Cruiser Log

The Newsletter of the North American Cruiser Association

Volume 18 Issue 1 March 2018

Cruising the Northeast Loop, Final Installment

This marks a real milestone for us. The trip thus far has been more adventure, challenge, and hard motoring than we had ever expected. The southern part of Nova Scotia will not be a cake-walk, but everyone we talk to here says it is easy cruising. We'll see.

We now sit in Halifax Harbor. During our first attempt to leave Liscomb Mills Lodge, we sailed out into the Atlantic and encountered six- to eight-foot waves that tossed poor *Pacific Pixie* every which way but loose. After two miles and a nanosecond of deliberation, we did an about-face and spent another day enjoying the Jacuzzi at the lodge. Next morning, the forecast was for light winds and one- to two-meter seas, just like the day before. This time, the winds were, indeed, calm, and we did 96 miles all the way to Halifax with the seas on our front quarter (that means we rolled and pitched for eleven hours).

Halifax is a busy city with lots of things to see and do. We toured the art museum and the Maritime Museum and, of course, enjoyed the shopping. The rain has descended upon us; for two days, it has alternated between downpours and drizzle. We are now waiting for the seas to lay down, so we can travel to the little coves and bays of southern Nova Scotia.

Inside This Issue:

The forecast is for two-meter seas and twenty-knot winds. We got a call from a cruiser who left the harbor, and he said it was less than ten knots and seas less than a meter. So, we left. A half-hour out of Halifax, the wind was twenty knots and the seas, two meters. I wanted to turn back, but Barbara said, "We are not turning back!!!" So, on we went for forty miles to Lunenburg Harbor. We were beat, but *Pacific Pixie* and Coco did fine.

Lunenburg is a typical seaside village, founded by German immigrants in the 1750's. The place is a tourist magnet. The houses are painted in reds, greens, blues, and many shades of pastels in between. We are tied to a fixed wharf that towers over *Pixie,* so we must climb up a ladder taller than our flybridge to reach the deck of the wharf. It is inconvenient but manageable. Tourists who are visiting the Fisheries Museum wharf look down at us sitting in our cabin. I wave at them, and they get embarrassed and walk away.

You know you have had a rough passage when you find seaweed on the flybridge, have been through

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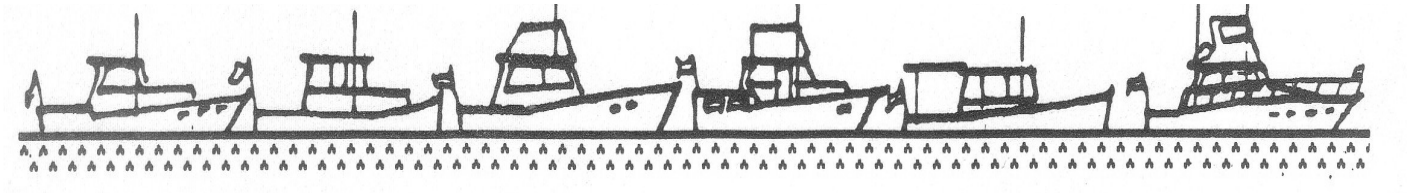

North American Cruiser Association

For help or information, visit our web site at http://www.navrally.org

The site provides a resource for boaters looking for information, to learn more about predicted logging or NACA, or to find a nearby member organization.

Feel free to call any of us with your thoughts and ideas!

Commodore
Ed Denaci (h) 858.672.1799
(c) 858.733.1460
E-mail: edenaci@san.rr.com

Vice Commodore
Maurice McGough (h) 727.743.3062
E-mail: maurice.mcgough@gmail.com

Rear Commodore
Ted Moorman (h) 847.234.7891
(c) 847.977.7892
E-mail: tmoorman747@aol.com

Secretary/Treasurer
John Burwell (h) 847.234.7891
(c) 847.977.7892
E-mail:

Jr. Staff Commodore
Ed Kutchma (h) 805.640.1570
E-mail: kutchma@aol.com

Chairman of the Board
Tom Collins (h) 818.363.6292
E-mail: admiral@ktb.net

2018 Directors at Large

Steve Greene	SDCA
Paul Swanson	SBCCA
Tim Subert	IPBA/N
Barbara Weller	SPYC

Chief Scorer
Bob Lindal (h) 206.325.4508
E-mail: BobL@lindal.com

***Cruiser Log* Editor/Publisher**
Elaine Townsend (h) 858.649.6413
E-mail: thepresence98@yahoo.com

Website Manager
Jeff Calabrese (h) 619.656.8056
E-mail: jeffc5250@sbcglobal.net

NACA Objectives

The objective of the North American Cruiser Association is to promote the sport of Predicted Log Contests in North America. Pursuant to this objective, NACA will:

1. Publish and distribute a periodic newsletter known as *Cruiser Log*, which shall contain news and information pertaining to the sport.

