W O R L D M E T E O R O L O G I C A L O R G A N I Z A T I O N

COMMISSION FOR INSTRUMENTS AND METHODS OF OBSERVATION

CIMO EXPERT TEAM ON REGIONAL INSTRUMENT CENTERS, QUALITY MANAGEMENT SYSTEMS and COMMERCIAL INSTRUMENT INITIATIVES

Second (reduced) Session

Casablanca, Morocco

4-5 December 2009

FINAL REPORT

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AGENDA

EXECUTIVE SUMMARY

This report provides a summary of the second (reduced) session of the Expert Team (ET) on Regional Instrument Centers (RICs), Quality Management Systems and Commercial Instrument Initiatives held in Casablanca, Morocco from 4 to 5 December 2009.

The main objective of the ET meeting was to review and agree on an evaluation scheme/ checklist for the auditing of RICs. This checklist should enable RICs to check whether they meet the set requirements and also to help them improve their capabilities. The meeting approved the checklist that had been presented to it and agreed that is should be used for the regular evaluation of all RICs. It encouraged all RICs and Regional Associations to make use of it for the regular evaluation of the RICs under their responsibility.

The meeting also reviewed a document on “Guidance on instrumentation for calibration laboratories, including RICs”. The document provides generic recommendations to WMO Members (not only RICs) that address the matter of the instrumentation needed by calibration laboratories to perform their duties and describes technologies and instruments suitable for these purposes. It also provides information on the whole traceability chain and presents instruments that can be used from the top uncertainty level to the uncertainty level of field instruments. This document should be published as an IOM report and will be made available on the WMO website.

Traceability of instrument to international standards was also reviewed and the meeting made a number of recommendations to improve the present lack of traceability encountered. Finally the meeting also started developing a new concept to provide support to RICs in the development of quality procedures addressing instrument calibration, in particular uncertainty calculations.

GENERAL SUMMARY

1. ORGANIZATION OF THE SESSION

1.1 Opening of the session

1.1.1 The second (reduced) session of the Expert Team on Regional Instrument Centers, Quality Management Systems and Commercial Instrument Initiatives (ET) was opened by its Chairman, Mr Jérôme Duvernoy, at 09:00 A.M. on Friday 4 December 2009, at the Direction de la Météorologie Nationale, Casablanca, Morocco. He greeted the participants and allowed each of them to introduce him/herself. The list of participants is attached in Annex I.

1.2 Adoption of the agenda

1.2.1 The ET adopted the Agenda for the meeting, which is reproduced at the beginning of this report.

1.3 Working arrangements for the session

1.3.1 The ET agreed on the proposed working arrangements and adopted the work plan for consideration of the various agenda items.

2. REPORT OF THE CHAIRPERSON

2.1 Mr Duvernoy recalled the mandate of the ET and the activities that were carried out since CIMO-XIV. He became chairman during the course of this year after the resignation of the former chairperson. He noted that none of the ET members had been part of the team in the previous inter-session period and was pleased that significant work had already been achieved by the ET. However, Mr Duvernoy stressed that the ET needed to improve its communication as there was a lot of work to be carried out by the team that could only be achieved through collaboration between its members. Finally, he provided information on selected activities.

2.2 A training workshop on metrology was held from 30 November to 3 December 2009 in Casablanca, Morocco, for French-speaking countries of western and central RA-I (Africa). At this occasion it was noticed that a number of the participants in the Workshop were not aware of the existence of the Casablanca RIC and of the services it could provide. This showed the need for increased communication of Regional Instrument Centres (RIC) capabilities and services to Region Members.

2.3 The Questionnaire on “Quality and Maintenance carried out in NMHSs” that was developed by the former ET was analyzed. A checklist for the evaluation of RICs was developed and will be the main focus of this meeting that should review, improve and validate it. After the meeting, the team should also work on the update of the parts of the CIMO Guide addressing instrument calibration for basic meteorological variables.

