

CCEM WGRMO Meeting

March 2017

Dr Ilya Budovsky
Chair, CCEM-WGRMO

Bureau
International des
Poids et
Mesures



Members of the WGRMO

- representatives of the RMOs;
- chairpersons of WGLF and GT-RF;
- the executive secretaries of the CCEM and the JCRB; and
- the KCDB manager.

Objectives of the WGRMO

1. establish and maintain **lists of service categories**, and where necessary **rules for the preparation of CMC entries**;
2. agree on detailed technical **review criteria**;
3. develop **“lower limits” of uncertainties** for CMCs in those cases, where these are imposed by the characteristics of the device under test;
4. provide **guidance on the range of CMCs** supported by particular KCs and SCs;
5. identify areas where **additional KCs and SCs** are needed;
6. coordinate the **sharing of the inter-RMO review** of new CMCs between the RMOs;
7. coordinate the **review of existing CMCs** in the context of new results of KCs and SCs;
8. **harmonize procedures and activities among the RMOs**; and
9. strengthen the **cooperation between the RMOs**.

CCEM WGRMO Meeting 21 March - Agenda

1. Introductions and welcome
2. Approval of the minutes of the last meeting (informal meeting on 10 July 2016)
3. CCEM WGRMO Chair's Report
4. CIPM MRA Review and update from JCRB
 - a. Overview of CIPM MRA Review and CCEM Input
 - b. Update from the Working Group on CIPM MRA Review
 - c. Update from JCRB
 - d. KCDB 2.0
5. Inter-RMO Reviews of CMCs
 - a. Implementation of sampling strategy in 2015-2017
 - b. Future directions
 - c. Periodic review of existing CMCs
 - d. CMC Submission Process
6. Format of CMCs
7. News from RMOs
 - a. Implementation of MRA Review recommendations
 - b. Action items from the meeting on 10 August 2016
 - c. Overview of RMO comparisons
8. Service Categories in Electricity and Magnetism
 - a. Currency of EM service categories
 - b. Categories 8 and 9
 - c. Proposals for new and updated service categories
9. Terms of Reference for CCEM WGRMO
10. AOB
11. WGRMO Chair for 2017-2018
12. Close and Date of Next Meeting

CIPM MRA Review

CCEM is at the forefront of implementing the MRA Review recommendations:

- Well thought-through comparison strategy
- Risk-based approach to Inter-RMO review of CMCs
- Optimisation of CMCs through matrices
- Significant input to MRA review, including the scoping of KCDB 2.0

<http://www.bipm.org/en/cipm-mra-review/>

Inter-RMO Reviews of CMCs

Sampling Strategy for Inter-RMO Review of CMCs:

- CCEM 2015 recommended to further reduce the volume of Inter-RMO reviews based on sampling

Prior to CCEM 2011:

Up to 400% review (Four RMOs each reviewing the entire set)



Since CCEM 2011:

100% review (2-4 RMOs collectively reviewing the entire set)



After CCEM 2015:

0 - 100% review (based on sampling)

Inter-RMO Reviews of CMCs

Sampling Strategy (continued):

CCEM 2015 Decision:

Upon submission of a CMC set, a proposal for the scope of Inter-RMO review is made by the Chair of WG-RMO or designate, based on agreed criteria such as:

- Magnitude of change
- History of previous reviews
- Coverage by on-site technical reviews
- Rotation
- High-level technical judgement

The final decision on the scope of review lies with RMOs.

5. Inter-RMO Reviews of CMCs

Implementation of Sampling Strategy

No	Country (NMI)	Contact	Entries in category												Sum						
			1	2	3	4	5	6	7	8	9	10	11	12							
			entry	matrix																	
CZ	Czech Republic (CMI)	jstreit@cmi.cz	new													3	0	3	AFRIMETS		
			improved				4	4				2	2				5	11	6	APMP	
			minor ch.											1	1				1	1	COOMET
			delete																0	0	EURAMET
FI	Finland (MIKES)	Jari.Hallstrom@vt.fi	new	2	2	1					2								5	2	SIM
			improved	3	3		2	2			1	1							6	6	
			minor ch.	3															3	0	
			delete																0	0	
FR	France (LNE)	francois.piquemal@lne.fr	new				3	3			2	1							5	4	
			improved						1	1	1	1				2	2		6	6	
			minor ch.			1									1	1			3	1	
			delete								1								0	0	
DE	Germany (PTB)	Juergen.Melcher@ptb.de	new				2	1							1	6			3	7	
			improved												5				5	0	
			minor ch.												4				4	0	
			delete																0	0	
IE	Ireland (NSAI NML)	oliver.power@nsai.ie	new					3	3										3	3	
			improved																0	0	
			minor ch.																0	0	
			delete						22										22	0	

