

THE MINUTES

of the 12th meeting of COOMET Technical Committee TC 1.10 “Thermometry and Thermal Physics”

**National Institute of Metrology
21-22 October 2015, Chisinau, Republic of Moldova**

1. Opening the meeting, greeting, introduction of the participants, adoption of the agenda

The meeting was opened by Deputy General Director of the National Institute of Metrology of Republic of Moldova Onchanu Adrian Vasilevich, who welcomed the participants of the meeting and wished a successful work.

Further word was handed on the Chairperson of COOMET Technical Committee “Thermometry and Thermophysics” (TC 1.10), Pokhodun Anatoliy Ivanovich.

A. I. Pokhodun welcomed TC members attendees representing at this meeting 10 countries: Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russian Federation, Slovakia, Uzbekistan, Ukraine.

AZERBAIJAN

Mr. Bagirov Azer, AzGSM

BELARUS

Mr. Krivonos P.V., BelGIM

Mr. Bakovets N.V., BelGIM

Mr. Givoyno V.S., “POINT” Ltd.

Mr. Syshchenko A.F., company „BMC”

GEORGIA

M. Chelidze Yu.V., GEOSTM

KAZAKHSTAN

Mrs. Duysebayeva Kuralay, RSE “KazInMetr”

KYRGYZSTAN

Mrs. Denisova M.G., CSM MERKR

MOLDOVA

Mr. Bordianu K.I., NIM

Mr. Byrsa T., NIM

Mr. Buzuk G., NIM

Mrs. Cheban V., NIM

RUSSIAN FEDERATION

Mr. Pokhodun A.I., VNIIM

Mr. Razhba Ya.E, VNIIFTRI

Mr. Pilipenko K.D., VNIIFTRI

Mr. Lazovik I.N., Eastern-Siberian Subsidiary of VNIIFTRI

Mr. Nikonenko V.A., NPP “Etalon”

SLOVAKIA

Mr. Duris S., STU

UZBEKISTAN

Mr. Allamuradov B.H., Uzstandart

Mr. Kholov A.U., Uzstandart

UKRAINE

Mrs. Sergiyenko R.P., NSC “Institute of Metrology”

The participants of the meeting have approved the following agenda.

Agenda

- 1 Report of Chairperson of TC 1.10 about the progress of works for reporting period
- 2 State of works on redefinition of temperature unit on the base of Boltzmann constant
- 3 About participation of national metrology institutes of COOMET in EURAMET program „Implementing the new Kelvin 2”.
- 4 Discussion of the progress of works on COOMET projects in the field of thermometry and thermal physics
- 4.1 387/UA-a/07 „Regional comparison of national measurement standards for temperature units in fixed points of silver, gold and copper freezing”
- 4.2 487/RU/10 „Regional comparisons of thermocouples type S in the range of temperatures from 300 to 1100 °C”
- 4.3 489/RU-a/10 „Regional comparisons of national measurement standards for combustion energy using samples of high purity graphite”
- 4.4 623/Ru-a/13 „Bilateral comparisons of national measurement standards for combustion energy by means of solid and liquid fuels”
- 4.5 488/RU/10 „Regional comparisons of national measurement standards for combustion energy using samples of gas mixes”
- 4.6 593/RU/13 „Regional key comparisons of national measurement standards for temperature in the range from 0.01 °C to 660.323 °C”
- 4.7 592/SK/13 „Regional key comparisons of national measurement standards for temperature in the triple point of mercury”
- 4.8 544/RU/11 „Regional comparison humidity standards of gases. Dew/frost point temperature -50 °C to +20 °C”
- 4.9 633/KG/14 „Development of COOMET recommendations “Calibration of resistance thermometers by comparison method”
- 4.10 642/MD/14 „Comparisons for measurements in the calibration of industrial platinum resistance thermometers”
- 5 New proposed projects
- 6 Current state of measurement capabilities of National metrological institutes of COOMET, presented in the database of International Bureau of Weights and Measures
- 7 State of problem of the extension of measurement capabilities for National metrological institutes of COOMET
- 8 About nominating a candidate for awarding a title the “Honorable metrologist of COOMET”
- 9 About new means for metrological assurance of temperature and thermophysical measurements, produced by enterprises of COOMET member-countries
- 10 Miscellaneous
- 11 About the time and place of holding the next TC 1.10 meeting