3. EVALUATION SCHEME FOR REGIONAL INSTRUMENT CENTRES

3.1 At its sixtieth session, the WMO Executive Council recognized that further work was needed to improve the performance of RICs and to bring all RICs up to the necessary performance standards. This was motivated by the ever increasing need for high quality observations, in particular in support of climate, disaster risk reduction and of the development of WIGOS. In this context, the Executive Council requested Regional Associations, in collaboration with CIMO, to initiate the process of continuous evaluation of RICs to verify their capabilities and performance.

3.2 Therefore, the ET was tasked to develop an evaluation scheme (checklist) for the auditing of RICs in order to enable them to check whether they meet the set requirements and also to help them improve their capabilities. The checklist should, above all, help RICs to progress. However,

the checklist should also ensure that the same baseline can be applied for the evaluation of comparable RICs and that their assessment would be independent from the person carrying out the audit. The ET recommended that RICs should be requested to declare their capabilities and that any evaluation should be carried out against this declaration. As a consequence, this would ensure that RICs are free to choose instrumentation meeting their needs and those of their Region and would not be forced to achieve the same uncertainty level in their calibrations as RICs of other Regions.

3.3 The checklist that was developed by Mr Duvernoy is based on the terms of reference of RICs and on the ISO 17025 standard "General requirements for the competence of testing and calibration laboratories". In this context, it should be recalled that the RICs Terms of References are also based on this standard, but do not require RICs to be accredited against this standard. The checklist contains 3 parts: the two major chapters of ISO 17025 (management and technical requirements), which are most relevant to RIC activities and the third part focuses on the RICs Terms of Reference in a broader sense. The meeting recalled that at present, at least 4 RICs were accredited according to ISO 17025 for pressure, temperature and humidity and that another one was certified according to ISO 9001. The meeting also noted that though accreditation according to ISO 17025 is a mark of very good performance of a RIC, the TORs of RICs go beyond that. Therefore, accredited RICs would also be expected to use the third part of the checklist to verify their capabilities.

3.4 The checklist is in the form of an Excel worksheet. Each of the questions is associated with a comment, which is supposed to help the user to understand the question and how to improve its capabilities. The sheet weights the answers according to their importance and calculates a score associated to the overall results of each of the sections. The final mark is associated with the following ratings "Not performing", "Need improvements", "Satisfactory" and "Good". The results are displayed against a number of headings to identify the areas that need improvement as a priority. Users of the worksheet must have basic knowledge of quality management and metrology.

3.5 Participants in the meeting had filled the checklist for their RICs. This proved useful in improving and clarifying the checklist as well as in ensuring that it was adapted for RICs and exempt of calculation errors. The meeting reviewed in detail the proposed checklist and tested in particular the clarity of the questions by conducting a trial evaluation on the premises of RIC Morocco with a view to test the suitability of the scheme and to improve the formulation of the questions according to the lessons learnt during the trial evaluation. When performing the evaluation of a RIC, the auditor would have to verify the evidence of the replies to the checklist (i.e. availability of the documents, procedures, date of calibration of the reference equipment, …).

3.6 The meeting agreed that this checklist was extremely valuable to improve the capabilities of RICs. In particular, it was recognized that it constituted a precious help for RICs that would like to start a quality process and/or wanted to prepare themselves for certification/accreditation as it included all the necessary items. The meeting was of the opinion that this checklist corresponded to what had been needed by RICs to improve their capabilities. The meeting unanimously agreed that its use was highly recommended for self-evaluation as well as for third-party evaluation of RICs. The meeting also stressed that this checklist was not restricted to the use of RICs but would be valuable for any NMHS that has a calibration laboratory.

