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		Hydrology Operations Manual		

SmarTroll / AquaTroll Calibration using the VuSitu Mobile App

OVERVIEW

Horizons Regional Council's Sampling Teams use both the In-Situ SmarTroll MP (Smartroll) and In-situ AquaTroll 400 (AquaTroll) handheld meters for determining and recording the following field parameters at all SoE, point discharge and groundwater sites where possible (the exception being sewage treatment ponds and effluent discharges). Horizons also use these meters for lake profiling and to provide check data for continuous water quality sites.

The AquaTroll replaces the now discontinued Smartroll. Both instruments share the same probes, and both utilise the same VuSitu App to display the instruments readings. The instruments do differ in cables, the Aquatroll uses a twist lock mechanism and the SmarTroll uses a screw lock, as such, the correct Wireless Troll Com (battery/baro unit) must be used. All new battery/baro units for either instrument uses the VuSitu App – these can be identified as those that are rechargeable. The older AA battery powered battery/baro units only work with SmarTroll's and the older ISitu Mobile App.

Horizons Regional Council generally records the following parameters with the AquaTroll/ Smartroll:

Parameter	Sensor Type	Range	Accuracy	Resolution	NEMS
Water Temperature	PT100	-5 to 50°C	± 0.1°C	0.01°C	Yes
Air Temperature	Thermistor	-20 to 70°C	± 2.0°C max	0.1°C	No
Barometric Pressure	Battery Pack	300 to 1100 mbar	± 3.0 mbar max	0.01 mbar	Yes
Depth	Non vented absolute PT	0 – 76 m	0.1% FS @15°C ± 0.3% FS Max from 0°C to 50°C	0.01 m	No
Dissolved Oxygen (%)	Optical (RDO)	0-80% 80-200 % 200-500 %	± 1% ± 2% ± 10% of reading	0.1%	Yes
Dissolved Oxygen (mg/l)	Optical (RDO)	0-60 mg/L	±0.1mg/L from 0 to 20 mg/L ± 2% of reading from 20-60mg/L	0.01mg/L	Yes
Conductivity	4-Electrode Cell	5 to 100000 μs/cm	± 0.5% + 1µs/cm	0.1µs/cm	Yes
рН	Glass electrode	0 to 14 units	± 0.1 units from 0-12 pH units	0.01 pH units	Yes
ORP	Platinum button	-1400 to +1400 mV	± 5.0mV	0.1mV	Yes

TRAINING REQUIREMENTS:

Prior to field use, all staff are required to be trained by the Discrete WQ Portfolio Holder. Once trained to the Discrete WQ Portfolio Holder's satisfaction the Training Log [Section 15.6 Appendix 8] will be updated in the Ops Manual.



SmarTroll / AquaTroll Calibration using the VuSitu Mobile App

Calibration of the Aquatroll/SmarTroll's (Troll) must be carried out prior to each sampling run. All parameters to be collected in the field need to be calibrated on the same day prior to any data acquisition. Conductivity, pH and ORP sensors <u>must</u> be checked and recorded at the end of the day using the appropriate standardised solution).

Record the calibration and complete the end of day checks on the calibration form in the Trolls labelled book (*form: 14.2 Appendix 1*). Record the marked number of the instrument as either **SmarTroll_XX** or **AquaTroll_XX**.

The Trolls should be found ready for use in an unassembled state:

- The Sondes should be in the WQ lab in their calibration cups with a saturated sponge wafer
- The cables should be bound with dust caps on the ends in the WQ Lab
- The Battery/Baro units should be charging with the iPads within the office(s)

MAKE SURE THE SONDE # AND BATTERY/BARO UNIT # MATCH

Note1: Having the instruments unassembled reduces stress on the connectors of the cable/instrument.



Note 2: The Sondes stored in this way means that they are stable and ready for RDO calibration without the need to allow for additional stabilisation time before calibration. The calibration cap with the vent hole should be on top of the calibration cup.

Note 3: at the end of the day, the instrument should be disassembled and left as found

Assemble the Troll, turn on the Battery/Baro unit, start the VuSitu App on the idevice (iPhone, iPad), and start working your way down the calibration form

1. BAROMETRIC PRESSURE CHECKS

Record the barometric pressure at the time of calibration of the Troll unit. This is checked against is the Manawatū at Victoria Avenue (VIC) barometer, which is, also recorded (simply read from the display screen). Note we use true (raw) barometric pressure. Calibrations are intended to occur at the WQ Lab where this check can be made. Otherwise mark the Manawatū at Victoria Avenue field as OFFSITE. Do not record these values at the end of the day in lieu at the time of calibration.