1. Report of Chairperson of TC 1.10 about the progress of works for reporting period

The main direction of activity of TC 1.10 "Thermometry and thermal physics" for the reporting period was conducting the works on COOMET projects, which were registered in TC 1.10. The detailed discussion of these projects is foreseen in the appropriate section of the agenda. Implementation of these projects will allow to expand the calibration and measurement capabilities of National metrological institutes to the aluminum point in the field of contact thermometry (Project 593/RU/13), to submit CMC in the field of pyrometry (Project 387/UA-a/07), to submit and support CMC data on the results of additional comparisons of thermocouples of type S (Project 487/RU/10). Pohodun A.I. noted, that technical protocols of all regional COOMET comparisons in the appropriate order have passed a peer review in the working group of CCT and have been developed taking into account the notes of experts.

Chairperson of TC 1.10 informed the attendees about the participation in the activity of CCT working groups.

A.I. Pohodun noted the organizational aspects of conducting this meeting, which was attended by the heads of leading enterprises of the CIS on production the measuring instruments in the field of temperature and humidity. Familiarization with products and possibilities of these enterprises will facilitate the choice of instruments and accessories, for example, for secondary standards in the field of contact thermometry to the customer. Experience demonstrates that the presence of such alternative makes the purchase, setting and exploitation of standard equipment less expensive on a considerable scale, but also repairing works in the future.

2. State of works on redefinition of temperature unit on the base of Boltzmann constant. 3. About participation of National metrological institutes of COOMET in the EURAMET Program „Implementing the new Kelvin 2”

TC 1.10 Chairperson noted that the introduction of a new definition of the temperature unit is planned for 2018. The leading role in the work on redefinition of the unit of temperature plays a number of metrological institutions of the European Community, which develop ideology of practical implementation of the new unit definition.

Redefinition of the temperature unit means the independence of the definition of the unit from material substance/artifact, it means from the triple point of water. Pokhodun A.I. summarized the physical principles which are the base of the new definition of temperature unit and its relationship with the Kelvin scale. Till now practical (empirical) temperature scales were an alternative for thermodynamic temperature scale. The practical scales are "approximation" of rather high quality of thermodynamic scale and are much easier to implement in comparison with the implementation by the primary gas thermometer. Thus, the direction of development of thermometry was leading to the extension of temperature range of practical temperature scales and improving the approximation of these scales to the thermodynamic temperature scale. The transition to a new definition of the temperature unit assumes the exclusion of practical temperature scales and the use of primary thermometers as reference means for the reproduction of unit. For determining the new temperature unit it is necessary to know the Boltzmann constant, as in the equation of any primary thermometer, for example, the acoustic one's or based on measuring the dielectric gas constant, there are two unknown quantities - the value of the Boltzmann constant and temperature.

Committee on the units, which deals with the SI system and harmonization of constants and works as part of the International Committee for Weights and Measures, decided that the redefinition of temperature unit is possible on condition of determination of

the Boltzmann constant with an uncertainty of not more than 1 ppm. The indicated accuracy must be achieved with the use of at least two independent methods. More than 10 leading metrology institutes all over the world took part in the research in this direction. In 2014 at the meeting of the working group of CCT on redefinition there were presented the results of conducted work. In determining the Boltzmann constant in the field of acoustic thermometry the accuracy was achieved not worse (1 – 1.5) ppm. Thermometry on the base of dielectric gas constant with accuracy about (3 – 5) ppm takes the next position. The results of research in thermometry on the base of measurements of Doppler expansion have lower accuracy. The indicated reasearch was carried out within the European program "Implementing the new Kelvin 1", aimed at clarifying the Boltzmann constant, and the development of primary thermometers.

A.I. Pokhodun noted that the final aim is not only a new definition of the temperature unit, but also the transition from standards which reproduce empirical scales to direct measurement of thermodynamic temperature based on primary thermometry. According to the reporter's opinion, a number of issues which require attention and further research remains today. Positive results, as mentioned above, do not cover the whole temperature range. The best results were obtained in the field of acoustic thermometry for low temperatures. According to the opinion of the reporter the results obtained in the field of pyrometry above the silver point are debatable. On the first stage of implementation of the new definition of the temperature unit there will be used primary methods for implementing a thermodynamic temperature scale (designation - T), in particular in the temperature ranges where it is possible, and there will be used practical temperature scale ITS-90 (designation - T_{90}) and PLTS-2000 (T_{2000}). The document «Mise en pratique» (Implementation of a new definition Kelvin) is developed in order to ensure the unity of measurements. This document will regulate methods of primary thermometry in light of new definition of the temperature unit, and also the relationship between the primary realization and practical temperature scales .

