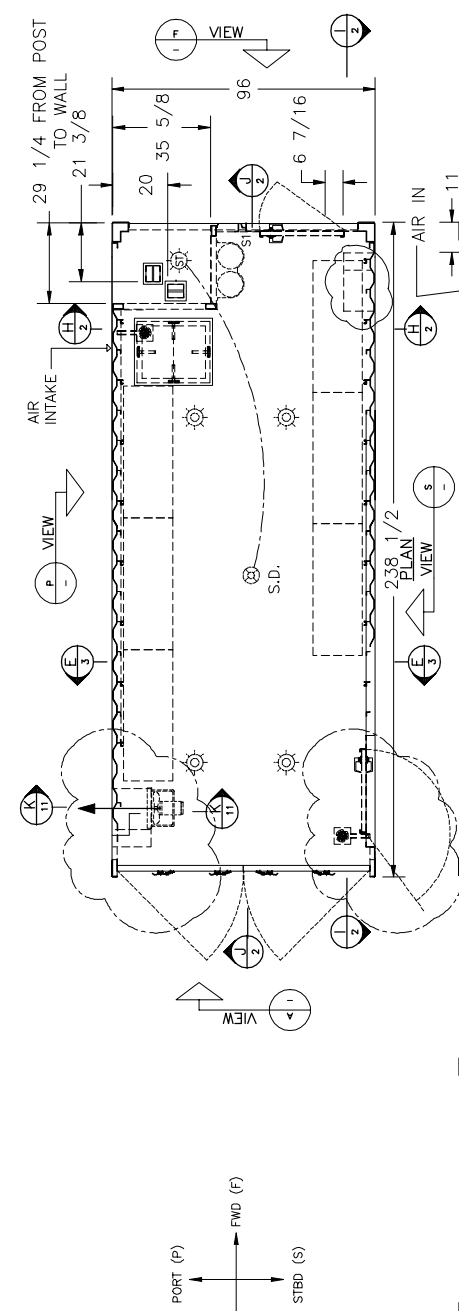
DWG No 625101-02

GENERAL ARRANGEMENT STANDARD ALUMINUM VAN

TITLE

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REVISIONS		DATE	APPROVED
ZONE LTR	DESCRIPTION		
A	ISSUED FOR APPROVAL	01/07/17	
	CHANGED DOOR LOCATION FROM PORT TO STBD		



		7973 PROGRESS WAY DELTA B.C. V4G 1A3 PH- 604 946-6100 FX- 604 946-6867	
CONTRACT No. 625.1.02		DATE 01/07/16	
DRAWN K MINHAS		CHECK ANDREW	
DESIGN ANDREW		DATE 01/07/12	
DESIGN ACTIVITY CUSTOMER		SIZE FSCM NO	
UNOLS		DWG No 625102-02	
TITLE GENERAL ARRANGEMENT CHEMICAL STORAGE VAN (STEEL)		SCALE NTS 1	

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