3.7 The meeting recognized that the evaluation scheme was very good and made some recommendations for its improvement. The meeting requested Mr Duvernoy, to finalize the checklist according to the recommendations made during the meeting and to send it to the participants for a final test by the end of the year. The participants would then apply it to their own RICs and test the ranges used to compute the final RIC evaluation (ranges of the ratings "Not performing", "Need improvements", "Satisfactory" and "Good"). The meeting requested the participants to inform Mr Duvernoy of any disagreement they may have on the ranges used to compute the final RIC evaluation by 20 January 2010. In case of need, a teleconference would be organized to agree on the final numbers. The meeting approved the overall evaluation scheme and thanked Mr Duvernoy for his contribution to this major development. An extract of the evaluation scheme, reproducing the questions is provided in Annex II. The meeting recommended that all

RICs should provide the results of their evaluation (at least the RIC and synthesis worksheets of the evaluation scheme) to the WMO Secretariat. In a first step they could chose to do it as a self-declaration or by third-party auditing. The meeting recommended that Regional Associations and RICs should be made aware of the existence of this evaluation scheme and requested to use it for the regular the evaluation of the RICs under their responsibility.

3.8 Setting in place a quality system is a very important but demanding task. Though the checklist presented above provides a significant support, having examples of procedures used by other organization can also provide a precious help in this process. The meeting therefore encouraged those NMHSs that had already gone through this process to provide their procedures to WMO so that they could be shared with NMHS which are starting this process. The meeting was aware that those procedures frequently contain confidential information and noted that this may be an issue as they would need to be drafted in an anonymous manner before they could be freely shared.

3.9 The meeting made additional recommendations to improve the collaboration between RICs and Members to make best use of resources and improve instrument traceability:

- a template should be developed to inform Members on RICs capabilities (parameters they can calibrate, calibration range, best measurement uncertainties, reference equipment and calibration procedures available at RIC).
- RICs capabilities should be posted on the WMO website
- RICs should notify WMO of any changes in their capabilities
- the results of RICs interlaboratory comparison should be published on the WMO and RICs websites
- RICs evaluation results should be provided to the Secretariat

4. STATUS OF INSTRUMENTS' TRACEABILITY IN NMHSs

4.1 The analysis of the Survey on Calibration and Maintenance carried out in 2006 at National Meteorological and Hydrological Services (NMHSs) was presented to the meeting. 75 replies were received, which corresponded roughly to a response rate of 40%, while the response rate of RICs was 75%. The survey revealed that most Members carry out the maintenance of their instruments themselves. Only 43 out of 75 replies said they needed RICs. Although 74% of the respondents declared doing maintenance and/or calibrations, the traceability of their reference instruments to international standards was missing in many cases. No region singled out itself with respect to traceability. Therefore, RICs should better inform Members of their Regions on their capabilities and the services they can provide to them to ensure the traceability of their instruments.

4.2 The meeting was concerned by this lack of traceability and recognized the need for more information on the importance of traceability and the existence of RICs and their capabilities. This could be achieved through workshops on metrology, websites and possibly through side-events on calibration during TECO. The meeting therefore recommended that RICs develop websites to improve communication with the Members of their Region and to sensitize them to the importance of instrument traceability. The meeting was pleased that the RIC Morocco was considering developing a website with interactive features to respond to questions of the Region Members.

4.3 Some NMHSs do not have a calibration laboratory and are therefore facing problems to ensure the traceability of their instruments. It happened that RICs were contacted to calibrate some Members field instruments as those had no reference standards.

4.4 The meeting was of the opinion that an improvement in the traceability of instruments could be expected from the broader use of traveling standards that can be purchased at reasonable prices. Such standards could be used by NMHSs that do not have a calibration laboratory and/or environment generator (pressure/temperature generator) to do at least one-point verifications on site and to ensure the traceability of their instruments by having the traveling standard calibrated at

a RIC on a regular basis. Also, RICs could use traveling standards to verify the standards of Members of their Region in their countries rather than in the RICs facilities if not possible in another manner. In view of the importance of instrument traceability to ensure that observations meet user requirements, in particular for climate issues and disaster risk reduction, the meeting recommended to NMHSs to invest in building calibration laboratories, at least for pressure, temperature and humidity and ensure the traceability of their measurements to international standards on a regular basis. This traceability could be obtained through a traveling standard.

