

**Report on the fourth meeting of the JCRB held on
20 - 21 March 2000
at NIST, Gaithersburg, Md - USA**

Those present:

T. Quinn	BIPM (chairman)
R. Kaarls	CIPM (secretary)
K. Brown	CIPM
D. Vasiliev	COOMET
V. Belotserkovsky	COOMET
A. Robertson	SIM
I. Castelazo	SIM
H. Semerjian	SIM
L. Contier de Freitas	SIM
J. Lusztyk	SIM
S. Carpenter	SIM
B. Inglis	APMP
H. Imai	APMP
N.H. Van	APMP
K.H. Lam	APMP
S.W. Chua	APMP
C. Shi	APMP
L. Erard	EUROMET
A. Wallard	EUROMET
W. Schwitz	EUROMET
F. Hengstberger	SADCMET
H. Ugur	MENAMET

Invited:

C. Thomas	BIPM
R. Watters	NIST

The list of participants with their affiliation with their e-mail addresses is added as Annex 1 to these minutes.

1. The chairman opened the meeting welcoming the representatives of the RMOs and their advisors as well as Dr Robert Watters and Dr Claudine Thomas invited to present their work on the database.. The draft agenda was approved with the addition of a point on the role of the CC's under agenda point 7. Other business.

Dr Kaarls agreed to act as secretary to the meeting.

The chairman then summarised the enormous progress in the development of the MRA since the last meeting of the JCRB on 15 July 1999 at Charlotte, NC, USA.

In October 1999 the MRA was signed by the Directors of the NMI's, the databases for appendices B and C have been developed much further, the RMO's have done much work in delivering draft input data and the CC's have advanced considerably in the identification and execution of key comparisons. The draft data files for Appendix C received by the BIPM are available now on CD. These CD's will be distributed to the RMO's / NMI's concerned; the data on the CD's are only for internal RMO/NMI consideration and are not intended for public use.

With the agreement of the Committee, the chairman then asked Dr Thomas to make a presentation on the present state of the databases. See Appendix 2 to this report.

2. The report of the third meeting of the JCRB was approved, with the remark that the format for Appendix C of the MRA for measurement capabilities in Amount of Substance will be discussed and approved later; the CCQM will have a final discussion on this format during its meeting on 6-7 April this year.

3. The Rules of Procedure for the JCRB have undergone minor modifications in order to take into account changes in the MRA made between February and October 1999. With the signing of the MRA in October 1999 these Rules of Procedure were approved.
4. The provisional data files submitted by RMOs for Appendix C of the MRA triggered an extensive discussion.
The chairman reminded the members of the JCRB of his letter of 24 November 1999, written after he had attended a meeting of the APMP. It was understood that the provisional data for Appendix C would be judged on the basis of the elements mentioned in this letter of 24 November 1999. (See Appendix 3).
The chairman invited the RMO's to clarify the procedures they have used so far and explain the problems they might have encountered and the possible solutions to the problems. The representatives of the RMO's tabled a number of documents, annexed as Appendices 4 to 7 to this report.

After ample discussions the JCRB agreed on the following statement:

The JCRB at its 4th meeting on 20 and 21 March 2000 is of the unanimous opinion that the declared objectives of the MRA require the CMC data entered in Appendix C be declared fully reliable by the RMO's. In consequence, CMC files submitted by NMI's will remain in the review and analysis loops of the RMO's and the JCRB until such time as this is the case.

Further with respect to the provisional data for Appendix C the JCRB agreed that:

- since only data declared fully reliable will be published in Appendix C, which is the database accessible by the outside world, there will be no "flags" or comments in the data in this database; in the draft data files reviewed by the RMOs and JCRB, however, flags or comments may be inserted;
- during the transitional period, the CMC's will be reviewed on the basis of the notes sent around by Dr Quinn in his letter of 24 November 1999 supplemented by the more detailed notes adopted by each RMO and given as Appendices 4 to 7 here;
- in first instance, the CMC data, after it has been sent in by an RMO, will be made available by the BIPM to all the other RMO's via CD's; these data files are not intended to be open to the public and should only be considered by the RMO's in order to be able to form an opinion about the acceptability for the inclusion in Appendix C of the MRA;
- each RMO will itself select which CMC from another RMO and in what detail it will be reviewed, since it is impossible to check every data file from every other RMO;
- the chairs of the different working groups of the RMO's co-ordinate and exchange their opinions on the CMC's directly to each other through the chairmen of the RMO's, this exchange will be done by e-mail, while an e-mail copy also will be sent to the chairman of the JCRB;
- the RMO's will either give comments or will confirm that they have no comment;
- for the data files already sent in, the RMO's will forward their revisions and any additional data before 31 May 2000; also the RMO's should give the status of the data (OK, under review, etc.)
- if in a region not enough expertise is available to review and analyse a CMC of an NMI, the region or NMI concerned will ask another region to provide the required expertise and assistance in the review and analysing process.
- the CC-Working Groups on Key-Comparisons will be asked to provide for all fields a harmonised classification of "services" (if possible) before 30 June 2000 to the BIPM. Dr Quinn will inform the CC-chairs and working group chairs on this issue (e-mails sent 30 March 2000).