5. Inter-RMO Reviews of CMCs

CMC Reviews in 2015-2016 - Implementation of Sampling Strategy

		AFRIMETS	APMP	COOMET	EURAMET	SIM	GULFMET	Notes
Sharing	AFRIMETS.EM.1.2013		No	Yes	Yes	No		1 lab only (NIS - Egypt)
	APMP.EM.7.2011	Yes		No	Yes	Yes		CMCs from 9 NMIs
	APMP.EM.8.2013	Yes		Yes	Yes	Yes		CMCs from 5 NMIs
	COOMET.EM.6.2013	Yes	Yes		No	No		1 NMI (Belarus - BelGim)
	COOMET.EM.7.2014	Yes	No		Yes	No		CMCs from 5 NMIs,
	EURAMET.EM.8.2012	No	Yes	Yes !		Yes		CMCs from 15 NMIs
	EURAMET.EM.12.2014	Yes	Yes	No		Yes		CMCs from 18 NMIs,
	SIM.EM.7.2014	Yes	No	Yes	No			1 NMI (INTI - Argentina)
Samling and Sharing	COOMET.EM.8.2015		Yes			Yes		2015-03-16 - 2015-05-21
	EURAMET.EM.13.2015	Yes	Yes			Yes		2015-08-31 - 2016-04-21
	SIM.EM.8.2015			Yes	Yes			2015-10-23 - 2016-04-29
	APMP.EM.9.2015			Yes	Yes	Yes		2015-12-21 - 2016-12-05
	COOMET.EM.8.2015		Yes			Yes		2015-03-16 - 2015-05-21
	COOMET.EM.9.2015							2015-12-21 - Re-submitted using matrices
	COOMET.EM.10.2015	Yes	Yes					2016-01-04 - 2016-03-25
	COOMET.EM.11.2016							2016-06-07 - 2016-09-07
	SIM.EM.9.2016		Yes	Yes	Yes		Yes	2016-10-04 - posted for final approval
	AFRIMETS.EM.2.2016					Yes	Yes	2016-10-05 - 2016-12-05
SIM.EM.10.2017				Yes			2017-02-03 -	

5. Inter-RMO Reviews of CMCs

Sampling Strategy - Lessons Learnt

1. The sampling strategy is a good working compromise between fairness and simplicity.
2. Deciding on the CMCs to review requires high level of judgement.
3. No redundancy remains in the process – delays in submitting reviews mean that critical reviews are not completed in time.
4. Higher impact of review decisions.
5. Some CMC entries continue to be amended and a small number rejected as a result of the review. This indicates that the Inter-RMO review is still essential and the balance presently achieved by the CCEM is close to optimal.

Inter-RMO Reviews of CMCs

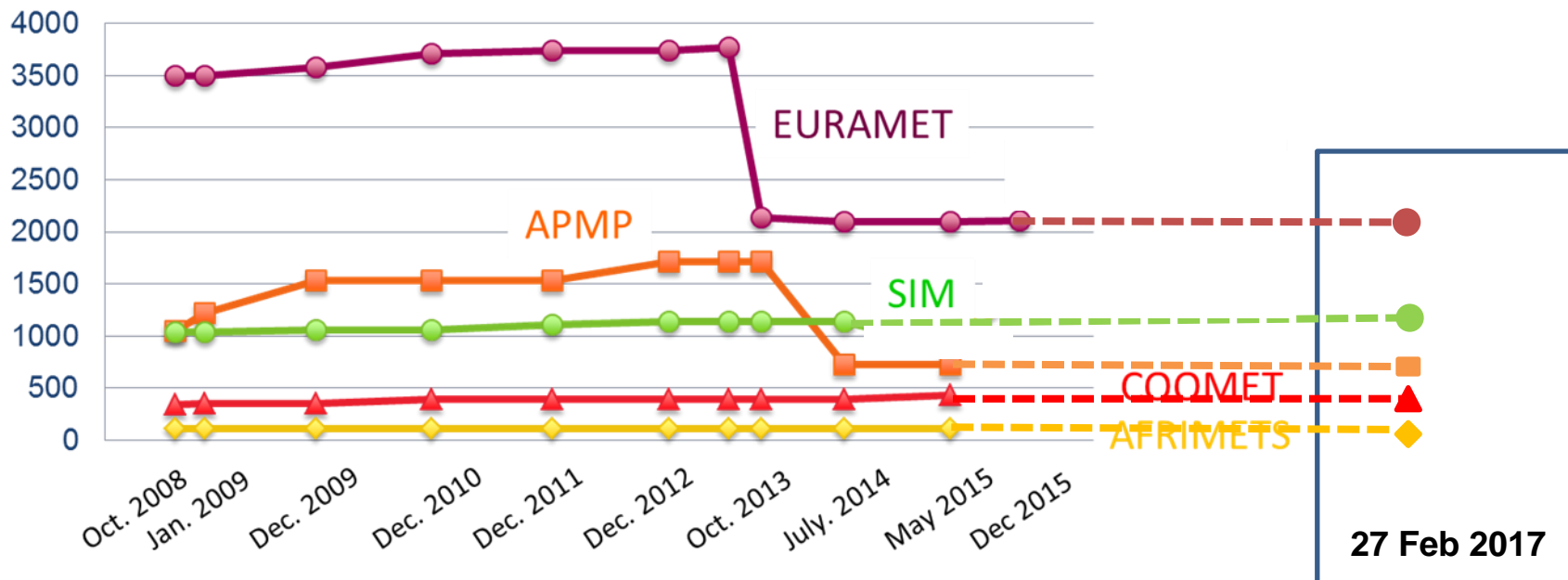
- ◆ **Decision 1:** WGRMO agreed to continue with the risk based approach to Inter-RMO reviews of CMCs based on sampling strategy.
- ◆ **Decision 2:** WGRMO in principle approved the Electricity and Magnetism Supplementary Guide for the Submission of CMCs version 5.0. Members are to provide further comments to Michael Stock in 4 weeks' time for compilation and upload to BIPM Website.
- ◆ **Decision 3:** For inter RMO review, each RMO should submit sets of CMCs in a single batch for processing at one time. The RMO should submit the next batch only after the review of the previously submitted batch has completed its review.

