

## 45 Horizontal Datum of Charts

The Canadian Hydrographic Service (CHS) produces nautical charts referenced to various horizontal datums, such as North American Datum 1983 (NAD83), North American Datum 1927 (NAD27), Local Astronomic Datums and others. The exact placement of lines of latitude and longitude on a nautical chart is dependent on the horizontal reference datum.

Through the use of satellites and other modern surveying techniques, it is now possible to establish global reference systems. As a result, NAD83, which for charting purposes is equivalent to the World Geodetic System 1984 (WGS84), was chosen to replace the various datums used in the past. While charted features will not move relative to adjacent features when horizontal reference datums change, the latitude and longitude of each feature will change.

Most CHS charts that have been printed after 1986 have a note indicating the horizontal datum upon which the chart is based. The note also contains sufficient information to inform the mariner if any correction must be made to the latitude and longitude when transferring geographic positions from NAD83 (WGS84) to the horizontal datum of the chart.

Mariners are cautioned that direct readout navigation systems provide latitude and longitude referenced to a specific horizontal datum.

When satellite navigation systems (e.g. GPS) are referenced to NAD83 (WGS84), positions obtained from these systems can be plotted directly on CHS charts that are published on NAD83.

A navigation receiver referenced to NAD83 will produce a position that must be adjusted by the average shift value published on the chart before it can be accurately plotted on a chart that is referenced to NAD27 or another horizontal datum. This is the most accurate method for plotting positions computed on NAD83 (WGS84) onto a chart that is referenced to NAD27 or to another horizontal datum. This procedure will produce more accurate results than using the positions obtained directly from satellite navigation systems where the mariner has selected NAD27 as the horizontal reference datum. The reason is that the satellite navigation system calculates the geographic position using NAD83, then transforms the position to NAD27. Differences in the accuracies of the transformation processes used in different navigation systems can result in significant differences in geographic positions.

If mariners coming from overseas ports set a horizontal reference datum other than NAD83, WGS84 or NAD27 on their navigation systems, then serious errors in position could occur.

Authority: Canadian Hydrographic Service (CHS)