Troll unit barometer vs. VIC barometer value: If the difference is >+/-5mbars between the two notify the Discrete Water Quality Portfolio holder/proxy. Consider using a different Troll.

2. RUGGED DISSOLVED OXYGEN (RDO) CALIBRATION

The calibration process starts with a 1-Point RDO calibration. The Troll should have been left stored in the cup with a moist sponge. This means that it is already stored in 100% saturated air and is ready to go. If the Troll is not gently dry the RDO probe and sensing material with a paper towel, ensuring the surface is free of water. Place in the calibration cup and wait 10 minutes for the temperature to stabilise before calibrating.

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regional		Hydrology Operations Manual	
	Aqua TROLL 400 Sweetzes vizz	Ague TROLL 400 - SN 841254 Level RDO Saturation RDO Concentration Conductivity PI ORP Quick-Cal (multi-sensor) Calibration Report	No. 10.00 (a) (* (* * * * * * * * * * * * * * * * *
2001 %-⊕¶ In. :		Note MAR 255 PM. Mon 13 Jul	PM. Mon 13 Jul at ♥ ₽ ♥ 10 ♥ RDO % Saturation Calibration Aque TROLL 400 - SN 661256 N RDO 100% Saturation Calibration Temperature 18.96 °C
3	Proparing for calibration	Concentration *** mg/L ***	Concentration 9.41 mg/L
		% Saturation *** %Sat ***	% Saturation 100.45 %Sat
Include	Q ↓ <	Stabilizing +	Stabilized
		Cancel Accept	Cancel Accept
botto	om of the cup – a scre	is installed on the calibration cup and a water en image will prompt you – select next – the screen will turn green, select Accept	saturated sponge is placed in the



- 2.8 Record the RDO Saturation both % and mg/L and temperature
- 2.9 Complete the pass calibration part of the form.

3. pH CALIBRATION

A 3-Point calibration is always to be undertaken. Start with the pH 7 buffer as this sets the offset and is a good indicator of the health of the sensor, followed by the pH4 and 10 buffers.

NOTE: The pH/ORP probes have a limited lifespan and do require regular maintenance by the Discrete Water Quality Portfolio holder. If you observe above normal stabilisation times and/or high mV readings when in the pH7 buffer [high = greater than +-35mV] please comment on the bottom of the form and notify the Discrete Water Quality Portfolio holder. Consider using a different Troll.



- 3.2 From the calibrations menu select pH, then Select 3-Point calibration
- **3.3** You will be prompted to put the Troll into pH7 Buffer

0-20 AM Tue 14 M	9-27 AM Tue 14 Jul 🗤 🖬 4G @ 🕫 99% 🖿	1
C PH Calibration	Calibration Report	
Aqua TROLL 400 - SN 660871	100 001110001 (pprif) 0.00	
A Calibration Point 1 of 3	Sonisor Loval Serial Number 659538 Last Calibrated 207/2020	
pH Buffer 7 pH 🔅	Lasi Galibrated 2017/2020	
Temperature 14.48 °C	Calibration Details Zero Offset -0.76 kPa	
	Reference Depth 38.12 m Reference Offset 0.09 kPa	
рН 7.04 рН 📀	Sensor pH/ORP Serial Number 20357	
pH mV -13.7 mV 🥥	Last Calibrated 14/07/2020	
	Catiloration Defails Total Catiloration Point 1 pi of Butler 4.00 pH pi H nV 10.82 mV Temperature 18.00 °C Catiloration Point 2 pi of Butler 7.06 pH	
	pH mV -13.9 mV Temperature 14.48 °C	
Stabilized 🥥	Calibration Point 3 pH of Buffer 10.06 pH pH mV -166.1 mV Temperature 15.57 °C	
	Stope and Ottset 1 Stope - 49.06 mVlpH Offset - 11.0 mV	
	Slope and Offset 2 Slope - 50.39 mV/pH Offset -10.9 mV	
	04P 019 Solution ZolBell's 019set -2.2 mV Temperature 17.65 °C	
Cancel Accept	Close Save to	
2.4 Allow the Troll to stabilize		the (i) all Duffer value (tep above
	- the screen will turn green, then record	tine. (I) pri buner value (top above
temperature). (ii) Temperatur	e (iii) pH mV value (the bottom value)	
3.5 Select Accept		
3.6 You will be prompted to pu	It the Troll into pH4 Buffer – rinse with	water first
3.7 Place into the pH4 Buffer a	· · · · · · · · · · · · · · · · · · ·	
	It the Troll into pH10 Buffer- rinse with	water first
3.9 Place into the pH10 Buffer	and repeat steps 3.4 to 3.5.	
3.10 The calibration will registe	er and create a calibration report – cheo	ck that this has updated, select Close
	d for pH. Return to the home screen to	
Calibration.	***	