2. Schedule and coordinate an annual "North American Invitational" (NAI) Predicted Log Contest.

3. Sanction contests of member associations that are to be scored for NACA points.

4. Maintain and publish scoring and standings of Predicted Log contestants participating in NACA sanctioned contests.

5. Provide perpetual and suitable keeper trophies and other awards for winners of such North American Predicted Log series and events as may be established by NACA.

6. Establish "Recommended Contest Rules" for NACA sanctioned Predicted Log Contests.

7. Generally be responsive to the needs and requirements of member associations and of the sport of Predicted Log Contests.

8. Support boating and Corinthian yachting in general.

Cruiser Log Publication Deadlines

Submit by:	For publication in:
February 15	March
May15	June
August 15	September
November 15	December

If you miss a deadline, your article will be published in a future issue.

Commodore's Corner

In preparation for these comments, I re-read the NACA objectives (see page 2). The Bridge and Directors have been very diligent in fulfilling these objectives. We have a responsibility to continue to "do the jobs". Fortunately, it is a pleasure to support cruiser navigation.

One area of focus, not included directly in the list of objectives, is to maintain and, if possible, to increase the number of competitors in cruiser navigation. There are inherent challenges in that effort.

One: a competitor needs an appropriate boat. That is usually solved by "selling" cruiser navigation to members of a yacht club or power squadron, especially to new members. And I do mean sell! Tell them why it's fun. Tell them how you end the contests with social gatherings. Invite them along on a competition and make them a part of it. Invite them to the social gatherings.

Two: a competitor must plan a contest. It can sound overwhelming. It's not. Everyone I know uses a computer program such as Coastal Explorer©. I plotted one contest by hand about twenty years ago and purchased a program compatible with Windows©. Shortly after discovering Coastal Explorer, I purchased it and have used it ever since. Any boat owner can afford Coastal Explorer. If this potential competitor's eyes don't glaze over when you describe differences in time, sell hard. Explain how we share methods, techniques, and computer programs. We help each other.

Cruiser navigation is social. It's fun. It's my passion. I'm looking forward to competing in the NAI at Saint Petersburg Yacht Club in October.

Ed Denaci
NACA Commodore

- Editor's Note:
The above original cartoon was drawn by Barbara Kutchma, a very talented artist with a great sense of humor. Several more will appear in future issues of *Cruiser Log*. According to her husband Ed, he is the inspiration for them.

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Predicted Log/Cruiser Navigation Lessons Learned: 2000 to 2018

Introduction

I am documenting a few of the many lessons I've learned after eighteen years of cruiser navigation competition in San Diego as a member of the San Diego Cruiser Association and as a participant in several west coast Barusch/Castagna and North American Invitational (NAI) regattas. Hopefully, these lessons will help other less experienced skippers move up the inevitable learning curve.

I've started with the basics of boat calibration, moved ahead with contest planning and on-the-water course piloting, and, finally, I visit participating in regional and national regattas. Of course, any errors, omissions, or misstatements are mine alone, and any opinions are just reflections of my own experience and personal bias. There is no money-back guarantee offered.

Baseline Calibration Tasks

Compass Calibration: Perhaps the most basic calibration task is a calibration (or confirmation) of the boat's compasses. Most boats will have a liquid compass near the helm station and also an electronic compass wired into an autopilot.

The liquid compass can be calibrated by boat owners using instructions provided by the manufacturer or by using their GPS receivers and piloting several compass points. Autopilot compasses are often calibrated using computer-based instructions and usually require maneuvering the boat on the water in a circle, away from known disturbances.

While basic to precision cruiser navigation, it amazes me how often I encounter boats that do not have calibrated compasses and display errors of up to twenty degrees in certain headings. So, before we begin to compete, it is essential that the skippers know how accurate their compasses are and what bearing deviations are present, based on their boat's heading. On that note, I find compass deviations of one or two degrees acceptable, because, frankly, I have difficulty steering the boat to that degree of precision. On my boat, I'm aware of those discrepancies (in the north and south headings) and steer accordingly.

