

GPS Reliability

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The Global Positioning System (GPS), a satellite based system, has been the primary electronic navigation system for the past twenty years.

The GPS system on your boat makes navigation easy, perhaps too easy. However it might not always be available. A problem with GPS is that the signal is relatively weak. You can see this where you have to have an external antenna when your GPS set is down below. GPS can be impacted by interference from various sources such as bad installations and being too close to other radiating devices. Since the signal is relatively weak it can easily be jammed and is subject to space weather events. GPS jamming devices are illegal in the United States, although they have been seen in Eastern Bloc countries.

In rare cases, GPS can be unreliable. A couple of years ago, the District 1 Notices to Mariners warned of GPS anomalies in Boston Harbor. The government sometimes runs tests that result in temporary GPS outages. Notice of these tests can be found here:

<https://www.navcen.uscg.gov/?pageName=gpsServiceInterruptions>

On 19 January 2016 the Coast Guard issued Safety Alert 01-16 to warn mariners of potential detrimental impact to navigation caused by GPS interference or jamming and the importance of understanding how vessel equipment could be impacted by the loss of the GPS signal.

In any event you should never rely on one source of navigation information. A classic case of over relying on one source of information is the grounding of the cruise ship Royal Majesty on the Rose and Crown Shoal, off Nantucket Island. She was on a GPS preprogrammed route from Bermuda to Boston. The GPS antenna connection had failed. The display showed DR, which means the system reverted to the dead reckoning mode, and SOL, which means that the system was no longer computing an accurate position. Since these letters on the display were small, the bridge crew failed to notice them. They also did not pay attention to the depth sounder where they had set the depth alarm at 0 feet. They had the radar on a short range setting so they did not see the island. This was a typical accident with a chain of events where the grounding would have been prevented if the crew had checked other sources.

The bottom line is you should not rely on any one source of navigation information whether GPS or any other source. Situational awareness is everything.