BY BEN ELLISON

Flying with Garmin

GARY AND MIN WANT TO PUT THEIR ELECTRONICS EVERYWHERE, INCLUDING ONTO YOUR BIG BOAT.

G1000 avionics onboard a Cessna mustang.

Thomas Haines, editor-in-chief of the world's largest aviation magazine, *AOPA Pilot*, theorizes that the intriguing integrated electronics system pictured at right "is called the Garmin G1000 because the average general aviation pilot will say, 'Gee!' 1,000 times during the demo flight." It's a clever line, but my excuse for repeating it here is to add that the G1000—which puts mapping, radar, gauges, controls, communications, and even live weather imagery across those multiple monitors—also suggests where boat electronics are headed and that Garmin is going to be there.

Haines goes on to write that, while he and his readers in the Aviation Owners and Pilots Association (AOPA) think of the G1000 as revolutionary, for Garmin it's simply evolutionary. That's because "the company founders Gary Burrell and Dr. Min Kao (the Gar and Min in Garmin) have envisioned the G1000 since before they produced their first product in 1989." It's worth noting that while these two hands-on engineers first met while working on early aviation GPS, Burrell was already a Lowrance alumnus. It's also clear, at least retrospectively, that they went out on their own with an apparently bottomless bag of vision and drive.

In those 15 years Garmin has grown from a roomful of engineers into a major electronics player that sold $572 million worth of mostly GPS-related products to flyers, drivers, hikers, and boaters worldwide in 2003 these sales were reportedly up more than 20 percent from 2002, which were said to be up more than 20 percent from 2001, and so on. Garmin is now building a 450,000-square-foot addition to its Olathe, Kansas, headquarters and has its own manufacturing facility in Taiwan. This sort of information may only be available because the company went public in 2001; generally Garmin—like many tech companies—is pretty tight-lipped about what it's up to. For instance, a representative declined

EPIRB/PLB Update

At presstime last month the Equipped to Survive Foundation (ETS) had just announced that its testing had uncovered serious issues with the GPS-equipped EPIRBs and PLBs made by McMurdo. In fact, the units failed to self-locate in *any* of the Foundation's marine tests, which included real-world scenarios like use aboard a liferaft in rain and spray (pictured). I'm using this month's Q&A space to update the story.

West Marine—which, along with BoatU.S., sponsored and attended the testing—has stopped selling McMurdo Precision EPIRBs and Fastfind Plus PLBs, and is advising prior customers to read the test summary and consider a full refund or exchange if they desire. Other retailers like Landfall Navigation are taking similar actions. McMurdo first announced that it will conduct its own test program, similar to ETS's, and then began offering a free soft-

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NEW

Garmin 60C

I can still vividly recall using my first GPS, a Garmin 45, to successfully negotiate a delivery to New York Harbor in fog that was so thick we couldn't see the Verrazano Narrows Bridge even as we steamed underneath it! Experiences like that made GPS, and Garmin. The 45 still works ten years later, but its output seems as antiquated as a sextant's compared to the 60C's amazing versatility. The handheld's reasonably bright 2.6-inch transflective screen can plot my vessel on Garmin's own full-detail BlueCharts (whose coverage was recently extended), track an island trail on a topo, or deliver automated turn-by-turn street routing. It has an eight-MB basemap plus 56 MB of internal storage, accessible via a fast USB PC interface and included routing software. The $482 60C is waterproof, runs 30 hours on two AA batteries, and even includes a few games. Garmin has also introduced the $535 76C, which has similar features in a buttons-above-screen case with 5MB of extra marine basemap and double the chart storage. Users of Garmin fixed plotters who burn their own chart cards could set up either handheld as a fully redundant backup. Users of pre-programmed BlueChart cards might consider the larger, $746 276C portable—yet another new model—which accepts them.

EPIRB/PLB update

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ware upgrade to its GPS-assisted beacons. ETS plans real-world testing of the upgraded units. Another issue brought up in ETS's test report was how submerging the base of a PLB's antenna in water weakened both its 406-MHz call-for-help signal to the satellites and the 121.5-MHz signal that rescuers can hone in on, a problem made worse in McMurdo's Fastfind design because of its antenna well. McMurdo intends to redesign that antenna—ACR already has in its latest PLBs (see page xx)—but the testers at Equipped tell me that the problem is not critical enough to warrant returning a non-GPS PLB. However, it is wise for a person overboard to position a PLB as high and dry as possible, as the U.S. Coast Guard is advising its Fastfind-equipped deck personnel.