A final lesson learned is that once the compasses are calibrated, be vigilant that sources of magnetic interference are not placed near any compass. A hand vacuum that I inadvertently placed on the cabin deck near my fluxgate autopilot compass changed my autopilot headings significantly.

Speed Calibration: The first decision a skipper has to make is to select a baseline speed for the boat. After several trials between 7.5 knots and 8.5 knots, I've found that a comfortable speed for the semi-displacement trawler I own (Grand Banks 36' Europa single screw) is just a tad greater than the calculated hull speed. My calculated hull speed is 8.0 knots, and my baseline competition speed is 8.2 knots. The best speed for a full displacement hull or a planing hull would, of course, be different.

The sweet spot is fast enough to mitigate the effects of cross currents and wind and slow enough to not waste fuel and maneuverability pushing the boat through or over the water. Your typical course venue may affect your choice; ocean competition has many differences over bay competition. Once you are comfortable with a baseline still-water boat speed, the next step is to calibrate the boat speed to engine rpm.

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NACA clothing (other than ball caps)
is available at the NACA Ship's Store.
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Click on NACA Ship's Store. This opens a link to Land's End Business Outfitters. Select your product and choice of logo. It is simple to use, and the merchandise is of good quality.

Predicted Log/Cruiser Navigation Lessons Learned (Continued from page 4)

Boat Speed/RPM Calibration: Boat speed calibration is a fundamental datum for accurately predicting baseline boat speed as a function of engine rpm. I've found that running more than three runs is much better for averaging the boat speed at any given engine rpm. I've observed that my most accurate measurements were made during a gentle ebb or flood current (no full moon) with little, if any, wind over a full nautical-mile course. I found that boat weight makes a difference of 45 rpm between full tanks (400 gallons) and an almost-empty tank for a baseline speed of 8.2 knots. Each additional crew member I add equates to approximately a two-rpm adjustment. Without saying, the boat bottom condition is another variable, and calibration (as well as competition) should be made with a clean, maintained hull.

No matter what the calibration conditions, sometimes I've had carefully documented calibration data that just do not agree with previous and future calibrations. This is one of the dangers of running a calibration just prior to competing (as some skippers do during the various regattas). I've gathered data from over 100 documented calibration runs and now run a check calibration only when I get fuel or suspect some damage to the propeller.

Calibration curves illustrating the sensitivity of speed to engine rpm near the baseline speed are useful for adjusting the rpm for unexpected currents. Every skipper should know the approximate engine rpm needed to adjust the boat speed by one or five-tenths of a knot.

One last word concerning digital tachometers: if you are really serious about accurate boat speed calibration, there is no other choice, in my opinion. Analog tachometers are notorious for systemic errors based upon their source of engine revolutions and should be viewed only as "roughly right".

Boat Turn Characteristics: Boat turning radius and turning angles can add many seconds of time to a common predicted log contest. Many variables are involved, including baseline boat speed, boat engine configurations (single vs. twin), boat hull configurations, etc.

I've found that once the baseline boat speed is set, a turn calibration is in order, both port and starboard. The key variables are the turn radius for a smooth turn and the turn time for incremental angles from 10 degrees to a full 180-degree turn. Once these variables are plotted, a comparison with the same distance without turning should yield an approximate turn time profile and turning radius. What is required is a table of turning angle and turning time penalty (in seconds) at the baseline speed.

Some boats, such as mine, with hydraulic steering, can be adjusted for rudder angle and turning radius as a function of wheel position. I'm comfortable with a half turn on the wheel for a rudder angle of 11 degrees, which yields a turn radius of approximately 45 yards. Each boat is different (for example, a 36-foot Grand Banks with twin engines was calibrated to take almost twice the turn radius as the single screw boat), and your comfort zone may be much different. I've found a typical bay contest can add 20 to 40 seconds to my overall predicted time because of the added turn times, and since I've incorporated turn times into my predictions, my scores have improved.

Wind Effects: Wind can effect the baseline boat speed and heading, depending upon the boat design, baseline boat speed, and other variables.

First, let's address the effects of wind on baseline speed. In my experience, any wind over four or five knots can effect baseline boat speed; however, for my boat, a relatively heavy semi-displacement trawler, the greatest wind effect is when the apparent wind is from the bow to about 45 degrees from amidships. From efforts to calibrate these effects,

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Predicted Log/Cruiser Navigation Lessons Learned (Continued from page 5)

I've found that considering just wind alone, an adjustment of up to 0.2 knots is necessary for a wind velocity between 12 and 15 knots. However, one doesn't often just experience the wind, but also wind-driven seas. These can add another 0.2 knot adjustment, depending upon the sea state, especially in ocean swells.