4.5 The survey also revealed that a number of old instruments based on capsules or bellows were still in use. On a related matter, the meeting had an extensive discussion on the use and replacement of thermo-hydrographs and barographs. It recognized that such instruments were still in wide use in spite of the difficulties linked with their maintenance and calibration. Though their replacement should be recommended, NMHSs sometimes face the problem of power supply for the new instruments. The meeting therefore recommended that CIMO-XV includes in its work plan an action on developing solution for the removal/replacement of thermo-hydrographs and barographs.

5. RECOMMENDED INSTRUMENTATION FOR CALIBRATION LABORATORIES, INCLUDING RICs

5.1 As mentioned in the previous section, NMHSs need to be equipped with calibration laboratories to be able to maintain their instrumentation. Also, NMHS require guidance on how to set-up their calibration laboratories and, in particular, guidance and recommendations on the type of instruments that are appropriate to perform the needed tasks.

5.2 A document on “Guidance on instrumentation for calibration laboratories, including RICs” was presented to the meeting. This document provides generic recommendations to WMO Members (not only RICs) that address the matter of the instrumentation needed by calibration laboratories to perform their duties and describes technologies and instruments suitable for these purposes. It also provides information on the whole traceability chain and presents instruments that can be used from the top uncertainty level to the uncertainty level of field instruments.

5.3 The meeting agreed that this document provided the needed guidance and a clear and valuable description of the instrumentation. The meeting felt that it was appropriate for publication as IOM report with minor modifications and thanked Mr Groselj for developing this review. It was agreed that the participants in the meeting would provide their comments on the final version of the document by mid-January 2010.

6. GUIDANCE MATERIAL ON INSTRUMENT INTERCOMPARISON

6.1 The Terms of Reference of RICs requests them to participate in, or organize inter-laboratory comparisons of standard calibration instruments and methods to ensure the comparability / equivalence of their standards. The meeting discussed the need to develop detailed procedures for such intercomparisons and agreed that detailed procedures were not needed as the comparison normally consists of different RICs calibrating the same instrument(s) and publishing the results of these calibrations together, including the uncertainties they obtained for their respective calibrations.

6.2 The meeting was informed that no inter-laboratory comparison had been performed to date in RA-I (Africa). The meeting was concerned by this situation and strongly recommended that RA-I RICs carry out an intercomparison using a set of digital instruments.

6.3 In view of strengthening the capabilities of RICs it is also important to ensure that they have appropriate procedures to calculate the uncertainties of the calibrations they perform. This gives not only very important information to the user of the instrument, but is also of paramount importance to ensure that the outcome of intercomparisons is meaningful. The meeting therefore proposed to consider organizing a workshop on the subject. The aim of the workshop would be that each participating RIC be able to properly estimate each of the uncertainty components and to compute the overall uncertainty budget for the calibrations they perform. The meeting felt that such

a workshop should be organized in collaboration with Regional Associations, depending on their needs.

6.4 Such a workshop could also be linked to the comparison of the traveling standards of each of the participating RICs. Each participating RIC would be expected to bring to the workshop their traveling standards for pressure, temperature and humidity (including their latest calibration certificates), the procedures they use for carrying out their calibration and computing their uncertainties and an example of a calibration certificate they provide to clients.

6.5 Before the workshop, the ET would prepare templates for uncertainty calculations for each parameter. Detailed computation of uncertainty budgets for example for the calibration of a mercury barometer and a digital barometer would be presented based on the equipment available at the workshop site. Supporting evidence for the estimation of each uncertainty component would be presented and discussed. Participants would then be expected to develop during the workshop the uncertainty budget for the equipment they use in their RICs. In view of promoting knowledge transfer, it should be envisaged to organize the workshop in the RIC of a developed country, preferably an accredited RIC.

7. OTHER BUSINESS

7.1 Mr Nakashima presented the capabilities and plans for the RIC Tsukuba (Japan). In particular he mentioned the plan to revise the lecture notes that had been developed for a training workshop on metrology that was held in Japan in 1998 for RA-II members.