4. SPECIFIC CONDUCTIVITY (SPC) C	ALIBRATION	

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SmarTroll / AquaTroll Calibration using the VuSitu Mobile App

Prior to use the Troll needs to have a 1-Point calibration for SPC, with a before after check undertaken. The strength of SPC standard solutions used for both checks and calibrations will vary depending on the environment the Troll is being used in. Therefore, this SOP references the appropriate solutions used to calibrate surface, lakes and groundwater environments in **GREEN** and references the appropriate solutions used to calibrate for coastal (saline/brackish) environments in **BLUE**.

DO NOT confuse SPC with Actual Conductivity – the device should not have this option selected on the live readings screen.

NOTE 1: The Conductivity calibration and check solutions are prone to contamination (i.e. they are solutions <u>not</u> buffers) so regular solution replacement is required. Use the solutions only ONCE before using a rinse solution and then discarding.

NOTE2: The majority of noted fails regarding Specific Conductivity are due to solution contamination. If either of the pre or post calibration Specific Conductivity checks fail, thoroughly rinse the troll and replace the solution(s). If it still fails (i.e. the value displayed is outside of the set range detailed in the calibration form): (i) Discrete WQ portfolio holder is to be informed (ii) the Troll is to be removed from use (iii) an alternative Troll is to be used.

NOTE 3: The solution bottles refer to SPC in the units of Molar (M). The units displayed by the Troll and recorded are to μ S/cm. The value of the SPC standards vary from batch to batch therefore the bottles of solution should have the SPC marked in μ S/cm - 0.001M equates to ~149 μ S/cm. 0.01M equates to ~1415 μ S/cm.

2:54 PM Mon 13 Jul	🖬 🗢 🐨 🕫 100% 🛄 - 9-27 AM Tu	a 14 Jul	🖬 4G 🛞 🕫 99% 🔲	2:56 PM Mon 13 Jul	all 🗢 🕑 🕇 100% 🔲
Connected Instrument	i 🕻 🐗 Liv	e Readings	1. E.	() Calibrations	1
🔪 Aqua TROLL 40		Aqua TROLL 400 - SN 660871	GPS: Ø	Aqua TROLL 400 - SN 661256	
🕥 SN 661256 v1.27 🏚		Device Location Your device's GPS location will be recorded with every reading	UPS: 😦	⊥ Level	
Battery: 98% remaining	2			-	
		Live Readings Rate: 2 seconds	Change Location >	A RDO Saturation	
Instrument Time: 2:54 p.m. 13/07/2020		Live Readings Rate: 2 seconds 😨 RDO Concentration 10.6	34 mg/L 🔅 :::	A RDO Concentration	
		RDD Saturation 106	.13 %Sat 💮 :::	☐ Conductivity	
		Oxygen Partial Pressure		<u>Д</u> pH	
		Actual Conductivity			
		Temperature 15.7	79 °C 🔅 :::	∆ ORP	
		Specific Conductivity 150	.98 μS/cm 🔅 💠	Quick-Cal (multi-sensor)	
		Salinity		Calibration Report	
		Total Dissolved Solids			
		Resistivity			
		Density			
E Live Readings		Pressure			
	.	Depth 0.24	0 m 💮 ::::		
Instrument Settings		PH 8.9	1рН 💮 ::::		
Ø Disconnect	RECORDING				
	n =				
4.1 From the home	screen, select live	readings.			
			or 1288	mS/cm, and allow to stabil	ico
4.3 Record the SPC	and Temperature	values onto the calibratio	n form –	this is the pre-calibratio	n handheld
			100110		

meter reading. Check that the value is within 126-170 μ S/cm or 1224-1352mS/cm of the solution – if not rinse the troll and replace solution.

