

U.S. Department
of Transportation

United States
Coast Guard



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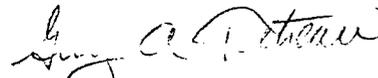
9303
30 September 1997

From: Commander, Eighth Coast Guard District
To: Distribution

Subj: TECHNICAL INTERPRETATION OF 46 CFR SUBCHAPTER T INTERIM
RULE

1. Enclosures (1) and (2) are provided for your information and use.

2. Enclosure (2) proposed that miniature, thermal overcurrent circuit breakers not meeting U.L. 489 be acceptable for DC circuits of less than 50 volts on small passenger vessels. Enclosure (1) adopts that proposal.


G. A. TETREAU
By direction

Encl: (1) COMDT (G-MSE-3) ltr 9303 of 20 Aug 1997
(2) MSO New Orleans ltr 16703/46-183.380 of 21 April 1997

Dist: All Eighth District MSOs, MSU and MSDs
DWRO

TO ENS AILEU

Pls Add to file & index under

- ① Circuit Breakers*
- ② Electrical (circuit breakers)*

blg



9303

08/20/97

From: Chief, Systems Engineering Division
To: Commanding Officer, Coast Guard Marine Safety Office, New Orleans
Via: Commander, Eighth Coast Guard District (m)

Subj: TECHNICAL INTERPRETATION OF 46 CFR SUBCHAPTER T INTERIM RULE

Ref: (a) MSO New Orleans letter of 21 APR 1997

1. In regards to reference (a), which was forwarded to our office on 04 Jun 1997, we concur with your assessment that the use of miniature, thermal overcurrent circuit breakers aboard small passenger vessels is acceptable for low voltage DC circuits of less than 50 volts.
2. As noted in reference (a), the Interim Rule for 46 CFR Subchapter T, Part 183.380 (m) requires circuit breakers to meet "UL 489 ... or other standard specified by the Commandant." As per 46 CFR 183.130 (a) (2) (ii), compliance with American Boat and Yacht Council (ABYC) Project E-9, "Direct Current (DC) Electrical Systems on Boats" is an acceptable alternative standard.
3. We concur with your assessment that compliance with UL 489 is excessive in regards to DC circuits of less than 50 volts and note that this standard is not required by ABYC.
4. Additionally, your proposal for amending the Final Rule of 46 CFR Subchapter T to reflect this alternative standard cannot be accepted at this time as comments for changes to the Interim Rule were to be received no later than June 10, 1996 and the Final Rule is currently being readied for publishing. It will, though, be noted for inclusion in any future revision of 46 CFR Subchapter T. Your proposal for dissemination to the field via a G-MOC Policy letter has been taken for action.
5. Any questions regarding this interpretation should be forwarded to LT Brian Armenta, G-MSE-3, phone# (202) 267-2206.

A handwritten signature in black ink, appearing to read "P.A. Richardson".
P.A. RICHARDSON

Copy: G-MSO-2

U.S. Department
of Transportation

United States
Coast Guard



Commanding Officer
U. S. Coast Guard
Marine Safety Office

1615 Poydras Street
New Orleans, LA 70112-1254
Phone: (504) 589-6273

16703/46-183.380
21 APR 1997

From: Commanding Officer, Coast Guard Marine Safety Office,
New Orleans

To: Commandant (G-MSO-2)

Via: Commander, Eighth Coast Guard District (m)

[Handwritten signature and date: 5/13/97]

Subj: TECHNICAL INTERPRETATION OF 46 CFR SUBCHAPTER T INTERIM
FINAL RULE

1. The Interim Final Rule for 46 CFR Subchapter T requires each circuit breaker used for electrical overcurrent protection to meet Standard UL 489 for molded case circuit breakers. Incorporation by reference of this UL standard is a significant change from the previous requirements of Subchapter T. I submit that required compliance with this referenced standard is not necessary from an engineering standpoint for low voltage, direct current electrical systems, is not justified by casualty history, and may prove more costly and burdensome than originally envisioned. I propose amending this requirement in the Final Rule, and disseminating a technical interpretation -- preferably via a Marine Safety Center Technical Note or G-MOC Policy letter -- to provide justifiable relief and promote consistent application of the regulations in the interim.