Thus, it is possible to identify the main results of the work on redefining the temperature unit:

- there is developed a new definition of the temperature unit;
- there are proposed and researched different methods of measurement of the Boltzmann constant;
- there is obtained more information about the differences ($T - T_{90}$) and ($T - T_{2000}$);
- there is being developed a document Mise en pratique (MeP-R).

A.I. Pokhodun presented information about the seminar "Towards implementing the new Kelvin", which took place on 18-19 May 2015 in Kavli Royal Society International Centre, Buckinghamshire, UK. The purpose of the seminar was to examine the current state of the primary thermometry and identifying areas of research needed for:

- the smooth implementation of the unit following the redefinition in 2018,
- support the evolving *mise en pratique* for the definition of the kelvin (*MeP-K*),
- identify requirements for a future temperature scale, the ITSxx, possibly to be established in the mid-2020s. It is expected that the new scale will be implemented approximately in 2025. It will combine ITS-90 and PLTS-2000 with the elimination of the deficiencies which exist now in the implementation of these scales.

During the seminar there were considered problems, which are to be solved for the full transition to the new definition of temperature unit, in particular:

- creation of infrastructure of transmission of temperature unit (establishment of equipment and devices which can transmit temperature unit in accordance with the new definition);

- training of qualified personnel who can operate in the transfer of the temperature scale from primary thermometers with the required accuracy;
- development of normative documents regulating the rules of the transmission of the temperature unit;
- certification of calibration laboratories.

In conclusion, the reporter informed that from EURAMET there have been sent a letter to the heads of other regional metrological organizations with a request for support for the project "Implementing the new Kelvin 2". The main objectives of this project are:

- To determine $(T - T_{90})$ in the range from ~ 500 K to ~ 1337 K using a variety of techniques and with a standard uncertainty of 5 mK;
- To determine $(T - T_{90})$ in the range from ~ 1 to about ~ 200 K using a variety of techniques and with a standard uncertainty of 0.5 mK;
- To establish novel primary thermometry approaches to re-determine T and $(T - T_{90})$, to identify and minimize systematic uncertainties;
- To perform research in the ultralow temperature thermometry regime (0.9 mK to around 1 K) – so as to demonstrate primary thermometer dissemination of T and identify the cause of the PLTS-2000 background data discrepancy (6 % at lowest temperatures);
- To facilitate the take up of the technology and measurement infrastructure developed by the project by the measurement supply chain

All regional metrology organizations supported this work and expressed a desire to take part in the project.

Finally, A.I. Pokhodun described the problem, concerning the participation of the regional organization COOMET in the activities of the CCT. This is due to the fact that the interests of COOMET are presented in CCT by NMI of Russian Federation only. The reporter asked the participants of the meeting to discuss the issue with the heads of their metrology institutes.

Resolution

1. To take into account the information about the state of works on redefinition of the temperature unit on the base of Boltzmann's constant.

2. To take into account the information about participation of National metrological institutes of COOMET in the EURAMET Program „Implementing the new Kelvin 2”.

4. Discussion of the progress of works on COOMET projects in the field of thermometry and thermal physics

387/UA-a/07 „Regional comparison of national measurement standards for temperature units in fixed points of silver, gold and copper freezing ”

Reporter: Sergiyenko R.P. (NSC “Institute of Metrology”)

Currently the works on the projects are completed. The form of final report on the project is sent to the COOMET Secretariat. The final report "B" on COOMET.T-K5 is published at the BIPM web-site. By the moment of the meeting there are formed CMC-entries according to the results of comparisons, which are planned to be considered at this meeting and to send for review.

Resolution

To take note of the information about workflow on the Project 387/UA-a/07.