4.4 In order to calibrate the Troll for SPC return to the home screen, select **Calibrations** and then select **Conductivity**



- 4.6 The conductivity standard value needs to be manually adjusted to match the current batch of solution. To do this select the gear icon next to this field and then enter the value. Select Set value to the value on the solution bottle.
- 4.7 Allow the Troll to stabilise the screen will turn green, Record the SPC and Temperature values onto the calibration form this is the calibration value
 4.2 Calent Accent
- 4.8 Select Accept

9:29 AM Tue 14 Jul 4G @ 🕫 98% 🛄	2:54 PM Mon 13 Jul 🔹 👘 🕫 100% 🛄	9:31 AM Tue 14	a lut 4	4G @ 🕫 9	8%
Calibration Report	E Connected Instrument	< 🕮 Live	Readings		1
Created 14/07/2020	🔪 Aqua TROLL 400		Aqua TROLL 400 - SN 660871		
Sonia Number 669986 Last Calibrated 18/06/2020	SN 661256 v1.27 🚱 Battery: 98% remaining	2	Device Location Your device's GPS location will be recorded with every reading		GPS: 😦
Calibration Details			Live Readings Rate: 2 seconds	Change Loci	tion >
Slope 1.034654 Offset 0.00 mg/L	Instrument Time: 2:54 p.m. 13/07/2020				
Calibration point 100%			RDO Concentration 10.10 m	A 52	
Concentration 8.84 mg/L Temperature 15.87 °C Barometric Pressure 1,020.9 mbar			RDO Saturation 98.59 %	iat ()	
Sensor Conductivity			Oxygen Partial Pressure		
Serial Number 660871 Last Calibrated 14/07/2020			Actual Conductivity		
Calibration Details Cell Constant 1.108		>	Temperature 14.73 *C		
Reference Temperature 25.00 °C TDS Conversion Factor (ppm) 0.65		>	Specific Conductivity 157.94 p	S/cm 🔅	
Sonsor Level Serial Number 659538 Last Calibrated 2/07/2020			Salinity		
Calibration Details			Total Dissolved Solids		
Zero Offset -0.76 kPa Reference Depth 38.12 m Reference Offset 0.09 kPa			Resistivity		
Serial Number 2037			Density		
Last Calibrated 14/07/2020	br Live Readings		Pressure		
Calibration Details Total Calibration Points 3	△ Calibrations	>	Depth 0.19 m		
Calibration Point 1 pH of Buffer 4.00 pH	Instrument Settings	>	рН 8.04 рН		
pH mV 1362 mV Temperature 16.00 °C	Ø Disconnect		co E4 Start Recording		
Close Save to					
4.9 The calibration will register and create a calibration report – check that this has updated, select Close	 4.10 From the home screen, select live Troll and place it into FRESH ~149 µS stabilise 4.11 Record the SPC and Temperature this is the post-calibration handhelic 	<mark>5/cm o</mark> I <mark>re</mark> val	or 1288mS/cm and allow lues onto the calibration fo	0	_

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		4.12 Check that the value is within 126-170 <u>µS/cm</u> or 1224-1352 <u>mS/cm</u> of the solution – if not rinse the troll and replace solution. Complete the pass			

calibration part of the form.

5. OXIDATION-REDUCTION POTENTIAL (ORP) CALIBRATION

Currently HRC only collect ORP for Groundwater sampling. The ORP probe is part of the pH probe, calibration of ORP is very similar to that of a 1-Point pH calibration.

2:56 PM Mon 13 Jul 3 🖬 🗘 100% 🔤	9:31 AM Tue 14 Jul 🖬 14 G 🕑 🕫 98% 🔜	9:31 AM Tue 14 Jul	🖬 4G 🛞 🖅 98% 📖
Calibrations	Core Calibration	C 🕫 ORP Calibration	1. Sec.
Aqua TROLL 400 - SN 661256	Aqua TROLL 400 - SN 660871	Aqua TROLL 400	- SN 660871
A Level	1. Fill cal cup to line 2. Place instrument in solution	△ Calibration Point 1 of 1	
A RDO Saturation	Proparing for calibration		ORP Standard 241.4 mV
	1		Temperature 15.60 °C
A RDO Concentration			ORP 219.8 mV
△ Conductivity			
Д рн			
▲ ORP			
Quick-Cal (multi-sensor)			
Calibration Report			
		Stabiliz	ed 🥝
	and the second s		
	Cancel Next	Cancel	Accept
5.1 From the home screen select calil	brations.		
5.2 Allow the Troll to stabilise the scre			
		ition	
	oll into solution. HRC uses Zobells solu		
5.4 Allow the Troll to stabilise the scre	en will turn green. Record the ORP Sta	andard and Tempera	iture values onto

the calibration form.