Wind will also effect boat heading, depending upon the amount of sail provided by the cockpit and cabin, boat hull configuration, and weight. It is hard to develop any basic rules (other than awareness) as to the overall effect. On my boat, the center of wind pressure appears to be aft of amidships, causing the boat to head up into the wind if the wind speed is over seven knots, all the while pushing the boat sideways. My advice is to be aware of the wind effects on heading and overall course maintenance and adjust accordingly, using ranges as available and wheel/throttle adjustments.

An anemometer displaying apparent wind direction and speed (not true wind direction and speed) is legal for most contests and useful, especially when piloting in an enclosed flybridge or pilothouse. A flying burgee on the bow will also help. The use of a GPS recording data tracker to display the boat's course on a computer chart following a competition can illustrate (and teach) the effects of wind in piloting a straight line leg.

Standing Starts: Most cruiser navigation regattas and many local competitions require a standing start. The very nature of a standing start introduces added time to the first leg of the race, and this time must be added to the predicted time for the first leg. Theoretically, the process of determining the added seconds resulting from a standing start is simple and straightforward. Just pilot a known distance with and without a standing start and assess the difference in total time. In practice, it is very difficult to obtain consistent data because of the variables associated with increasing the throttle or throttles to the baseline speed, resulting in several tries to get repeatable times. My advice is to avoid standing starts, unless required, and approach the starting location close to your baseline speed.

Race Planning

Computer Based Race Planning: Most competitive skippers use one of many computerized chart plotting and planning programs. I use Rose Point's Coastal Explorer software; however, many other skippers use Nobeltec or one of the other available software programs to plot and plan their contests without difficulty. One of the many things I like about Coastal Explorer is its ability to incorporate the boat's turn radius into the display and distance calculations, using the Predicted Log option for course display.

The first step is analyzing and plotting the announced course instructions, taking care to plot each waypoint or checkpoint as instructed, observing distance off the waypoints, course headings, and timed-run distances. Once this is completed, I look at the overall course, and, where legs are more than 0.5 nautical miles, I often break these up into seg-

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FUTURE NAI EVENTS (Tentative Dates)

2018—St. Petersburg, Florida (October 27)
2019—Chicago, Illinois (August 3)
2020—San Diego, California (October 3)
2021—West Lake Erie Cruiser Assoc. (August 7)
2022—Ventura, California

Predicted Log/Cruiser Navigation Lessons Learned (Continued from page 6)

ments for current predictions. If dog-leg restrictions are not in place (no direct legs), there might be additional opportunities to adjust some legs to use available ranges, buoys, or other aids to assess the currents or help navigation.

The next step is to transfer this information to another program or spreadsheet, identifying legs, headings, distances, and baseline speeds. Many charting programs allow the user to extract data to a spreadsheet format and calculate the various leg time increments. I've developed my own Excel spreadsheet for this purpose. This spreadsheet uses the given start or finish time and baseline speed to calculate the mid-point time for each leg (for current estimate purposes), allows for adding predicted current set and drift, and calculates the adjusted speed over ground and adjusted heading, based on the predicted current direction (set) and current speed (drift).

My experience with regional and national regattas demonstrates that there are often other adjustments to be made, involving timed runs, blind points, requirements for reduced speeds during certain legs, etc. Some ingenuity, coupled with program adjustments, have to be created frequently to accommodate these non-standard requirements.

Turn Time Predictions: After the race spreadsheet is assembled, my next step is to determine the time additions necessary to account for turns. On a separate spreadsheet, I list all the turns for the contest, both port and starboard, and calculate the time lost during the turn at my baseline speed. This data is transferred to my overall contest calculation spreadsheet and is added to the particular leg where the turn occurs. I now have a calculation spreadsheet that shows me the time for each contest leg, taking into account the time lost in each of the turns. The next task is incorporation of predicted current effects.

Current Predictions: The most difficult part of race planning is often current prediction.

Most major coastal navigable waters in the United States have assigned one or more Master Harmonic Tidal Current Stations combined with subsidiary stations. These stations can be found via NOAA online or through the use of various computer programs, including "Tides & Currents". The master stations contain a prediction for each day, based on a cosine-based harmonic, fitted between the times of maximum ebb and flood and slack water observations. Subsidiary stations also indicate the same information for their location, being adjusted as to the relative timing of the max ebbs, max floods, and slacks, and their relative magnitude in relation to the master station. Okay, so far, so good.