2. Specifically, §183.380(m) requires each circuit breaker to:

a. meet UL 489, "Molded-Case Circuit Breakers and Circuit Breaker Enclosures," or other standard specified by the Commandant;

b. be of the manually reset type;

c. be designed for inverse time delay;

d. be designed for instantaneous short circuit protection;
and

e. be designed for switching duty if used as a switch.

3. The design criteria expressed in subparagraphs b, c and d above were previously required by §183.05-30(a) for circuit breakers in electrical systems operating at less than 50 volts. For years, miniature, thermal overcurrent circuit breakers (by such manufacturers as E-T-A and Blue Seas) meeting the requirements of "old" Subchapter T have been accepted in low voltage DC circuits on numerous small passenger vessels. I am not aware of any significant history of casualties associated with the proper use of such circuit breakers.

Enclosure (2)

21 Apr 1997

Subj: TECHNICAL INTERPRETATION OF 46 CFR SUBCHAPTER T INTERIM
FINAL RULE

4. By requiring compliance with UL 489, the Interim Final Rule has raised the threshold considerably. While compliance with this standard was mandated, presumably, to facilitate determinations of compliance by citing a recognized industry standard, the IFR effectively bans the continued use of equipment which has proven safe and effective for decades. Although the IFR allows for compliance with other standards specified by the Commandant, discussions with the Marine Safety Center and G-MSE-3 reveal that no other circuit breaker standards have been accepted.

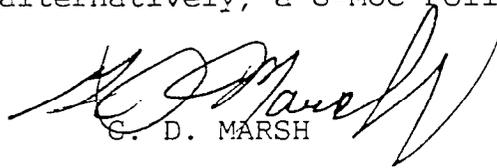
5. The miniature, thermal overcurrent circuit breakers in question generally do not meet the requirements of UL 489 for short-time response at the upper end of their rated current ranges. Specifically, the circuit breakers installed in 12 volt DC circuits on one small passenger vessel recently constructed in this zone operate at 200% of rated current in less than the 12 seconds cited in section 15.8 of UL 489, but are not marked as "Non Time Delay" in accordance with section 49.68 of the UL standard. This UL standard, with the exception of section 38 for instantaneous-trip circuit breakers, is written with thermal-magnetic circuit breakers in mind; that is, it applies primarily to circuit breakers possessing both a thermal trip characteristic for overloads and a magnetic trip characteristic for short circuits. Per IEEE Standard 100, "instantaneous" means that the device operates without deliberate time delay. The miniature, thermal overcurrent circuit breakers do not possess a magnetic trip characteristic, yet their performance satisfies the requirement of 46 CFR 183.380(m)(2) for "instantaneous short circuit protection."

6. I note further that compliance with UL 489 is not required by American Boat and Yacht Council (ABYC) Project E-9, "Direct Current (DC) Electrical Systems on Boats." Compliance with this ABYC standard is accepted as an alternative to compliance with the generally more onerous requirements of 46 CFR Part 183 for small passenger vessels not more than 65 feet in length carrying not more than 12 passengers; see 46 CFR 183.130(a)(2)(ii). The reduced risk of fire and electrical shock posed by electrical circuits operating at less than 50 volts is also recognized in 46 CFR 183.130(b), which permits compliance with the cable and wiring requirements of 33 CFR 183.430 (for recreational vessels) for such circuits in lieu of those contained in 46 CFR 183.340. Clearly, the IFR makes some special provisions for circuits of less than 50 volts, and permits the use of the miniature, thermal overcurrent circuit breakers in question on some small passenger vessels subject to the IFR.

16703/46-183.380
21 Apr 1997

Subj: TECHNICAL INTERPRETATION OF 46 CFR SUBCHAPTER T INTERIM
FINAL RULE

7. I believe the continued acceptance of miniature, thermal overcurrent circuit breakers not meeting UL 489 is safe, appropriate, and economically justifiable in DC circuits of less than 50 volts on small passenger vessels. I propose that compliance with UL 489 is neither necessary for safety nor desirable from a cost-benefit consideration for circuit breakers in DC circuits of less than 50 volts, and urge that the Final Rule for CGD 85-080 reflect this determination. In order to promote consistent application of the regulations, I further propose that this view be disseminated to the field as a formal policy determination by means of, preferably, a Marine Safety Center Technical Note or, alternatively, a G-MOC Policy letter.



G. D. MARSH

Copy: Marine Safety Center