7.2 The ET welcomed this initiative and recommended that the revised document be submitted to the ET for review and published preferably as an IOM report.

7.3 Mr El-Sayed presented the capabilities and equipment of RIC Cairo which was recently upgraded.

Collaboration between RICs and manufacturers of meteorological instruments:-

7.4 Mr. Zillmer, the HMEI representative presented detailed technical features of some calibration equipments required for calibration laboratories.

7.5 RICs have a common need to be informed about new instruments, sensors, systems, software and services that are available from the private sector to support calibration activities. Therefore, the meeting welcomed the presence of HMEI representatives at the meeting and encouraged close collaboration between RICs and HMEI Members, especially in the area of development of calibration equipments. Such collaboration would also facilitate technology transfer and be of mutual benefit to both the RICs and HMEI, as it could also lead to instruments better meeting RICs needs and more cost-effective equipments. The RICs should continue efforts to enhance that collaboration which would also help them when providing advice to developing countries in choosing their calibration equipments.

7.6 In addition, the meeting encouraged manufacturers and instrument providers to assist developing countries, as far as possible, in organizing training events, in ensuring traceability to SI and in developing new simple and cheap instruments and calibrations facilities to update obsolete instrumentation still used in some NMHSs of developing countries.

8. CLOSURE OF THE SESSION

8.1 The session was closed on 5 December 2009 at 18:55 hours.

Annex I

List of participants

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Annex II

Extract from the Evaluation Scheme for RICs

Chapter 4: Management Requirements

4.1 Organization	Is the RIC's position clearly defined in the parent organisation structure? Are RIC relationships between other services defined? Are RIC and maintenance service clearly separated? Are there policies and procedures relating to the protection of its clients confidential information? Are there organigram describing internal RIC organization? Are responsibility, authority and interrelationships of all personnel specified? Has a member of staff been appointed as quality manager? Have deputies been appointed for key personnel?
4.2 Quality System	Have you any Quality Assurance procedures (Quality Manual…)? Is the quality manual appropriate to the scope of the RIC activities? The date of the last update is? Are objectives of RIC clearly documented (for instance in the quality policy statement)? Does the quality manual include the structure of the documentation and responsibilities of technical and quality managers?
4.3. Documentation Control	Are there procedures to control documents? Are there instructions or procedure dealing with the review and approval of documents? Are updates and modifications clearly identified in all documents? Are the latest versions of documents promptly available? Are all documents, included external sources, controlled?
4.4 Review of contracts	Are the procedures for the review of request and contracts established? Are reviews and discussions with a client maintained?

4.5 Subcontracting of calibrations	Are you subcontracting some of your calibration works? Are selecting criteria clearly defined? Is the client advised of the subcontract?
4.6 Purchasing supplies	Is a policy for purchasing supplies expressed? Are the purchasing procedures written and validated? Are the conformity criteria used for materials acceptance clearly defined, especially for materials used in calibration works? Are the evaluation of critical materials suppliers performed?
4.7 Service to client	Have you a procedure or dispositions concerning relationship with your clients? Are clients allowed to be present during your calibration work? Is the confidentiality of clients ensured during all the process?
4.8. Complaints	Have you a policy for the resolution of clients' complaints? Have you a procedure(s) for the resolution of clients' complaints?
4.9 Control of nonconforming calibration work	Have you a policy for the resolution of nonconforming work? Have you a procedure dealing with nonconforming calibration work? In case of nonconforming work, is the responsibility for authorizing the resumption of work defined? Are dispositions taken in case of nonconforming calibration report?
4.10 Corrective action	Have you established a policy for implementing corrective action when nonconforming work has been identified? Have you established a procedure(s) for implementing corrective action when nonconforming work has been identified? Are correctives actions monitored to ensure effectiveness?
4.11. Preventive action	Have you establish procedure(s) for preventive actions?
4.12. Technical records	Have you establish procedure(s) for the control of quality and technical records? Is the retention time of quality and technical records clearly established? Are all records kept securely?