5.5 Select **Accept.** The calibration will register and create a calibration report – check that this has updated, select **Close**

6. DEPTH CALIBRATION

Used especially for Lake profiling the Trolls can show the depth of water they are placed in. Calibrate at site immediately before use.

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STAM Root An Calibration Calibration Expose pressure sensor to a	41 40 관 각 9 Aqua TROLL 400 - SN 660871	Sal do S + 23 M = 200 S + 2	All Standson Report 2 Calibration Details Stope 10046 Calibration Details Stope 100464 Calibration Details Calibration 1005 Calibration point 1005 Calibration 1005 Calibration 1005 Calibration 1005 Calibration 1005 Calibration Point 2025 Calibration Point 2025 Calibration Point 2025 Calibration 1007/2020 Calibration 1007/2020 Calibration 1007/2020 Calibration 1007/2020 Calibration 1007/2020 Calibration Point 2025 Calibration 1007/2020 Calibration Point 2025 Calibration 1007/2020 Calibration 1007/2020 Calibration Point 2025 Calibration 1007/2020 Calibration Point 2025 Calibration 1007/2020 Calibration Point 2025 Calibration 1007/2020 Calibration Point 2025 Calibration
Cancel	Next the home screen sele	Cancel Accept	Close Save to
6.2 Selec 6.3 Selec 6.4 Allow 6.3 Selec	et Level et Zero-in-Air calibra t of the Troll to stabilise t et Accept .		is has updated, select Close

7. END OF DAY CHECKS

After completing the sampling activities, it is required to check the instrument for drift by undertaking the following checks. Turn on the Troll and idevice and select **Live Readings**:

K 🕸 Live Re	adings			÷
	Aqua TROLL 400 - SN 660871			
Q	Device Location Your device's GPS location will be recorded with every reading			PS: 🥥
		Chan	ge Loca	tion >
	Live Readings Rate: 2 seconds			
~	RDO Concentration	10.10 mg/L		
~	RDO Saturation	98.59 %Sat		:::
	Oxygen Partial Pressure			
	Actual Conductivity			
~	Temperature	14.73 °C		:::
~	Specific Conductivity	157.94 µS/cm		:::
	Salinity			
	Total Dissolved Solids			
	Resistivity			
	Density			
	Pressure			
~	Depth	0.19 m		
~	pH	8.04 pH		:::
	Ds. Start Recording			

7.1 pH 7 END OF DAY CHECK:

- i. Place the sensor (still within its protective metal cover) into pH 7 buffer.
- ii. Leave for a few minutes to stabilise
- iii. Record the value of the pH and the temperature (no need to leave the main screen)

For the end of day check to be successful, the value displayed should be **between 6.8-7.2 pH**. If the check fails, repeat the process with fresh standard solution and a re-rinsed sensor and allow sufficient time to stabilise.

If the check is, still a failure document the calibration form as appropriate and notify the Discrete WQ portfolio holder as soon as possible. Either remove the Smartroll from the WQ shed or mark it not for use to avoid it being used until the Discrete WQ portfolio holder can rectify the situation.



7.2 SPC END OF DAY CHECKS:

- i. Place the sensor (still within its protective metal cover) into <u>FRESH</u> ~149 <u>µ</u>S/cm or ~1288<u>m</u>S/cm conductivity solution
- ii. Leave for a few minutes to stabilise
- iii. Record the value of the conductivity and the temperature (no need to leave the main screen)

For the end of day check to be successful, the value displayed should be within 126-170 <u>µS/cm</u> or 1224-1352<u>mS/cm</u> of the solution if the check fails, repeat the process with fresh standard solution and a re-rinsed sensor and allow sufficient time to stabilise

If the check is, still a failure document the calibration form as appropriate and notify the Discrete WQ portfolio holder as soon as possible. Either remove the Smartroll from the WQ shed or mark it not for use to avoid it being used until the Discrete WQ portfolio holder can rectify the situation.

