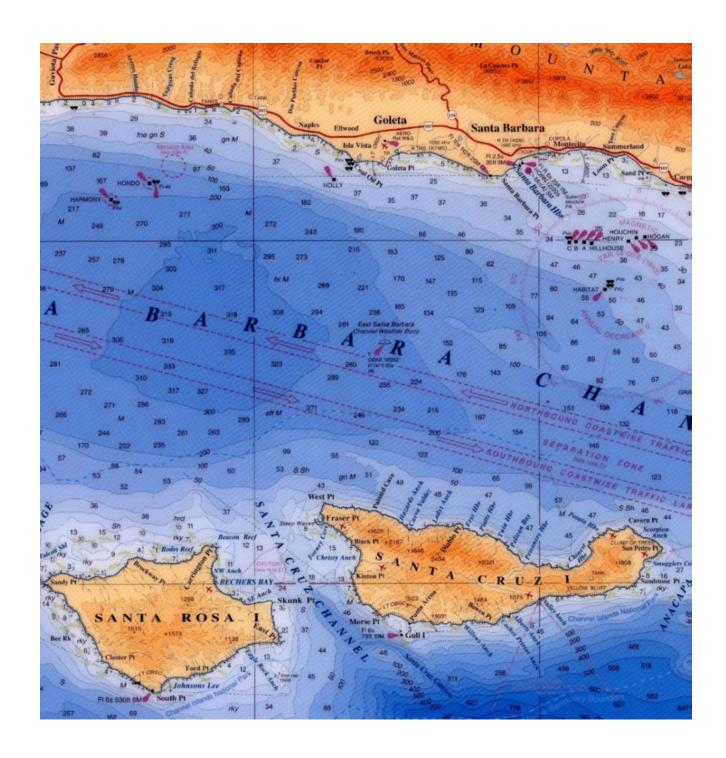


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# **Signal Hoist**



## Santa Barbara Sail & Power Squadron Monthly Newsletter November 2022





### **COMMANDER'S MESSAGE**

**Cdr. Virginia Johns, P** 

Virginia is on a land cruise to the Southwest at the moment and is looking forward to seeing you all at the Maritime Museum Mixer, November 16, and following that, the Holiday Party. Look for more details for these events below. *Editor* 

### **Upcoming Activities**

Nov 16 Wed Maritime Museum Mixer Santa Barbara 5:00pm- Maritime

7:00pm Maritime
Maritime

Dec 10 Sat Holiday Party Mulligan's

6:00pm Cocktails7:00pm Buffet Dinner



#### Maritime Museum Mixer

Wednesday, November 16, 2022
5:00 to 7:00 p.m.
Hosted Wine and Appetizers
SB Maritime Museum

We will have the Museum all to ourselves. Join us for two short hours of comaraderie - sharing nautical knowledge, boating stories, and friendship.

Presentations at 5:30pm

Hosted by
Santa Barbara Sail and Power Squadron
Santa Barbara Sailing Club

RSVP by Monday, November 7 to Suzette Seagoe shseagoe@gmail.com or 530 277-1786

(If you would like to help in any way, including the day of the event, with set-up, greeting, and/ or pouring wine, please let Suzette know at the above email or phone number.)



#### **Dockside Brunch**

It was a slightly overcast day for the dockside brunch hosted by Ed and Martha Kaufman on the dock, along side their boat, Aisling. The weather made it very comfortable — not too hot or cold. Pancakes, including pumpkin



spice, with all the fixings were served by our hosts, Ed and Martha. Many other delicious brunch delicacies were brought to share. We were stuffed!! It was also an exciting day to be at the Harbor since it was the 150-year-celebration of Stearn's Wharf and cannons could be heard in the distance. Here are some photos (provided by Betty Koch — thank-you Betty).





### **Lead Acid Batteries - Not Dead, Yet**

#### Rich Ciolino

I hope this story doesn't jinx me, but here goes....There seems to be a fair amount of talk about Lithium based batteries and their applicability for cruising boats. They are smaller and lighter and pack more energy than traditional lead acid batteries, and some people are converting to them on their boats. Don't despair though because there's still a place for traditional lead acid batteries, especially for existing boats. Simply put it's a lot more involved than just replacing your dead or underachieving lead acid batteries with Lithium based batteries and for many cases I'd bet that staying with lead acid batteries is just fine for the typical boat owner. I'm not going to get into the pros and cons of battery technology and doing a replacement on a boat since it's complicated and I don't profess to be that knowledgeable on the subject. I am going to talk about my own needs and satisfaction with lead acid batteries, in particular the AGM lead acid batteries that comprise our "house" battery bank that are still performing well enough after about 8 years. Of course, because of age and use they don't have the Capacity (as measured in Amp Hours (Ah) of energy storage) that they had when new, but they provide enough Capacity for our present sailing needs.

