



U.S. Coast Guard Safety Alert



Marine Safety, Security and Environmental Protection

February 4, 2005
Washington, DC

Alert 1-05

GPS Receiver Manually-Entered Position Offsets May Cause Safety Hazard when Interconnected to Navigation Devices

It has come to the attention of the U.S. Coast Guard that certain Global Positioning System (GPS) receivers do not provide a proper indication to other connected equipment when manually-entered position offsets are entered into the GPS receiver. Even a small offset could result in danger of collision or other navigation safety hazard when the receiver is interconnected to devices such as an automatic identification system (AIS), Electronic Chart Display and Information System (ECDIS), integrated navigation systems (INS) or track control system (TCS).

The problem is caused by an error in the NMEA 0183/IEC 61162 data interface Datum Reference ("DTM") "local datum" field. Navigation systems interconnected to the GPS receiver use this field to determine whether the position received is referenced to World Geodetic System 84 (WGS84) or something different. AIS equipment, for example, disregards external position information for reasons of safety if the "local datum" field does not indicate WGS84. As a result, equipment that is interfaced to GPS receivers having this problem would act as if the position were referenced to the WGS84 datum, when in fact the position differs from the WGS84 datum by the manual offsets entered by the vessel's crew or captain.

The problem can be identified if own ship position displayed on an AIS changes in proportion to manually-entered offsets entered into the GPS receiver interconnected to the AIS. The GPS is operating correctly in such a situation if the AIS reverts to its integral GPS and disregards the manually-entered offsets sent from the externally-connected GPS.

GPS Receivers identified having this problem:

Furuno GP80
Furuno GP90

Mariners having these receivers are advised to either take steps to ensure that the manually-offset feature is never and can never be used, or to disconnect these receivers from the AIS, ECDIS, INS, TCS or other navigation or communications system.

Technical questions relating to this alert may be addressed to Mr. Lee Luft at (860) 441-2685 or LLuft@rdc.uscg.mil.

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