

Catalina

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MAINSHEET

Technical Editor
 Jim Wohleber
 PO. Box 157
 Friendship, MA 20758
 jetjockey@aol.com

The C470 list on Sailnet.com has become a very active site for discussion among owners about maintaining and equipping a Catalina 470. I encourage everyone to join the list and take a look. There is no charge for participation. Go to www.sailnet.com, and look at the site index on the left side. Click "Join E-mail List" under the Member's Center section of the index. Then click "Display All Active Lists", then click the "C470 Discussion List" and fill out the brief form to join. You will from then on receive copies of all mail sent to the list by C470 owners and will also be given instructions on how to submit mail to the list.

Zeus, Thor and the C470 Fleet...

Lightning...the weapon of the Gods! Zeus threw it; Thor made it with his hammer. It's power, beauty and randomness are awesome to watch... until it hits your boat!!! Since July 1st, 2003 no less than 6 C470s have been hit by lightning in various parts of the USA. One (mine) sustained heavy damage and three others sustained moderate damage. Several C400s have also been struck. Thankfully, no one has been injured.

The next three Technical articles, along with a thorough discussion at the Annapolis C470 owner's dinner on the subject, will deal with lightning. What it is, where and why it happens will be covered in this article; the second will deal with application theories, codes and research; the last with hardware and "best practice" for dealing with the reality of lightning strikes on the fleet.

Within a cumulonimbus ("CB") cloud, super-cooled water droplets and ice crystals (AKA hydrometeors) created by the lifting and cooling of the

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updrafts, bump into each other. Not fully understood is why the larger particles accept negative charges and the smaller accept positive charges. These hydrometeors are separated by charge as the cloud becomes more vigorous and dynamic. The resulting difference inside the cloud between positive and negative particles results in POTENTIAL. The discharge of lightning is a way that this potential is eased.

Most of the negative particles collect on the bottom of the CB. Positive charges collect on things like barns, tall buildings and masts. A "stepped leader", a jagged path of ionized particles with each step about 150 feet long, descends from the cloud. When the stepped leader approaches to within 150 feet of a positive source, a streamer from the positive source rises to meet its downward traveling negatively charged counterpart. When the two make contact a current RISES from the positive source making a circuit; the negative electrical charge from the CB then descends via the

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Publisher/Editor

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

Technical Consultant

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 38
 Tom Troncali
 Tidron@earthlink.net

Catalina 320
 Rod Boer
 Rod.Boer@verison.net

Catalina 270
 Phil Agur
 pjaagur@sbcglobal.net

Capri 14.2
 Ed Jones
 rooket88@cts.com

Catalina 42
 Garry Willis
 garrywillis@attbi.com

Catalina 36
 Bob McCullough
 rmcullough@comcast.net

Catalina 310
 Bill Lewis
 wol1@yahoo.com

Capri 26
 Bob Unkel
 Unkel@one.net

Catalina 400
 Ron Marcuse
 CaptRon@optonline.net

Catalina 36 MKII
 Tom Senator
 tsenator@cisco.com

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

Catalina 25/250
 Russell & Noelle Fredericksen
 rjibe@bellsouth.net

Catalina 380/390
 Warren Elliott
 warrenell@msn.com

Catalina 34
 Steve Lyle
 TechEditor@c34.org

Catalina 27
 Harry M. Cowgill
 molyc27@cox.net

Catalina 18
 Erik Van Renselaar
 esvan@firedreptel.net

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leader and lightning occurs. Most interestingly, research has shown that the most powerful lightning bolts emanate from supercells (super-jumbo thunderstorms) and are positively rather than negatively charged. These positively charged bolts are responsible for starting many forest fires. Why they only occur from large CB's is not yet fully understood.

Only 25% of lightning is cloud to ground/mast; the remainder is inter/intra cloud discharge. Commercial jet aircraft with their aluminum skins and well-designed lightning discharge wicks on all control surfaces are regularly hit but seldom damaged. In 24 years of flying jet aircraft I have also regularly seen St. Elmo's fire dancing across the windscreen with no effect. Navy warships, built of aluminum and steel, are in essence a huge grounding plate and are seldom affected by a strike. In theory, an aluminum mast on a well-grounded fiberglass boat should follow the rules...

Florida, along with the Himalayas and central Africa is the world's capital for lightning strikes. The north and south Poles seldom experience the phenomenon, nor do the oceans. The

convergence of air masses, offshore/onshore breezes and upslope lifting effects in mountainous areas coupled with an abundance of moisture produce an environment conducive to lightning. Statistically, you are less likely to be hit on the West coast of the USA than anywhere in North America; more likely in the South-East USA and the least likely to be hit offshore.

The strength and power of lightning bolts is awesome. Lightning strikes have been measured in mega (Millions) volts and even the smaller of strikes have been detected in the kilo-amp range. Some larger strikes, observed during lightning research, were so powerful that even highly sophisticated measuring equipment could not ascertain the amperage. One strike was estimated at well into the millions of amps. The strike which decimated my boat, Beckoning... was conservatively estimated at 500,000 to one million volts. Our fleet type has been hit hard this year by lightning but in past years we have experienced few strikes and none with the devastation of 2003. These are certainly random events. Avoidance of CB's is preferable but not always possible. Outrunning a CB

moving at 35 knots in an 8 knot sailboat is not always an option. As cruising skippers our best defense is knowledge of the weather, the terrain and hoping that we have the right equipment in the right place at the right time. -Jim Wohlleber, Beckoning, C470 #76

enjoy below:

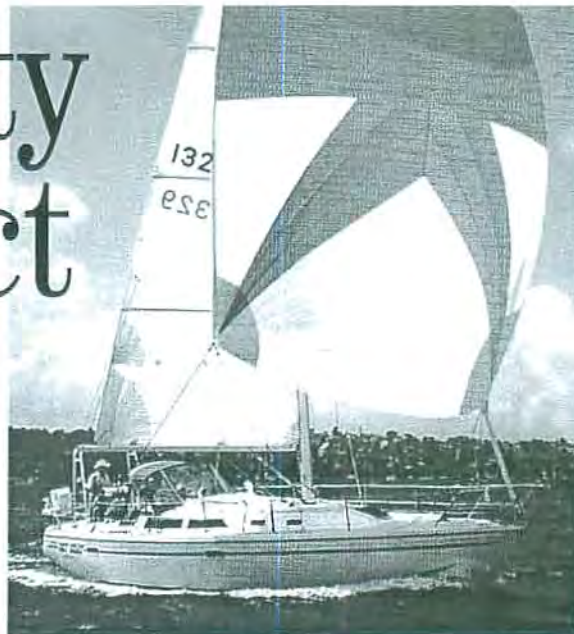
C470 Burgees Are Now Available

Contact Diana Frizzelle at rfizzelle@aol.com
The cost is \$25.00 each which includes shipping and tax.

C470 Trader's Corner

Do you have any C470 items you want to sell or buy? We are keeping a list on the C470 Website. Log on to www.Catalina470.Org and click the for sale button. GlenMc470@aol.com.

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