First, some background: We installed our AGM (Absorbed Glass Mat) deep discharge lead acid batteries in 2014 while preparing for the 2015 Baja Ha Ha Sailboat Ralley. In 2015 before the trip we added approximately 400 watts of solar panels (2x200 watts) to provide daylight power needs and charge the batteries. One of the key features of AGM batteries is that they



are sealed and don't require maintenance. I selected the largest Capacity "Lifeline" AGM 12 volt batteries that would fit into our boat's existing battery storage compartment. Also, there were no wiring changes required, it's just a battery swap. Their cost? About \$300 each. Today these same batteries sell for about \$390 each.

This gave us a house battery bank consisting of two 125 Ah batteries wired in parallel so the voltage is nominally 12 volts and the Capacity is double what one battery would be, that is, we'd have

250 Ah of Capacity. However, according to lead acid battery supplier data, the lower the in-use Depth of Discharge the better as far as battery life is concerned and they recommend a Depth of Discharge of 50% to achieve an End of Life of 1,000 50% discharge/charge cycles. End of Life isn't so bad per the manufacture's data because they define it as when the Capacity is 80% of new. So, in our case, we had a nominal new battery bank Capacity of 125 Ah, not 250 Ah.

Lead acid batteries are complicated in that many factors go into determining their End of Life when in use. Manufacturers provide really nice performance data but all of it is the result of looking at specific characteristics under laboratory conditions. Although it's possible that some applications are closer to a laboratory test condition, operating as a "house" battery bank on a boat is not one of them. For instance: battery Capacity increases with lower current loads and typical boat loads can vary quite a bit; the number of charge/discharge cycles along with their Depth of Discharge affects battery life; batteries lose Capacity with storage time. These characteristics make it difficult to predict when a battery is going to fail to deliver usable electrical energy for one's boat.

One way to get a feel for the battery bank's condition is to measure its Capacity and compare it to its new battery Capacity. This can be done by discharging the fully charged battery bank at a known current load while measuring its Ah output. This data along with the battery manufacturer's data makes it possible to get a pretty good estimate of the battery bank's Capacity. I've done a few of these and the most recent test result indicates we have about 50% of the new batteries' Capacity when tested to the recommended 50% Depth of Discharge.

I'm going to dig into the weeds a bit here but hang on as I think it is useful to understand why I think the test result is pretty good news. In our case 50% Capacity equates to about 65 Ah for the battery bank which is enough to handle our biggest current load that occurs at night to keep our refrigerator going. It's operating 24/7 and I don't use shore power to charge the batteries but instead let the batteries cycle with the solar panels charging them during the day. An interesting bit of data is that we have over 2,500 cycles on the battery bank at this time. The refrigerator load is about 40 Ah from sunset to sunrise or 20 Ah per battery. Based on the test

data the present 50% Depth of Discharge battery Capacity is 32.6 Ah so each cycle is 20Ah/32.6Ah = 61%. That's not ideal because it exceeds the recommended 50% Depth of Discharge.

The test was done as follows: I ran a relatively constant current discharge test while measuring Ah used until the battery bank voltage reached 12.15 volts which is defined by the manufacturer as 50% of Capacity at a load current of 10.9 Amps. (A voltage of 10.5 volts is considered 100% discharged.) The test took six hours and the total energy used was 65.2 Ah for 65.2Ah/6hr = 10.9 Amps average current load which works out to be 10.9/2 or 5.5 Amps per battery. This also means that each battery supplied 65.2Ah/2 = 32.6Ah during the test. According to the manufacturer's data the full new single battery Capacity is 127 Ah for a 5.5 Amp current, so at 50% Depth of Discharge the new-battery Capacity would be 127Ah/2 = 63.5Ah. Finally, the present single battery Capacity of 32.6 Ah is 32.6Ah/63.5Ah = 0.51 or approximately 50% of new as reported above.

To sum it up I am very pleased with these batteries. They come with a 5 year warranty and we're at 8 years now and, tempting the jinx again, they're handling all our cruising needs. For instance we typically stay on a Catalina Island Two Harbors mooring ball for at least a week and we don't have to run the engine to charge the batteries, thanks to the solar panels. I wish I could say the same for our waste holding tank, but that's another story.









The <u>Signal Hoist</u> is the official publication of the Santa Barbara Sail & Power Squadron. Articles of interest to the membership should be forwarded in writing via email to the Editor by the 20th of the month in order to be included in the next issue. We solicit the submission of your articles on safety, boating, cruising, racing, and squadron activities. Accompanying relevant photos are appreciated. We encourage articles by our members. Send us your true or tall tales. Articles, opinions, and advertisements published herein do not necessarily reflect squadron policy or endorsement unless so designated.

Editor: Peggy Ciolino, P

Proofreader: Lt/C Richard Ciolino, JN

Squadron Photographer: Janis Johnson, S SBSPS Website Manager: Lt/C Steve York, P

Lt/C Eric Peterson, AP

Website address: <u>www.sbsps.net</u>

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