

Catalina

TECHNICAL SECTION • FEBRUARY 2004 • VOL 22 • NO 1

MAINSHEET

C470 Association Technical Editor
 Jim Wohleber
 P.O. Box 157
 Friendship, MA 20758
 jetjockey6@aol.com

The two codes pertaining to lightning protection of sailboats are the NFPA (National Fire Protection Association) and the ABYC (American Boat and Yacht Council). These codes are constantly being updated as new research, hardware and building techniques evolve. In the early 1990's both codes were rewritten due to significant research done by Ewen Thompson of the University of Florida. His works, available to the boating public, include a 23-minute video on lightning protection for boats.

Our Catalina yachts are not delivered to the dealers from the factory with a lightning protection system installed. The reason is simple: There

are no systems available today which will protect a sailboat from being hit by lightning with any degree of certainty. There are also no dissipation systems that can guarantee that, in the event of a strike, that all electrical current will be safely discharged from the boat through the installed system with no damage to occupants or equipment. Indeed, boats both power and sail with extensive lightning systems installed are regularly hit and damaged by lightning.

NFPA and ABYC provide a codified methodology for attachment, routing and corrosion protection of hardware for grounding/bonding and electrical dissipation purposes. These codes are guidance only and not regulatory in nature. The ABYC code specifically notes that its provisions exist in order "to provide a conductive path for the adequate discharge of electrical currents ..." There is no guarantee that a lightning strike will follow the constructed path even if the path is built in accordance with the code.

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Indeed, ABYC code Section 4.7.1 specifically states, "To minimize side flashes...boat's wiring". A side flash is the arcing of electrical energy from one wire running in parallel to another.

Generally, the Codes provide that grounding and discharge cable runs shall be as straight and vertical as possible, with necessary bends no less than 90 degrees, and constructed of no less than #4 AWG grounding wire. Interestingly, large metal objects such as fuel tanks, engines, winches, etc., which are within 6 feet of a lightning conductor path must be interconnected with each other by a cable no less than #6 AWG wire. Remember, the differences in paths: one path on the boat is for grounding and the other path is for discharge of electrical energy from a strike. Grounding attempts to create a neutral "hole in the water" which is not attractive to lightning strikes. conductive path exists for the discharge of electricity when a strike occurs.

It may seem that the codes are nebulous in their orientation. However,

SUPPLEMENT TO CATALINA MAINSHEET MAGAZINE

Publisher Editor

Jim Holder
 830 Willow Lake
 Evans, GA
 (706) 651-0533
 jholder@mainsheet.net

Technical Editor

Gerry Douglas
 Designer & Engineer
 Catalina Yachts
 (818) 884-7700
 gerard@catalinayachts.com

DIRECT QUESTIONS AND COMMENTS TO YOUR CLASS TECHNICAL EDITOR.

Catalina 470
 Jim Wohleber
 Jetjockey@aol.com

Catalina 42
 Garry Willis
 garrywillis@attbi.com

Catalina 400
 Ron Marcuse
 CaptRon@optonline.net

Catalina 380/390
 Warren Elliott
 warrenell@msn.com

Catalina 38
 Tom Troncalli
 Tdtron@earthlink.net

Catalina 36
 Bob McCullough
 mcmccullough@comcast.net

Catalina 36 MKII
 Tom Senator
 tsenator@cisco.com

Catalina 34
 Steve Lyle
 TechEditor@c34.org

Catalina 320
 Rod Boer
 Rod.Boer@verizon.net

Catalina 310
 Bill Lewis
 wol1@yahoo.com

Catalina 30
 (edited by Max Munger)
 techtalk@catalina30.com

Catalina 27
 Harry M. Cowgill
 molyc27@cox.net

Catalina 270
 Phil Agur
 p.agur@stglobal.net

Capri 26
 Bob Unkel
 Unkel@one.net

Catalina 250
 Arlyn Stewart
 aa5by@cox-internet.com

Capri 14.2
 Ed Jones
 rocket18@cts.com

Catalina Mainsheet is published quarterly by Eagle Ltd., 830 Willow Lake, Evans, GA 30809 • Phone&Fax (706) 651-0533 • jholder@mainsheet.net
 For advertising information, contact Jim Holder, Eagle Ltd. For subscription information see page 63.

Technical articles are the opinion of the authors and not necessarily the advice of Catalina Yachts, Catalina Mainsheet or the National Associations.

one codified area exists that is based in fact, verified in experience and commonly used. By personal experience I can attest to the fact that this works! I am referring to the zone of protection afforded by a lightning protective mast. It has been shown that, if a grounded conductor is available, it will divert to itself a strike which would otherwise contact the water/boat.

The zone of protection is based on observed data indicating that the lightning protective mast, if installed, shall be located so that the zone of protection covers the entire boat. This is calculated, for Catalina 470's, in a different manner than for boats with masts less than 50' tall. For our class of boat, the zone of protection is calculated by a concave arc with a radius of 100 feet extending from the top of the mast to the water. Within the zone of protection the risk of a lightning strike is greatly reduced. For boats with masts less than 50 feet in height the zone of protection is a straight line from the top of the mast to the water. When BECKONING... was struck all aboard were within the zone of protection and no injuries were sustained.

The ABYC and NFPA codes exist to aid in the reduction of the incidence and the severity of damage of lightning strikes on boats. As stated above, no foolproof methods or hardware have been developed to guarantee either of the above. There do exist several bodies of thought and practice developed over the years that experienced mariners believe does lessen lighting incidents and the resulting damages. Those practical methods will be dealt with in the last and final article on lightning.—*Jim Wohlleber, Beckoning, C470 #76*

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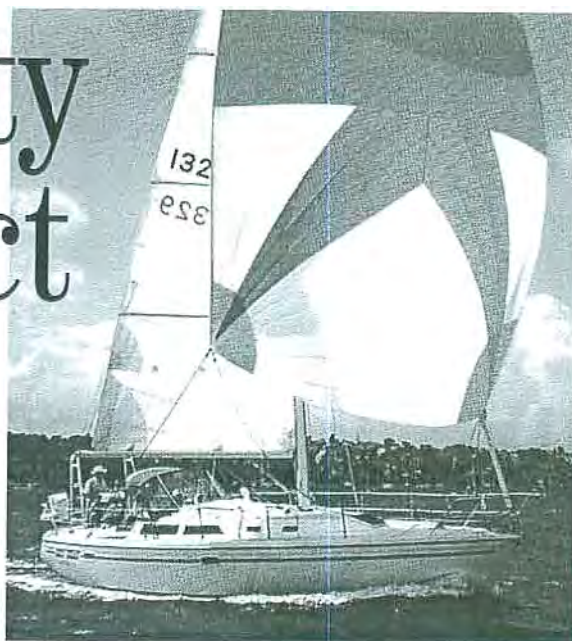
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