4.13. Internal audits	Are internal audits of RIC conducted periodically? Have you establish a procedure to schedule internal audits? The period of internal audits is All elements of quality system of RIC are covered by audit?
4.14. Management review	Have you establish a schedule for quality system review? Have you establish a procedure to organize quality system review? The periodicity of such review is? Are the decided actions decided recorded and reviewed regularly?

Chapter 5: Technical Requirements

5.2. Personnel	Have you establish a policy for training of personnel? Do you ensure that personnel are qualified to perform calibration work? Is every job described in the quality system from managerial to technical staff? Have you described competency and responsibility of every technical staff?
5.3. Accommodation and environmental conditions	Do the RIC have all facilities to perform calibration work for the expressed capabilities? Are environmental conditions controlled and recorded? Are measures taken for housekeeping of laboratory areas? Have you special dispositions dealing with neighboring areas (for instance storage) ?
5.4. Calibration methods and method validations 5.4.1. General	Have you manuals for the use of every equipment used in calibration work? Have the laboratory established instructions on the use and operation of all relevant equipment?
5.4. Calibration methods and method validation 5.4.2. Selection of methods	Is the client informed by the laboratory of the method used for calibration? Has a member of staff been appointed as technical manager (or equivalent), which is in charge particularly of method selection and validation?
5.4. Calibration methods and method validation	Have the laboratory validated its calibration methods?

5.4.5. Validation of methods	Are client's needs in term of performance and accuracy clearly defined? Or are your capabilities in term of range, steps and accuracy clearly defined?
5.4.6. Estimation of uncertainty of measurement	Do you apply a procedure to estimate the uncertainty of all calibration measurement covered by quality system?
5.4.7. Control of data	Are calculations and data transfers systematically under control or checked? Have you developed and validated special software for calibration work? Have you established a procedure(s) for data protection?
5.5. Equipment	Do the RIC have all equipment to perform calibration work for each claimed parameter? Is the required accuracy specified for all equipment (reference standards in particular)? Is every equipment (reference standard, particularly) uniquely identified? Have you established records for each equipment? Have you established instructions dealing with defective equipment or software? Do you have special procedure(s) for equipment going out of your direct control?
5.6. Measurement traceability 5.6.1. General	Have you established a progamme for the calibration of reference standards and associated systems? Have you established a procedure(s) for the calibration of reference standards and associated systems?
5.6. Measurement traceability	Can the RIC give real proofs of traceability to SI units for all reference standards and associated equipments? Do the calibration certificates of reference standards contain measurement results, including the measurement uncertainty and/or a statement of compliance? Have you performed regular checks to maintain confidence in the calibration status of reference? Have you established a procedure(s) for handling, transport, storage and use of your reference standards? Are you using equipments which are not able to ensure traceability to SI units?
5.8. Handling of calibration items	Have you established a procedure(s) for the transportation, receipt, storage of instruments to be calibrated? Have you established instructions for identifying such items?

5.9. Assuring the quality of calibration results	Have you established a procedure(s) for monitoring the validity of your calibrations?
5.10. Reporting the results	Are all relevant information and data reported in the calibration certificate given to the client after calibration work? If needed, are calibration data, which are obtained before and after adjustment or reparation, reported? Are you able to give opinion or interpretation to satisfy client requirements? Are you able to give a compliance or noncompliance opinion? Are compliance criteria reported in the calibration report?
5.10.9. Amendments to calibration certificates	Have you established instructions dealing with amendments of a calibration certificate?

