JERICO QUESTIONNAIRE

Task 4.1.1 Physical Sensors

(* Please provide a separate sheet for each parameter)

Laboratório de Calibração – Instituto Hidrográfico

Part b: Calibration

Parameter/measurand*:____temperature_____

Unit of measurement: _____ITS 90, degree Celsius

_____

Range: _____0-30 ºC_____

Accuracy: _____0.005 _____

Precision: _____-_____

Calibration uncertainty (if available): ___0.005_____

1. How often do you calibrate the sensor/s or sensor system/s you are presently using for the specified parameter/measurand: please list the typical calibration interval/s you are employing; note that if you are calibrating irregularly, kindly specify why and when (e.g. before a deployment, following a malfunction, etc.).
   _____Before a deployment or once a year
   _____
   _____
   _____
   (Add lines as necessary)

2. Please provide a brief description of the calibration setup, including a list of the principal equipment, reference material (certified and/or conventionally accepted) and instrumentation involved in a typical calibration operation.
   - Temperature reference: 2 SPRT 25,5 Ohm from H.S (Hart Scientific) model 5699, with traceability to IPQ (Instituto Português da Qualidade)
   - DC Bridge H.S model 1590
   - 25 Ohm Guidline resistance standard
   - Calibration bath from H.S model 7052;
   - Gallium temperature standard from Isotech;
   - 2 Triple Point of Water from Isotech;
   - 1 Water Triple Point maintenance bath from Isotech;
   - 1 SBE 3T Temperature sensor from Seabird;
   - 1 SBE 31 multi channel counter to interface SBE 3T and SBE 4
   - The temperature sensors are calibrated by comparison with 5 or 10 points.

   (Add lines as necessary)

3. Do you employ reference material which are mutable or unstable
   (e.g. secondary standards, reagent solutions, gas mixtures,

pressure generators, etc.) to calibrate the sensor/s or sensor system/s you are presently using for the specified parameter/measurand. **No**
(if **Yes**, please list the types of this kind of reference material you are employing; kindly specify also the measures you take to guarantee the reliability of the reference material in terms of batch-to-batch uniformity of characteristics)

_____
_____
_____
_____
(Add lines as necessary)

4. In your view, does your facility ensure an effective traceability chain for the specified parameter/measurand? **Yes**

5. Please provide a brief description of the procedures employed to ensure adherence of the performances of the principal equipment and reference instrumentation of the calibration setup to factory specifications (in-house monitoring of performance, in loco re-calibration, servicing by the manufacturer, etc.).

_____
_____
_____
_____
(Add lines as necessary)

6. Does your facility maintain a Manual with a description of the calibration method and the measuring procedures, together with details of sample treatment and preparation when these steps are present? **Yes**
(If **Yes**, kindly attach a copy to the completed questionnaire, otherwise please provide a short, description below)
___ Based on the CTD Calibration course by OSIL
_____
_____
_____
_____
(Add lines as necessary)

7. In your view, is regular factory calibration/servicing necessary to obtain optimal performances from your sensors/instrumentation for the specified parameter/measurand in the field? **No**
(If **Yes**, please provide details of the sensors/instrumentation, indicating also the intervals you recommend for factory calibration/servicing, below)

_____
_____
_____
_____
_____

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(Add lines as necessary)

8. Do you perform field calibrations for the specified parameter/measurand? **No**
(If **Yes**, please provide a brief description of the method and procedures)
_____
_____
_____
_____
(Add lines as necessary)

9. Does your facility perform:
   - internal quality audits to monitor and assess its calibration system for the specified parameter? **Yes**
   - independent quality audits to monitor and assess its calibration system for the specified parameter? **No**

(If **Yes** to any of the above, please provide a brief description of the procedure/s applied, including a list of the principal equipment and instrumentation involved)
____ISO 17025
_____
_____
_____
_____
(Add lines as necessary)

10. Does your facility actively maintain an archive containing issued calibration reports/certificates for the specified parameter/measurand? **Yes**
(If **Yes**, please specify the document retention time/s)
___three years
_____
_____
_____

11. Do you have any suggestions or ideas for improving the quality of your calibrations for any particular sensor/sensor system you are presently using for the specified parameter/measurand (e.g. innovative reference material, modifications to existing methodologies or new methodologies you have developed, etc.)? **No**
(if **Yes**, please provide a brief description of your ideas and/or suggestions, including the details of the sensor/s or sensor system/s)
_____
_____
_____
_____
(Add lines as necessary)

12. Do you have any suggestions or ideas for improving the general quality

of the calibration of sensors or instruments for measuring the specified parameter/measurand (e.g. testing and promoting the use of new reference material, development of new methodologies, etc.)? **No**
(if **Yes**, please provide a brief description of your ideas and/or suggestions)

_____
_____
_____
_____
(Add lines as necessary)

Submitted on: __2012-01-20_____
(Date)
Compiled by: _Manuel Marreiros___
(Name of respondent)