UNOLS Standardized Scientific Van Design
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The main goals of the standardization effort were to make vans more interchangeable among UNOLS ships, enable transport by common carrier, facilitate group purchase, and standardize certain design elements for the benefit of the scientific user. The most important result, however, was a clarification of the basic standards to which portable scientific vans should be built. The intent was not to rewrite the existing rules in 46 CFR, or create new rules, but rather to clarify the ones that already exist for "sub-Chapter U" vessels.

Standards from other industries, other classes of vessels, and classification societies (ABS and DNV) were used for guidance. The specifications and design details were sent to the US Coast Guard in Washington, DC for review in order to obtain a single, centralized view of the basic standards to which vans should be built. The review letter that came back from the Coast Guard addressed most van types to some degree, but the response dealt mostly with requirements for inspected vans. Many key elements needed to standardize design, namely side panel strength and structural fire protection, had been very difficult to ascertain before now.

The three primary decisions of the review were:

- An ABS side and aft deckhouse design pressure of 2.0 psi. for plate and 1.5 psi. for stiffeners is suitable for accommodations vans in "sheltered locations". A definition of "sheltered location" was negotiated, which is based on the premise that the loads experienced by the van will primarily be wind loads. A standard ISO container does NOT meet this requirement and requires additional stiffening.

- Portable vans on sub-Chapter U vessels are allowed to take into account the "van/ship system" when considering the overall fire rating of the "boundary". This includes the van structure, adjoining ship's structure, and the air space in between. The actual suitability of this "boundary" being subject to formal flame testing. This ruling allows most van types (including labs) to be built of aluminum, though some types will still be required to be built of steel.

- Accommodations vans must be built of "incombustible materials" all around. This means that either the wooden deck normally found in a standard ISO container must be replaced with a metal deck, or a metal "belly plate" must be added.

One additional benefit of the review process was to obtain a formal ruling that laboratory vans are not "accommodations", and thus, not required to be inspected. However, it was stated in the review letter that for lab vans the "…design and material selection must [consider] forces and environmental conditions to which the vans …will be exposed." Normally lab vans are placed in very similar locations to accommodations vans on UNOLS vessels, and there is very little difference in the conditions and forces

experienced. Also, scientific personnel occupy the van while the ship is underway. Because of this fact, the members of the Research Vessel Operators Committee (RVOC) voted at the October 2001 meeting to accept the accommodations van standards as the minimum for all new vans which are occupied by personnel – including laboratory vans. Vans which currently meet the other basic safety requirements given in the new specifications and the CFR's (egresses, electrical, etc.) may be "grandfathered" with regard to the structural requirements. However, all new vans, whether ship or science owned, should be built to these new standards.

Formal flame tests were completed at a US Coast Guard approved testing facility. The standard steel panel design (stiffened 20-foot container) passed the A-0 requirements. The aluminum "van/ship system" passed the A-30 requirements. This means that a stiffened 20-foot container can be used for several van types, such as machinery and chemical storage vans. It also means that both the standardized steel and aluminum vans can be placed anywhere on board the vessel without regard to the adjacent space.

The *UNOLS Scientific Van Manual* was assembled to be a resource to ship operators, scientific users, and the federal funding agencies alike. This manual can be used as a guide during construction, and also when dealing with local US Coast Guard inspectors to ensure the vans are built and used to standards. An electronic version of the *UNOLS Scientific Van Manual* can be accessed by going to the UNOLS Research Vessel Operators Committee web site at www.unols.org. Technical questions or comments can be directed to Matthew Hawkins, 302-645-4341, hawkins@udel.edu.