

Buckleys provide a range of sub-sea corrosion monitoring equipment specifically designed to measure the structure to sea water potential of immersed structures.

The BathyCorrometer®, UCP1A, UCP1B, and marine type silver/silver chloride half-cell all contain a silver/silver chloride sea water electrode. The structure to sea water potential is always with respect to the silver/silver chloride sea water electrode.

From a measurement of the structure to sea water potential an indication of the corrosion status of a given structure can be obtained. The structure to sea water potential will give an indication of whether a structure is corroding or is partially or fully cathodically protected.

This indication will be provided by the actual value of the potential displayed on the measuring device. If the potential value recorded indicates that the structure is corroding then only the likelihood of corrosion can be determined as measurement of the structure to sea water potential will not give information on the rate of corrosion but will provide an indication as to whether corrosion is likely. Guidance on the significance of the value of the structure-to-sea water potential versus a silver/silver chloride sea water electrode is given on Table 1.

Additional guidance on the structure to sea water potentials necessary to achieve cathodic protection on different structures can be obtained from EN 12473

The Buckleys BathyCorrometer® is constructed with the internal reference electrode connected to the positive terminal of a millivoltmeter, whilst the structure connection is made to the negative terminal.

Thus, a cathodically protected potential displayed on the BathyCorrometer® millivoltmeter will be shown as 0.800V; not -0.800V versus Ag/AgCl sea water as shown on Table 1.

To convert the potential readout from a BathyCorrometer® to the conventional expression for a structure to sea water potential the polarity of the measured voltage must be changed from '+ve' to '-ve'. It is important when taking

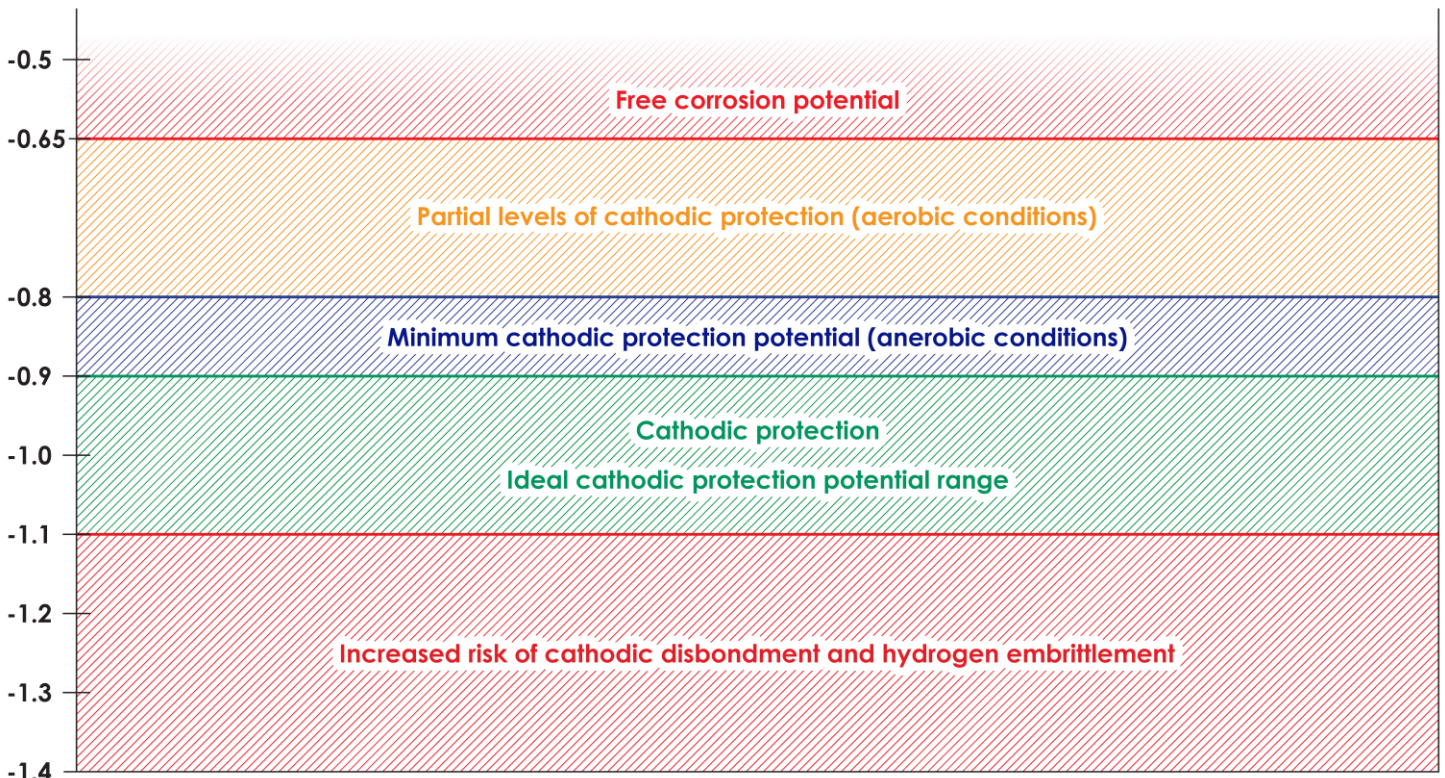
a structure to sea water potential with portable half-cell to ensure the sign of the displayed voltage is recorded together with a note of whether the reference electrode was connected to the positive or negative terminal of the voltmeter.

The Buckleys BathyCorrometer® Pro' is constructed with the internal reference electrode connected to the **Negative** terminal of the voltmeter. This now complies with the Internationally accepted manner of reporting structure to electrolyte potentials.

Thus, a cathodically protected potential displayed on the BathyCorrometer® millivoltmeter will be shown as -0.800V versus Ag/AgCl sea water as shown on Table 1.

The electrode normally provided with the Buckleys BathyCorrometer® is only suitable for use in sea water. Since the reference electrode potential is affected by the chloride concentration in the aqueous environment. If the BathyCorrometer® or marine type half cells are to be used in brackish waters, a constant chloride ion activity silver/silver chloride electrode should be used to provide an accurate indication of the structure to sea water potential.

Table 1 - The relationship between silver/silver chloride sea water potential and the possibility of corrosion and levels of cathodic protection of steel in a marine environment.



Important: These notes are provided for guidance only. For a detailed interpretation of the significance of the potentials recorded expert advice should be sought.

Buckleys (UVRAL) Ltd.

Buckleys House, Unit G, Concept Court, Shearway Business Park, Shearway Road, Folkestone, Kent. CT19 4RG. UK

Tel: +44 (0)1303 278888 Fax: +44 (0)1303 274331 Email: sales@buckleys.co.uk Website: www.buckleysinternational.com