Anyone interested in marine safety should check out ETS's report at www.equipped.org. Aside from more guidance on smart EPIRB and PLB use, you'll learn how effective the COSPAS-SARSAT safety system really is (also see "Lifeguards in the Sky," *PMY*, January 2004), even if the desirable GPS option is hard to design and even if its equipment standards need an upgrade. You will also likely come away, as I did, extremely grateful for the good work done by the ETS and its sponsors on our behalf. —B.E.

Got a marine electronics question? Write to Electronics Q&A, Power & Motoryacht, *260 Madison Ave., 8th Fl., New York, NY 10016. Fax: (917) 256-2282. e-mail: PMYElectronics@primedia.com. No phone calls, please.*

The new Marine Network can support 25 sensors and ten multifunction displays.

to say how many of the current 900 employees in Olathe are engineers. My guess is a heck of a lot.

Here's a nugget from Garmin's annual report: "Management expects that its research and development expenses (already $44 million) will increase approximately 20 to 25 percent during 2004 due to the anticipated introduction of approximately 45 new products." No wonder the big boys of marine electronics almost all consider Garmin their biggest long-term worry. While some of these products—like the G1000 or tiny wrist-top GPS for runners—will be of no use to boaters, Garmin has the habit of accessorizing products in one niche with ideas developed in another. The new 60C handheld plotter (see page xx) is a good example, able to do turn-by-turn car routing almost as well as it does boat navigation.

But the big news from Garmin is the recent unveiling of a multistation system aimed squarely at larger boats. At center are the spanking-new 3006 (6.4-inch) and 3010 (10.4-inch) color MFDs (multifunction displays). That's an expression we should all get used to; Raymarine is using it with its new C Series, and it's an apt term to describe the latest from Northstar and Furuno. Garmin's 3000 series MFDs look and act like its popular 2000 plotters and can similarly double as fishfinders with the addition of a GSD20 black box and transducer, but there's much more. The units have dual video inputs and can output to a VGA monitor. They can also purportedly provide verbal alarms and turn prompts (probably like the company's multilingual car navigation systems).

What's more, the 3006 and 3010 can be wired to each other and/or more sensors with Garmin's new Marine Network, which is based on the 100-megabit version of Ethernet except that Garmin has designed its own waterproof Ethernet hardware. The first available sensors are unique. The GDL30 is a satellite receiver able to bring in XM Satellite Radio's new weather data service; almost real-time Nexrad radar and other useful info like wave heights and surface temps are overlaid on the display's BlueCharts. (I'm testing the PC versions of XM WX Weather and two similar products for an in-depth report next month.) The GDL30A adds XM's regular, mostly commercial-free, 100-plus audio channels. The sound is routed to the boat's stereo but is controlled by the MFD or its optional remote. In other words, you'll be able to select tunes or even agitated talk-radio hosts with your plotter! All these items should be shipping about the time you read this with the MFDs starting at $2,400 and the XM receivers at $650 (plus monthly subscriptions).

Garmin engineers at work (including a first peek at a prototype random).

Contrary to normal practice Garmin also introduced a Marine Network sensor that won't be available until early 2005: radar. Details like brochures and pictures and prices are lacking, but it is evident—and not surprising, given the company's style—that the engineers started from scratch. The 2- and 4-kW models announced are self-contained; all the processing goes on inside the 24-inch radomes, meaning installation will only involve running Ethernet and power cables. The radars, which support chart overlay and MARPA, will display on any attached