The bad news is that the data for many master stations is dated, and the data for the subsidiary stations is often badly outdated. For example, to my knowledge, the last time the subsidiary stations were calibrated for San Diego Bay was in *1934*. While the timing of the full moon can be up to date to the fraction of the minute, the predictions for the tides and currents are increasingly seen to be rough estimates.

Without going into the many land and channel changes that have occurred since these observations were made, let it be said that the official current predictions are just a starting point for our race predictions. Spring of 2017 in San Diego has proved my point. During the first four contests in the bay, all during an ebb tide, all ebb current predictions for many of the affected subsidiary stations were shown to be between 0.3 and 0.5 knots *understated*.

Most of us still use the official predictions, mostly for the timing of the max ebb and flood. However, our final predictions are usually an estimate based on the NOAA predictions and local knowledge. As we'll visit in the next section, this uncer-

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Predicted Log/Cruiser Navigation Lessons Learned (Continued from page 7)

tainty puts more emphasis (aka stress) on our piloting tasks.

Current Speed/Direction and Effect on SOG/ COG: Incorporation of current predictions into the race prediction spreadsheet is not straightforward because of the effect the current direction has on the boat speed and the course that must be steered to maintain a straight line as we plotted the contest. For the two extremes, a current in the same direction as your predicted course or a current precisely abeam, the calculations are not difficult. However, when the current is at an angle to the boat heading, both the effect on boat speed as well as the course to be steered must be calculated or estimated, based on experience. Without getting technical, several reference sources on piloting (Chapman is one) provide vector equations that can be incorporated into a spreadsheet to calculate the change in baseline boat speed as well as the change in heading needed to compensate for the predicted currents.

Planning for the Use of Navigation Electronics During the Contest: During the past several years, sophisticated navigation electronic equipment has increasingly become an integral feature in all new powerboats. Freshman boating members, who will become future cruiser navigation contestants, are embracing these electronics as an essential navigational aid and an enhancement of their boating enjoyment.

Both local and national cruiser navigation associations are responding to this development by encouraging the use of navigational electronics during our contests. This has resulted in contests permitting the use of GPS receivers displaying position coordinates, speed over ground, or other information.

The ability to use electronic navigation information presents additional opportunities for our race planning. If GPS speed over ground data is permitted, our planning must include how we incorporate this information into our planning and piloting. If GPS position information is permitted, we can use this data to accurately transit long legs and accurately achieve blind points or latitude/longitude-based turn points or check points.

The opportunities are many, and, should electronic navigation data be permitted, this information should be an important part of our planning process.

Completing the Plan: Once our calculations are complete with our start, finish, and major leg times, there still remain two important steps to complete our planning process.

The first step is to complete the Contestant's Log, and the Observer's Log, using the predictions we've made during our planning process. While this is a straightforward process, many an error has occurred during this transfer of data, thus deserving a special mention of it here. Check and recheck the predictions and the information that will be provided to the race committee and the assigned observers.

The second step is to document the race planning to assist in piloting the course. There are many approaches to this process, depending upon the preferences of the skipper and his navigator or crew. Since I prefer to steer my own boat in local contests, I will describe the plans I create. Others have different routines and assigned responsibilities and will have different ways to document their piloting instructions.

I prefer to document my piloting instructions on a single sheet of paper in tabular form. (Regattas with longer contests usually take several pages.) The table I assemble shows each leg's start and finish point and appropriate magnetic compass course to steer. For each leg, I annotate waypoints on the leg, the result of the leg (timed "Mark" or "Route Point"), ranges, if available, the expected currents, and the next heading once the leg has been

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Predicted Log/Cruiser Navigation Lessons Learned *(Continued from page 8)*

achieved. Also, I include special instructions for each leg including timed runs, use of GPS, etc. For regattas in unfamiliar waters, I often insert photos of buoys, landmarks, or other navigation features provided by the committee.

I provide a copy of these instructions to my navigator (and sometimes to the observer). This document is my on-the-water piloting instructions.

(*This article, written and submitted by David Weimer of San Diego Cruiser Association, will be continued in the next issue of* Cruiser Log*.)*

Cruising the Northeast Loop, Final Installment *(Continued from page 1)*

twenty-knot winds for eighty miles, and had waves on the nose all the way to Shelburne. This is where Donald McKay designed and built the clipper ships, the fastest sailing ships of the 19th century. Next to the marina is an historic section of town with houses from the clipper ship era, very quaint.

