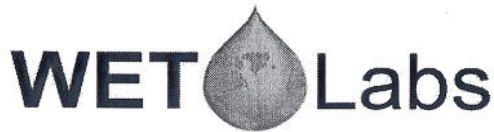


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ECO CDOM Fluorometer Characterization Sheet

Date: 9/21/2010

S/N: FLCDRTD-2012

CDOM (Quinine Dihydrate Equivalent) concentration expressed in ppb can be derived using the equation:

$$\text{CDOM (QSDE)} = \text{Scale Factor} * (\text{Output} - \text{Dark Counts})$$

| | Analog Range 1 | Analog Range 2 | Analog Range 4 (default) | Digital |
|---------------------------------------------|----------------|----------------|--------------------------|------------------|
| Dark Counts | 0.048 | 0.026 | 0.015 V | 35 counts |
| Scale Factor (SF) | 25 | 50 | 100 ppb/V | 0.0304 ppb/count |
| Maximum Output | 4.94 | 4.94 | 4.94 V | 16380 counts |
| Resolution | 2.8 | 2.8 | 2.8 mV | 2.9 counts |
| Ambient temperature during characterization | | | | 22.3 °C |

Analog Range: 1 (most sensitive, 0–4,000 counts), 2 (midrange, 0–8,000 counts), 4 (entire range, 0–16,000 counts).

Dark Counts: Signal output of the meter in clean water with black tape over detector.

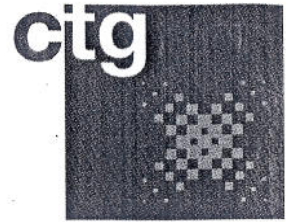
SF: Determined using the following equation: $SF = x + (\text{output} - \text{dark counts})$, where x is the concentration of the solution used during instrument characterization. SF is used to derive instrument output concentration from the raw signal output of the fluorometer.

Maximum Output: Maximum signal output the fluorometer is capable of.

Resolution: Standard deviation of 1 minute of collected data.

For Tom Weber

Chelsea Technologies Group Ltd
Certificate Of Calibration



CERTIFICATE OF CALIBRATION

All test equipment and standards used are of known accuracy and traceable to national standards. Details of test equipment and standards relevant to this certificate are available upon request.

Date of Issue: 23rd September 2010
Part Number: 0155-9174H
WOT Number: WO107779
Description: UV Aquatracka (hydrocarbon)
Serial Number: 10-7779-005

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REPORT

UV Aquatracka is an ultraviolet stimulation fluorimeter sensitive to dissolved hydrocarbons. Output is a logarithmically scaled analogue voltage. For the purposes of the current calibration, Carbazole was chosen as a typical hydrocarbon.

The fluorimeter was exposed to various concentrations of Carbazole dissolved in pure water in addition to pure water. The following formula was derived from the readings to relate instrument output to carbazole concentration.

$$\text{Conc.} = (0.001477 \times 10^{\text{Output}}) - 0.664969$$

Where:-

conc. = fluorophor concentration in $\mu\text{g/l}$
Output = Aquatracka output in volts

The above formula can be used in the range 0 - 10 microgrammes per litre to an uncertainty of 0.007 microgrammes per litre plus 4% of value.

Notes

The above formula has been derived using carbazole dissolved in pure water. No guarantee is given as to the performance of the instrument to any other hydrocarbon or to hydrocarbons dissolved in sea-water

The zero offset has been determined in the laboratory using purified water from a reverse osmosis/ion exchange column. It is possible that purer water may be found in clean deep ocean conditions. Under these conditions, the offset shown in the above formula should be replaced by the antilogarithm of the Aquatracka output in the purest water found, multiplied by the scale factor.



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