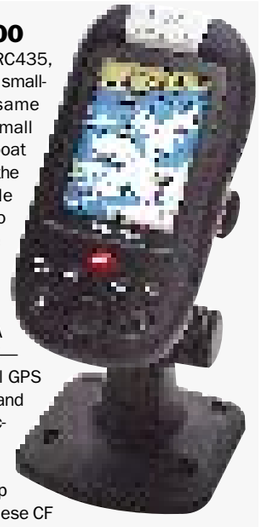
NEW

Garmin iQue

The iQue was a big first for Garmin last year—and is still the only PDA with a built-in GPS—but it's not particularly at home on a boat. It will plot on BlueCharts but can't yet display their included tide predictions and is light on conventional marine navigation functions. Plus it's not waterproof and the normally smooth relationship with Garmin's PC mapping and routing software had to be awkwardly modified to work around the iQue's Palm V operating system. On the other hand, the Palm OS means that the iQue can easily synch with your computer's to-do lists and address book. In fact, this PDA can map such an address with a stylus tap, then route you to it with verbal street turn directions in a wide choice of languages. Perhaps ironically, the $589 iQue also does a good job of running more marine-specific Palm charting programs like Fugawi or Maptech's Outdoor Navigator. It also has a lovely, if battery-sapping, screen. Note that Garmin regularly posts software updates for all its active products, so my complaints might be history tomorrow.

NEW

Raymarine RC400



The submersible RC400 joins the RC435, introduced last year, in Raymarine's small-boat A Series, and includes the same valuable features to maximize a small display. Autozoom can keep your boat and next waypoint always in view on the 3.5-inch transflective screen, while Screen Amplifier offsets the image so you see more chart ahead. The $710, 6.5-inch-high portable comes with a fixed mount and a data/power cable but can also be run on rechargeable NiMH (or alkaline) AA batteries, included. Like the RC435—now also available with an internal GPS useful for open-helm installations—and Raymarine's new C Series multifunction displays, the RC400 uses Navionics Gold charts on Compact Flash cards and thus could back up any of those fixed units. Note that these CF cards have virtually unlimited route and track storage and compatible PC planning software is reportedly in development.

Raymarine ☎ *(800) 539-5539. www.raymarine.com.*

MFD. By the way, all network components are purportedly "plug and play," and all will be upgradeable via PC downloads burned to a MFD's chart card.

A major new system like this raises lots of questions, some of which I was able to throw at Garmin's marine products manager Craig Mehan. Will Marine Network support NMEA 2000 and/or PC interfacing? "Certainly possibilities; we'll assess our customers' needs and continue to develop products that they want." But he had to counter most of my nosy inquiries about items like open-array scanners and bigger displays with a "Sorry, it's standard policy not to comment on any future product plans."

Which is how I got to nosing around the G1000. Lo and behold, there are some obvious similarities between that gee-whiz glass airplane cockpit and the fledgling big-boat system—Ethernet, MFDs, even XM weather. Notable in the G1000 are higher-resolution displays, including a 15-inch model, and integrated VHF communications. It also supports transponder safety systems that are vaguely similar to the upcoming AIS marine safety system; it includes a high-performance, solid-state gyro not unlike the rate-of-turn gyros that are improving marine autopilot and radar overlay performance; and, in fact, a G1000 autopilot is supposedly in development. I asked Mehan if there will eventually be a marine equivalent to the G1000. His careful answer: "That would certainly be cool, wouldn't it?" Gee, yes.

Garmin ☎ *(913) 397-8200. www.garmin.com.*

NEW

ACR AquaFix PLBs

ACR just introduced two Personal Locator Beacons (PLBs). Both 1.7"x5.7"x3" lifesavers can summon search-and-rescue help worldwide using 406 MHz, along with 121.5 MHz for final homing. The $640 AquaFix GPS I can also interface with any NMEA 0183 GPS, while the $750 I/O model adds an internal GPS. Thus either can locate you for rescuers faster and more accurately. These new models were unfortunately not part of the testing discussed in "EPIRB/PLB Update" on page xx, but seem to reflect lessons learned. For instance, several inches of their antenna bases are sealed in plastic, and GPS data acquisition can be tested along with the internal circuitry and the battery (which is user-replaceable). The I/O model also has the GPS interface, so it can be preloaded with a position to help the internal GPS start quicker if the going gets rough. AquaFixes come with a rubber holster for belt or harness mounting, as well as a carbineer loop, and there's also an optional float bag with room for a handheld GPS.

ACR Electronics ☎ *(800) 432-0227. www.acrelectronics.com.*