The JCRB agreed on the following time schedule, while setting priorities for those areas of measurements which are mostly developed now with respect to the review and analysis of CMC's:

- | | |
|--|---------------------------|
| - Deadline for submission of revised data files
(in particular length, electricity and magnetism) | 31 May 2000 |
| - Final date for receiving comments from the RMO's | 31 August 2000 |
| - Review and preparation for Appendix C by JCRB | 11-13 October 2000 |

- First publication Appendix C **December 2000**
- Deadline for submission of revised data **31 October 2000**
(in particular AUV, T, PR, IR, gas mixtures, mass standards, force and pressure)
- Final date for receiving comments from the RMO's **31 January 2001**
- Review and preparation for Appendix C by JCRB **12-13 March 2001**
- Publication in Appendix C **May 2001**
- Deadline for submission of revised data **31 May 2001**
(in particular rest of mass and some chemistry)
- Final date for receiving comments from the RMO's **31 August 2001**
- Review and preparation for Appendix C by JCRB **8-9 October 2001**
- Publication in Appendix C **December 2001**

It is planned that the JCRB will meet every six months for the foreseeable future and that the above scheme of dates and deadlines will continue from year to year. The scheme does not exclude the possibility of CMC data files becoming available earlier being discussed.

Please note that all data files should be sent directly to Claudine Thomas at the BIPM on cthomas@bipm.fr, do not use other e-mail addresses at the BIPM. This is to ensure the minimum of internal BIPM manipulation of the data files.

With respect to a few other points related to Appendix C the JCRB decided that:

- Bob Watters and Claudine Thomas will complete several changes with respect to the input data files to be delivered by the RMO's and will distribute new instructions as soon as possible to the RMO's (Appendix 9).
 - in Appendix C, an extra column will be added for stating k (in general k=2)
 - in Appendix C contact persons will not be mentioned but only the NMI concerned and its co-ordinates.
 - instead of ISO/IEC Guide 25, from now on one will read ISO /IEC Standard 17025.
 - the model 2 of Appendix 8 to this report will be used as the format for Appendix C in the field of measurement capabilities in chemistry, pending a final discussion by the CCQM during its meeting on 6-7 April 2000.
 - as soon as the JCRB has agreed on all RMO review procedures the JCRB will produce a compilation of all these procedures;
 - the chairs of the relevant CC Key Comparisons Working Groups must be informed of RMO Key Comparisons and RMO Supplementary Comparisons and through them the results will be included in the key comparison database
5. No provisional data for Appendix C was discussed during this meeting of the JCRB since further clarification of the status of the data is needed and several data may have to be revised or added. All clarification and submission of revised or added data shall be sent in before 31 May 2000 (see timetable above).

Before the submitted data files are approved for inclusion in Appendix C the data files will be distributed by the BIPM to the RMOs on CD's; this will also make it possible to carry out a check on the correctness of the data.

6. The Key Comparison database including a full list and details of all key comparisons (Appendix B of the MRA but with as yet no results) opened on the web on 30 November 1999.

As regards key comparison reference values, In principle should always be a Key Comparison Reference Value connected to a Key Comparison. This rule is applicable to all the fields of measurements and only in exceptional cases for technical reasons a CC may decide that it is not appropriate to have a Key Comparison Reference Value.

Although it may be possible and desirable to have a direct link between Appendix C and Appendix B in order to see which Key Comparison is underpinning a claimed CMC, it would not be wise to make this information directly publicly accessible, since there will be several CMC's which are not

directly underpinned by a Key Comparison but have nevertheless been approved on the basis of other considerations (peer review results, accreditation, etc.)

With respect to the search possibilities in the database, we must take into account the needs of the users. For example, a user may like to know to what extent one can rely on the calibration and measurement certificates issued by an NMI in a certain country for a particular quantity.

The chairman of the JCRB concludes the discussions on the databases with special thanks for the enormous efforts made by Bob Watters and Claudine Thomas and several other members of the staff of NIST and BIPM, his remarks were applauded by all members.

7. With respect to the role of the CC's in relation to the Appendix C it is concluded that the CC's will not have a direct role but that their key comparison working groups provide about the only worldwide forum for discussing matters such as formats and unified lists of measurement services. In the case that inconsistencies between the RMO's cannot easily be solved by the RMO's, the chair of the JCRB may consult the CC for advice.
8. The next meeting of the JCRB will be on 11 – 13 October 2000 at the BIPM in Sèvres.

During this meeting not only the first CMC's will be reviewed but also the different review procedures and criteria used by the different RMO's (the quality issues, etc.) will be discussed.

The chairman adjourns the meeting and thanks everyone for their contributions in the meeting and the NIST for the provision of facilities.

List of Annexes

1. List of participants and e-mail addresses
2. Presentation of Appendix C files by Claudine Thomas
3. Letter of Dr T. Quinn of 24 November 1999
4. APMP Position Paper on the Entry to Appendix C of the Global MRA
5. APMP Questionnaire for their TC Members
6. EUROMET Contribution to the JCRB No. 4
7. SIM Procedure for Review of Calibration and Measurement Capabilities Submitted for Appendix C of the CIPM-MRA
8. Model 2: format for Appendix C in the field of chemistry
9. List of new instructions with respect to input data for the database.