KCDB 2.0

- ◆ **Decision 4:** The WGRMO endorses, in principle, the proposed CMC web platform functionality of KCDB 2.0
- ◆ **Decision 5:** The WGRMO requests that KCDB 2.0 provides support for the risk-based strategy of Inter-RMO reviews of CMCs, based on sampling and presently coordinated by the WGRMO Chair.

Format of CMCs

Number of EM CMC lines



	CMC	MTX
AFRIMETS	118	5
APMP	796	365
COOMET	455	29
EURAMET	2065	763
GULFMET	0	0
SIM	1038	149
TOTAL	4472	1311

Format of CMCs

- ◆ **Decision 6:** The WGRMO agreed that it is mandatory for new CMCs to follow the simplified CMC format.
- ◆ **Decision 7:** WGRMO agreed to keep the current overall structure of the EM service categories.
- ◆ **Decision 8:** WGRMO approved in principle the revised EM service categories 8 and 9 draft for the high voltage areas proposed by the Ad Hoc Working Group. The Ad Hoc Working Group is to provide the final draft of the revision, including any new proposed high voltage service categories within one month.

Format of CMCs

Decision 9: WGRMO agreed on the time line for the implementation for the revision of the high voltage CMCs in the KCDB:

- ◆ RMO will provide comments to the Ad hoc Working Group final draft within 2 months.
- ◆ The Ad Hoc Working Group will then produce the final version of service categories 8 and 9 in 2 months' time.
- ◆ The RMOs and NMIs are to approve the revised service categories in a month's time.
- ◆ The Ad Hoc Working Group will reformat the high voltage CMC entries for the NMIs and obtain their approval in 10 months' time for uploading to the KCDB.
- ◆ The migration of the existing high voltage service categories to the revised version is expected at the commencement of KCDB 2.0, due around July 2018.

Other Decisions

- **Decision 10:** WGRMO agreed to keep its terms of reference unchanged.
- **Decision 11:** WGRMO approved Dr. Ilya Budovsky to continue as the Chair of WGRMO for another 2 year term.
- **Decision 12:** WGRMO encouraged RMOs to take part in GULFMET comparison and to include GULD MET in their regional comparison.
- **Decision 13** WGRMO agreed to hold an informal meeting during the CPEM 2018.

Actions

- **Action 1:** WGRMO to review the Electricity and Magnetism Supplementary Guide for the Submission of CMCs version 5.0 and provide comments to Michael Stock by **20 April 2017**.
- **Action 2** The Ad Hoc Working Group to provide the final draft of the revised service categories 8 and 9, including any new proposed service categories for the high voltage service categories by **20 April 2017**.
- ◆ **Action 3:** RMO will provide further comments on the final draft to the Ad hoc Working Group by **20 May 2017**. The Ad Hoc Working Group will then produce the final version of service categories 8 and 9 in **20 July 2017**. The RMO and NMIs are to approve the revised service categories by **20 Aug 2017**. The Ad Hoc Working Group will reformat the high voltage CMC entries for the NMIs and obtain their approval by **20 June 2018**. The migration of the existing high voltage service categories to the revised version is expected at the commencement of KCDB 2.0.
- **Action 4:** WGRMO Chair to make arrangement with LNE on informal meeting during the **CPEM 2018**.

CCEM endorsement of the WRMO decisions is sought

Thank you

Please consider joining our meeting next time.

Any questions?