7.3 ORP END OF DAY CHECKS:

- i. Place the sensor (still within its protective metal cover) into the Zobells Standard Solution
- ii. Leave for a few minutes to stabilise
- iii. Record the value of the ORP and the temperature (no need to leave the main screen)

For the end of day check to be successful, the value displayed should be between 200-255 mV. If the check fails, repeat the process with fresh standard solution and a re-rinsed sensor and allow sufficient time to stabilise

NOTE: the allowable range displayed on the field calibration form is out of date –the range of 200-255mV above should be adhered to.

If the check is, still a failure document the calibration form as appropriate and notify the Discrete WQ portfolio holder as soon as possible. Either remove the Smartroll from the WQ shed or mark it not for use to avoid it being used until the Discrete WQ portfolio holder can rectify the situation.

8. CALIBRATION FORM

Once the end of day checks are completed double check all fields are completed in the Handheld Meter Calibration Form, including adding any comments, prior to finishing for the day. Place the white top copy in the inbox in the WQ lab.

9. TROLL STORAGE

Once all checks are finished and deemed satisfactory turn the Troll off by holding down the power button on the baro/battery unit and exiting out of the idevice app (turning off the idevice afterward):

- i. For safe storage ensure that the sponge is still moist and place the probe(s) into the cup (as if carrying out a DO calibration).
- ii. Disassemble the cable from the sonde and baro/battery packs and carefully coil the cable up, using the Velcro cable tie.
- iii. Place the components on the shelving with the others.
- iv. If the backpack is damp or wet, dry out the case by either bringing into the building proper or hang the backpack up to dry.
- v. If the sonde, Battery/Baro pack, backpack or cable has been covered in mud or sand, please clean, immediately after completing all end of day checks.



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SmarTroll / AquaTroll Calibration using the VuSitu Mobile App

EXAMPLE CALIBRATION FORM:

XXXX HANI		IZONS RE				orizons
Meter ID: AQUAT	Date:	29-0	7 - 1	2020		
Staff Member: A SAMPLER			Time:	14:00		NZST
Run Name:		MO				
	B	AROMETRIC	PRESSURE	CHECKS		
Handheld Meter Reading:		1006 .	1		mbar	
Manawatu at Victoria Avenue:		e:	1006	·4		mbar
	DI	SSOLVED O	XYGEN CAL	BRATION	0.01533	
DO% (after calibration):		100.0	%	Tempera	ature	Pass Calibration 99.7%-100.3%
DO mg/L (after calibration):		9.01	mg/L	23.41	°C	(Ŷ) / N
	C-III-		H CALIBRA		0.000	
H 7 (calibration):		ration Value	18.0	orature °C		VpH Value フロ
H 4 (calibration):	1	*	18.0	°C	+ 10	7.3
H 10 (calibration):	10	*	17.0	N ₀C	- 17	0.6
			ITY CALIBR		<u> </u>	1.2
			onductivity	Temper		Pass Calibration SoE 126-170
Handheld Meter Reading:		153.1	µS/cm	17.65	°C	µS/cm Coastal 1224-1352
Calibration value:		1416			m8/cm	
Handheld Meter Reading:		154	μS/cm	17.3	°C	(Ŷ) / N
			ALIBRATIO	N	SAGENE	
ORP (Calibration):		Calibration	mV	Temper	ature 0C	
		229	DAY OUE		1	
taff Member: A	SA	NPLER	DAY CHEC Time:	16:30		NZST
н		Handheld	Temper	1 1 1	wable Rar	
H 7 Buffer:	-	7.12	18.3	°C 6	6.80 -7.20) (Ý/ N
pecific Conductivit	v	Handheld	Temper		wable Ran	-
erification solution:	15	54.8 ^{µs/c}	^m 18.4	C[ĭ µs	ioE 126-17 i/cm Coas 4-1352mS/	tal (Y) / N
RP		Handheld	Temper	(10 1) - 1	wable Rar	a bar in the standard scenario and a
RP Check value:	2	30 m	18.3	18.33 °C 200-2		Y/N
OMMENTS:						
< AQUATROLL	S DIS	RAY A	1 CALIB	RATION	VALU	es as
4/7/10			SE ARES	HOMNT	12.D	PN
(AUBRAT SMARTON	1011	FILE .		2227100	C IMU	IS TO 2DO
SMARTROL Appendix 1	SD		rsion 6	SIGTION:	> VENG	15/07/2020
		10				-of or fearers