Our next stop was Yarmouth, Nova Scotia, after an eighty-mile trip through the shallows and islands of the south end of Nova Scotia. Yarmouth is a working-class town, no frills. We had 26-foot tides, but, fortunately, we were on a floating dock. We left early the next morning for Eastport, Maine, and, after a ninety-mile trip, tied up and cleared customs.

I think Nova Scotia was trying to be kind to us by giving us two days of flat seas and moderate winds. We saw many whales, puffins, and porpoise along the way. Nova Scotia, you gave us a glimpse of how beautiful you can be.

Our adventure is drawing to a close, and, because we are finally in an area that is boat friendly, it is sad. Every five to ten miles, there is a full-service marina and, in-between them, are several gorgeous anchorages. The choice of where to go and what to see is staggering. It gives me a headache to try to plan our next stop. My only complaint is the abundance of lobster trap floats, even in the fairways. They are everywhere, leading to the marinas and anchorages. We have to hand-steer to avoid them; no auto pilot to ease the way.

We are in Northeast Harbor on Mt. Desert Island. For entertainment, we take a free bus to Bar Harbor to see the cruise ship tourists. For scenery, we take another free bus that loops through the Arcadia National Park and exposes us to some spectacular scenery.

The next stop is a town called Camden, Maine. Imagine Avalon Harbor with ten times the restaurants, shops, moorings, and more docks than Marina Del Rey. That's Camden. We have had a week of warm temperatures and calm seas and have travelled the Maine coast with gusto.

We are now in Portland, Maine, and our marina is having their end-of-season Labor Day barbeque, so all boats out of the water by next week. We had planned to see the New England coast as far as Connecticut, but two hurricanes are forecast. We have hauled the boat; it is waiting to be picked up and trucked home.

Ed Kutchma
Santa Barbara Channel Cruiser Association

0-10 Scale for Logging the Amount of Cloud Cover

0 = clear sky
5 = half covered
10 = sky wholly covered

San Diego Cruiser Association Feedback on the Use of GPS

With 2018 underway, we're all anticipating another year of competition. San Diego Cruiser Association (SDCA) already has completed two rallies (the new name for contests/races) and is focused on the March 10, 2018 rally.

NACA has been working/brainstorming on ways to attract new participants. Suggestions have been presented to use more of the commonly available navigation instrumentation, and some organizations have incorporated the use of Speed Over Ground, Course Made Good, Latitude and Longitude, and Chart Plotters with the planned course and current position shown. The thought is that by making the prediction process easier (wind, current, and crab are essentially eliminated), cruiser navigation will be more attractive to more of the boating population. Southern California Cruiser Association uses SOG frequently in ocean contests, since it is very difficult to read or predict the currents in the Catalina Channel.

On January 20, 2018, SDCA held a contest where SOG, CMG, LL, and Chart Plotters with boat position were allowed. After the rally, I asked the participants to fill out an appreciation form. Note that this rally was held on January 20th, a day with wind up to 25 knots true. Additionally, the moon, sun, and magic conspired to increase the currents by at least 50% during much of the contest. Without SOG, the scores would have been very large.

The participants were asked to insert a number related to their appreciation based on the following basis:

- I hated the use of … and never want to use it in a contest again.
- I disliked the use of .. and can't imagine learning to like it.
- I can take or leave the use of … It may be desirable in certain contests.
- I liked the use of … and want to use it again.
- I loved the use of … and would prefer to use it in all contests.

The numbers were applied to the following criteria:

- Use of LL throughout the contest where not necessary to find a location. Average response was 3.0.
- Use of Speed Over Ground. Average response was 2.83.
- Use of Course Made Good (GPS heading). Average response was 3.0.
- Use of Chart Plotters displaying the boat position. Average response was 2.67.

Written comments included:

- "SOG was no fun. I was constantly adjusting my throttle. However, I learned that the current changes are not linear from one secondary station to another."

- "I did not like SOG, but we needed it today. Using it once in a while would be useful to learn the currents."

The general verbal consensus was that it was certainly a learning experience, was very useful on that wild day, and was not what they wanted to do on a regular basis.

Ed Denaci
San Diego Cruiser Association

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For your annual dues of $15, a print copy of each issue of *Cruiser Log* and the annual roster will be mailed to you.

Complete this form to join or renew membership in the North American Cruiser Association:

Name: _____

Address: _____

City: _____ State: ____ Zip Code: _____

Spouse Name: _____Boat Name: _____

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Boat/Cell Phone:_____

Other Boating Organizations: _____

ANNUAL DUES: $ 15.00

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Cruiser Log

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