



# SHIP SAFETY BULLETIN

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**Subject:** **HORIZONTAL CHART DATUMS AND  
POSITION ACCURACY**

An investigation into a recent grounding, where the ship sustained extensive bottom damage, has raised concerns about certain navigation practices. This Bulletin is to bring to mariners' attention the importance of being aware of the horizontal datum in use when plotting positions on charts.

Charts use various horizontal datums as a reference for specifying geographical positions. Consequently, an object or location will have a different latitude and longitude depending on the horizontal datum used. For this reason mariners must ensure the datum in use is consistent with the chart datum. The latitude and longitude from a navigation receiver such as, a Global Positioning System (GPS) receiver are referenced to a specific horizontal datum. Unless the receiver datum is the same as the chart datum, or the position is converted, an inaccurate and misleading position will be plotted.

GPS makes direct use of the World Geodetic System 1984 (WGS84), which is considered equivalent to the North American Datum 1983 (NAD83) now used by the Canadian Hydrographic Service (CHS). Most GPS receivers incorporate datum transformations into their software. This allows the mariner to select a datum that is compatible with the chart. Mariners should be fully familiar with the use of the datum selection feature on their navigation receiver. However, mariners are advised that the most accurate position is obtained by having the GPS receiver referenced to WGS84 (or NAD83) and then applying the datum adjustment published on the chart. Differences in the accuracies of the transformation processes used in different navigation systems can result in significant differences in geographic position. **To check position accuracy, mariners should use other available information and a second method to fix a position on a chart.**

For a more thorough review of this subject and to find additional important information, mariners are advised to consult **Notice 45 of the Notices to Mariners - Annual Edition: Horizontal Datum of Canadian Hydrographic Charts** (<http://www.notmar.com/>). Furthermore, the Canadian Coast Guard (CCG) publication entitled "GPS/DGPS Made Easy" contains a section on GPS/DGPS and Nautical Charts where clear instructions are provided on how a datum shift can be applied to a chart ([http://www.ccg-gcc.gc.ca/dgps/guide\\_cover\\_e.htm](http://www.ccg-gcc.gc.ca/dgps/guide_cover_e.htm)).

**Keywords:**

1. Chart Datum
2. GPS
3. Navigation Practices

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