Regional Instrument Centre Requirements

(a) A RIC must have, or have access to, the necessary facilities and laboratory equipment to perform the functions necessary for the calibration of meteorological and related environmental instruments;	Does the RIC have all facilities to perform calibration work for the expressed capabilities? Are environmental conditions controlled and recorded? Are measures taken for housekeeping of laboratory areas?
(b) A RIC must maintain a set of meteorological standard instruments and establish traceability of its own measurement standards and measuring instruments to the SI;	Do the RIC have all equipment to perform calibration work for each claimed parameter? Required accuracy is specified for all equipment (reference standards in particular)? Is every equipment (reference standard, particularly) uniquely identified? Have you established instructions dealing with defective equipment or software? Have you established a progamme for the calibration of reference standards and associated systems? Can the RIC give real proofs of traceability to SI units for all reference standards and associated equipments?
(c) A RIC must have qualified managerial and technical staff with necessary experience in fulfilling its functions;	Are there organigram describing internal RIC organization? Are responsibility, authority and interrelationships of all personnel specified? Have you establish a policy for training of personnel? Do you ensure that personnel are qualified to perform calibration work?

	Is every job described in the quality system from managerial to technical staff?
	Have you described competency and responsibility of every technical staff?
(d) A RIC must develop its individual technical procedures for calibration of meteorological and related environmental instruments using calibration equipment employed by the RIC;	Have the laboratory established instructions on the use and operation of all relevant equipment?
	Is the client informed by the laboratory of the method used for calibration?
	Have you established a procedure(s) dealing with uncertainty associated with calibration results?
(e) A RIC must develop its individual quality assurance procedures;	Has a member of staff been appointed as technical manager (or equivalent), which is in charge particularly of method selection and validation?
	Do you have any Quality Assurance procedures (Quality Manual…)?
	Are objectives of RIC clearly documented (for instance in the quality policy statement)?
	Do the quality procedures include the structure of the documentation and responsibilities of technical and quality managers?
(f) A RIC must participate in, or organize inter-laboratory comparisons of standard calibration instruments and methods;	Have you organized or participated in an interlaboratory comparison?
	Have results of intercomparison been published (for instance on WMO or RIC Web)?
(g) A RIC must, as appropriate, utilize the resources and capabilities of the Region to the best interest of the Region;	Have contact or meetings with other Region members?
(h) A RIC must, as far as possible, apply international standards applicable for calibration laboratories, such as ISO 17 025;	Is a member of staff responsible of RIC quality assurance?
	Are RIC and maintenance service clearly separated?
	Does RIC apply international standards, such as ISO 17 025?
	Are the laboratories certified or accredited against ISO 9001 or ISO 17025 standard?
(i) A recognized authority must assess a RIC, at least every five years, to verify its capabilities and performance;	Have you establish a procedure to schedule internal audits?
	The period of internal audits is

	Have you been audited or evaluated within the last five years by a recognised authority?
(j) A RIC must assist Members of the Region in calibrating their national meteorological standards and related environmental monitoring instruments;	Have you external clients (external to organisation)? Have Region members as client? Have you any demand concerning the calibration of national standards of Region Members?
(k) A RIC must participate in or organize, WMO and/or regional instrument intercomparisons, following relevant CIMO recommendations;	Do you organise or participate in a WMO comparison campaign?
(l) According to relevant recommendations on the WMO Quality Management Framework a RIC must contribute positively to Members regarding quality of measurements;	Have you calibrated instruments (transfer standards or other sensors) for other Region member(s) within the last five years? Have you collaborated within instrument domain with other region member(s) within the last five years?
(m) A RIC must advise Members on inquiries regarding instrument performance, maintenance and the availability of relevant guidance materials;	Did you receive demands dealing with instrument domain coming from other region members? Have you demands of Region members dealing with instrumental documentation?
(n) A RIC must actively participate in, or assist in the organization of regional workshops on meteorological and related environmental instruments;	Have you contributed of the training of staff on instruments in the Region (workshop, trainee…)? Have you participated in or organised workshop on metrology or instruments?
(o) The RIC must cooperate with other RICs in standardization of meteorological and related environmental measurements;	Have you had contact(s) with other RIC within the last five years?
(p) A RIC must regularly inform Members and report, on an annual basis, to the president of the Regional Association	Do you inform regularly Members, president of the Region and WMO, about your activity as RIC?

and to the WMO Secretariat on services offered to Members and activities done;	Have you a specialised web-site on RIC activities?