Admiralty Chart Datum in ABP South Wales Ports

On the 1st January 2009 there will be a change in South Wales. The datum for tide measurement at each of the five ABP ports – Swansea, Port Talbot, Barry, Cardiff and Newport - will change from local datums to Admiralty Chart Datum.

Datums

Two principal Datums are widely used across the UK. Ordnance Datum Newlyn (ODN) which is applicable across the whole of mainland Great Britain, is a convenient zero value to transfer across the whole country and is used by civil engineers, builders, mountaineers and other land based users. Values are given in metres counting positive upwards from zero.

At sea, Admiralty Chart Datum (ACD) is used. This is a level declared for a port or harbour and it's approaches and is based on Lowest Astronomical Tide (LAT). LAT is that level below which the predicted tide will never fall, although in practice wind and high atmospheric pressure may occasionally force the actual water level below this. Values are given in metres counting positive downwards and negative upwards from zero.

Admiralty Chart Datum is used as the basis for soundings on all UK navigation charts. This means that any sounding immediately shows the minimum depth of water available - with any known tide level being a 'plus' which may be added with care.

The Changes

Each port may have small rounding adjustments. In no case are these more than 50mm (two inches).

- **Swansea**.

  The ACD zero is 2.82 metres above the cill gauge zero. Typical tide readings will be reduced by 2.8 metres.

  Swansea Channel Maintenance Level (ML) is 4.2m below ACD.

  Swansea Ferryport Maintenance Level (ML) is 4.9m below ACD.

- **Port Talbot**.

  The ACD zero is 11.24 metres above the Harbour ML zero. Typical tide readings will be reduced by 11.2 metres.

  Port Talbot Channel ML is 11.2m below ACD.

  Port Talbot South Pocket ML is 17.2m below ACD.

  Port Talbot Dock Channel ML is 0.4m below ACD

- **Barry.**

The ACD zero is 3.32 metres above the Lady Windsor cill zero. Typical tide readings will be reduced by 3.3 metres.

Barry LW Approach ML is 3.3m below ACD.

Barry Basin Approach ML is 0.4m above ACD.

Barry Pontoon Berth ML is 2.7m below ACD

- **Cardiff.**

The ACD zero is 0.55 metres above the cill gauge zero. Typical tide readings will be reduced by 0.55 metres.

Cardiff Channel ML is 1.1m below ACD.

- **Newport.**

The ACD zero is 1.72 metres above the cill gauge zero. Typical tide readings will be reduced by 1.7 metres.

Newport Channel ML is 0.7m below ACD

(Note: Various underkeel allowances are given for Usk River berths – in each case the allowance is decreased by 1.72m. The Dockmaster has issued tables to cover this).

- **Enclosed Docks**

The enclosed docks in South Wales have various datums, some based on lock inner cills, some on constructed steps. In some places the dock is dredged to datum, in others a Maintenance Level (ML) above or below the datum is dredged. **There is currently no proposal to change any of these**. A project for another year, perhaps?

Consequences

Actual heights of water, depths of channels, times and availability of locks will not change. Only the numbers will be different and will need to be understood. Most users have a few levels in mind for immediate recollection. These will have to be adjusted and re-learned.

Tide tables – From 2009, only ACD tide heights will be shown in the tables.

The individual port information text has been updated to highlight the changes and warning reminders inserted. Relative level tables for each port should help clarify the change.

The widely used Arrowsmith's Bristol Channel Tide Tables will also be changing the five ABP ports to ACD, so matching all their other port predictions.

Local Survey Charts – UKD charts are mainly internal to ABP Marine Management, Dredging and Pilotage, but some are used elsewhere.

From 2009, all regular South Wales tidal-water sounding charts will be drawn using ACD as the datum for soundings. The soundings will appear to be deeper than in pre-2009 charts, but will represent the same depth of water as before. Any depth related colours and contours (eg showing ML) will be the same.

The legend on each chart will, as always, clearly state the datum for soundings on the chart. Most charts already have a conversion 'ladder' to assist translation.

For the last few months of 2008 we are publishing both versions, to help users understand the change.

Tide Gauges - There is a program of replacement of visual tide boards for all five ports, new boards being made of laser-cut galvanized steel. To avoid confusion, the letters ACD will be at the top of each of the new gauges. This program will be completed before 2009.

Automatic recording gauges and readouts will be adjusted to the ACD.

Documentation.

Various tables and drawings from UK Dredging, both constant (Tidal Reduction Tables & Curves showing heights before and after HW) and annual (Acceptance Tables showing a year's lock availability for vessels of various draughts), are available as before. The numbers may be different, but the usability will be the same.

Note that ACD is sometimes referred to as Chart Datum (CD). This is safe enough if there is only one chart datum about, but in this context it is better to be specific.

Further details and answers to specific tide related matters can be obtained by contacting the appropriate Harbour Master or the Author directly.

Andrew Zienkiewicz

Hydrographic Surveyor

UKD Survey

Tel: 02920 835210

Email: andrewz@abports.co.uk