GPS Signal Interference

Ann & Rhett McMahon (LA) - The air was glass smooth as we hummed home in the twilight. It had been a perfect trip. We left Baton Rouge six days ago for our journey to Reno via Tucson and Sacramento and the Weather God had smiled. Majestic purple and salmon mountains met us at sunrise in the Sonoran desert, we ate a "Long-EZ" omelet at the General William Fox airport west of Mojave and experienced the dive into the Reno valley. I was so proud of my Long-EZ.

My reveries were interrupted by Houston Center calling me to contact Lake Charles approach as we entered Louisiana. I noticed my new Garmin GPS 150 signaling a message. For the first time in six days it reported poor GPS coverage. I pressed the status screen and watched 7 satellite signals dwindle to nothing. Rebooting produced no improvement. I amended my IFR flight plan toward Baton Rouge instead of my home base.

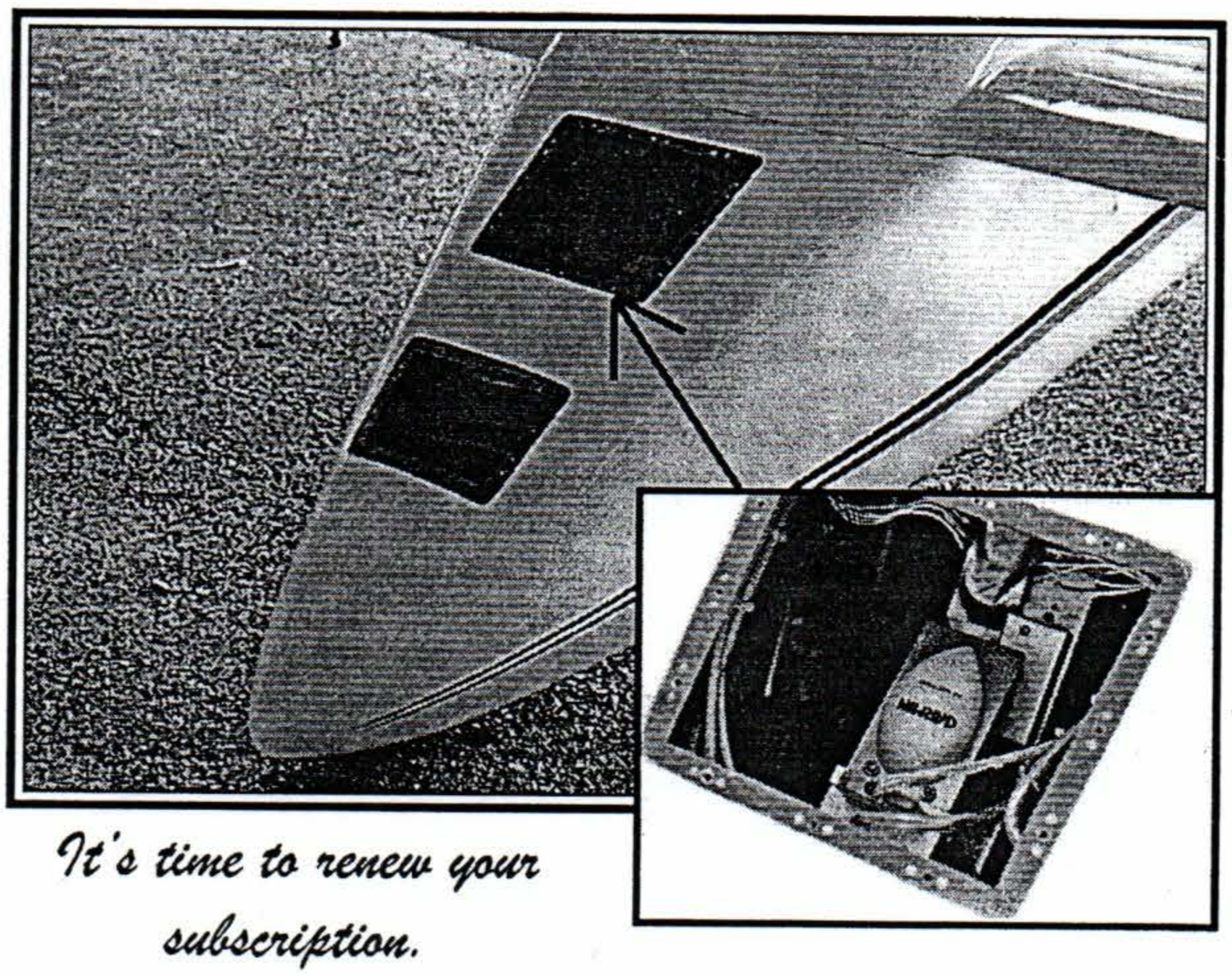
Garmin suggested the problem may have been caused by the VOR or COM radio frequency we were using at the time the GPS quit receiving satellite signals. Sure enough, we found the Lake Charles frequency of 119.35 sent reception to the cellar. Our culprit was not the COM frequency itself, but a harmonic of the simultaneous oscillator frequency that hit in the 1000 MHZ range with the satellite reception frequency.

Now, what to do? Detaching the Garmin antenna from its mount in the nose and, with the 150 unit receiving several satellites on a "good" frequency, we walked around the aircraft No matter where we located the antenna - under the canopy or right on top of the radio stack or further down the nose - all signal was lost on the Lake Charles frequency of 119.35 and those frequencies adjacent to it.

To solve this problem, we began by trying to isolate the antenna using aluminum foil placed strategically between the antenna mounted in the nose and points from the COM radios where we could imagine the oscillator emissions coming. Not only did this not work, it hampered the reception of the Garmin antenna. Next we replaced the standard antenna wire with 100% shielding. This slowed down the loss of reception on the "killer frequency", but did not stop it.

Finally, we called Narco Avionics, manufacturers of the MK12E COM radio in my Long-EZ. They said they believed the offending harmonic oscillations were coming from the face of the Narco unit and impacting the reception in the Garmin antenna in nose of the aircraft! To test this, we unhooked the COM antenna from the back of the radio and then set it for the "killer frequency" once again. The same affect occurred, loss of satellite while the radio was tuned to 119.35. So, indeed, it looks like the interference is coming from the face of the radio.

Narco says they are working on a face plate for the radio that will stop the offending oscillations. Let's hope it doesn't look like the window on our microwave oven. In the meantime, when I have encountered a COM frequency that stops GPS reception, I ask the controller if it is possible to speak to them on another frequency. So far, they have been happy to comply and I have not had to amend my flight plan.



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