

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.

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Date of Issue: 29th June 2017
Part Number: 0161-5552R
WOT Number: WO170212
Description: Alphatracka (25cm, 660nm)
Serial Number: 12-8780-001

REPORT

Alphatracka is a 25 cm transmissometer, measuring attenuation of light at 660 nm. It is designed for use at depths up to a maximum of 6000m.

Results

Readings from the transmissometer were taken, at a temperature of 20°C, +/- 1°C, in both air and purified water, and the following results were obtained:-

Reading in air	=	4.0936 Volts
Reading in purified water	=	4.2006 Volts
'Zero' reading	=	0.0121 Volts

Notes

The 'Zero' reading was obtained by mechanically obstructing the detection window.
The purified water used was generated using a reverse-osmosis/ion exchange column. 'Purer' water (ie water with a higher transmission) may be found in clear deep ocean conditions.

Equipment used during calibration:-

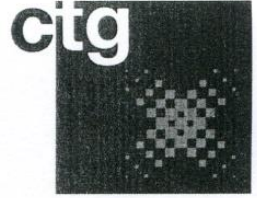
Thurlby Dvm Cil 088
Weir Psu Cil 098

Name: M.J.Nicholson

Signed: 

Date: 29th June 2017

Registration No: 00832429
Registered at the above address



TEST REPORT

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Description: Alphatracka (25cm, 660nm)
Serial Number: 12-8780-001

This is to certify that ALPHATRACKA MK II has been pressure tested for 1 hour at 60 Bar, with no apparent leakage.

The design of Alphatracka Mk II has previously been verified as suitable for continuous use at a maximum depth of 6000 metres

Equipment used during testing :-
Pressure chamber Cil 219

Signed:

A handwritten signature in black ink, appearing to be 'M.J. Nicholson', written over a horizontal line.

M.J.Nicholson

Date: 29th June 2017

Registration No: 00832429
Registered at the above address



CERTIFICATE OF CALIBRATION

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Date of Issue: 26th June 2017
Part Number: 0088-3598C
WOT Number: WO170211
Description: AQUATRACKA MKIII
Serial Number: 12-8513-004

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REPORT

The fluorimeter was exposed to various concentrations of Chlorophyll-a dissolved in acetone in addition to pure water and pure acetone. The following formula was derived from the readings to relate instrument output to chlorophyll-a concentration.

$$\text{Conc.} = (0.014145 \times 10^{\text{Output}}) - 0.021535$$

Where:-

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

The above formula can be used in the range 0 - 100 microgrammes per litre to an uncertainty of 0.02 microgrammes per litre plus 3% of value.

Notes

The above formula has been derived using Chlorophyll-a dissolved in acetone. No guarantee is given as to the performance of the instrument to biologically active chlorophyll 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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Certificate Of Calibration

Fluorimeter calibration readings

Ambient temperature 20°C

Output for detector mechanically blanked 0.1674 Volts

Output for pure water 0.1826 Volts

chlorophyll concentration in acetone ($\mu\text{g/l}$)	Output (volts)
Acetone (pure)	0.2681
0.1	0.9479
0.3	1.3552
1.0	1.8529
3.0	2.3288
9.9	2.8615
29.1	3.3202
90.9	3.8081

The uncertainty of the chlorophyll concentration is estimated not to exceed 3%. The uncertainty of output voltage measurement is estimated not to exceed 2mV.

Equipment used during calibration:-

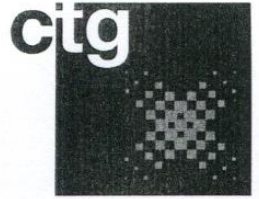
Thurlby Dvm Cil 088

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Signed

Date 26th June 2017

M.J.Nicholson



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Date of Issue: 26th June 2017
Part Number: 0088-3598C
WOT Number: WO170211
Description: AQUATRACKA MKIII
Serial Number: 12-8513-004

This is to certify that Aquatracka III (Titanium) has been pressure tested for 1 hour at 60 bars and is suitable for use to a maximum depth of 6000 Metres.

**Equipment used during testing:-
Pressure chamber Cil 219**

Signed:

A handwritten signature in black ink, appearing to be 'M J Nicholson', written over a horizontal line.

M J Nicholson

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