487/RU/10 „Regional comparisons of thermocouples type S in the range of temperatures from 300 to 1100 °C ”

Reporter: Pokhodun A.I. (VNIIM)

Supplementary comparisons of COOMET.T-S1 (Project 487/RU/10) are completed. The Project was conducted for the support of CMC for thermocouples of type S. The final report "B" is published on the web-site of BIPM.

Resolution

To take note of the information about workflow on the Project 487/RU/10.

488/RU-a/10 „Comparisons of national measurement standards for combustion energy using samples of gas mixes”

Reporter: Bakovets N.V. (BelGIM)

Participants of these pilot comparisons are VNIIM (coordinator), NSC IM (Ukraine) and BelGIM (Belarus). According to the results of comparisons there is formed the final report.

Resolution

To take note of the information about workflow on the Project 488/RU-a/10.

489/RU-a/10 „Regional comparisons of national measurement standards for combustion energy using samples of high purity graphite”

Reporter: Pokhodun A.I. (VNIIM)

Three NMIs participate in the works on this project: VNIIM, (Russia), NSC “Institute of Metrology” (Ukraine), Chemical Metrology Analytical Science Division, National Institute of Metrology (NIM, China). It was determined that the obtained results were inconsistent.

Resolution

To take note of the information about workflow on the Project 489/RU-a/10.

623/RU-a/13 „Bilateral comparisons of national measurement standards for combustion energy by means of solid and liquid fuels”

Reporters: Pokhodun A.I. (VNIIM), Krivonos P.V. (BelGIM)

VNIIM (coordinator) and BelGIM (Belarus) are participating in the Project. Technical Protocol of comparisons is agreed. Experimental works are being conducted according to plan of Technical protocol on the base of BelGIM.

Resolution

To take note of the information about workflow on the Project 623/RU-a/13.

592/SK/13 „Regional key comparisons of national measurement standards for temperature in the triple point of mercury”

Reporters: Pokhodun A.I.(VNIIM), Razhba Ya.E. (VNIIFTRI)

In connection with the dismissal of specialists in SMU (Slovakia) there was raised a question about the linking institute in these comparisons. As a linking institute and project coordinator agreed to be VNIIFTRI (Russia). NMI of Belarus, Moldova and Kazakhstan have expressed a wish to participate in the project. A.I. Pokhodun noted that it is reasonable to involve in this project also the NMI of Czech Republic and Slovakia, which have participated in key comparisons of EURAMET and are linked to the reference value in the triple point of mercury.

Resolution

1. To recommend Chairperson of TC 1.10 to send to the address of COOMET Secretariat (coomet@vniims.ru) information about the need of excluding the Project 592/SK/13 from COOMET Program.

2. Project coordinator should send the form of the new proposed COOMET Project to COOMET Secretariat (comet@vniims.ru) till 30.01.2016.

3. All interested NMIs should consider the possibility of participation in the project and inform the project coordinator (razhba@vniiftri.ru) till 28.02.2016.

593/RU/13 „Regional key comparisons of national measurement standards for temperature in the range from 0.01 °C to 660.323 °C”

Reporter: Pokhodun A.I. (VNIIM)

The project participants are NMIs of Russia (coordinator), Belarus, Kazakhstan, Ukraine and Georgia. The project is registered at the web-site of BIPM as key comparisons of COOMET.T-K3. The technical protocol of comparisons has passed a review in working group WG7 CCT. The experimental part of works was conducted in BelGIM and KazInMetr. In November 2015, the standard of comparison should be submitted to the NSC IM (Ukraine), and then is to be sent to the NMI of Georgia. It is supposed that experimental works will be completed in 2016. During the discussion, NIM of Moldova expressed a wish to participate in the project.

Resolution

- 1. To take note of the information about workflow on the Project 593/RU/13.**
- 2. To recommend NIM of Moldova to inform the coordinator of project not later than by 30.06.2016 and about its readiness to conduct experimental works.**

642/MD/14 „Comparisons for measurements in the calibration of industrial platinum resistance thermometers”

Reporter: Bordianu K.I. (NIM, Moldova)

Coordinator of the project is the NIM of Moldova. Participants of comparisons are NMI of Moldova, Kazakhstan, Kyrgyzstan, Azerbaijan, Georgia, Bosnia and Herzegovina, Turkey. There is formed a Technical protocol of comparisons, which is ready for review submission in a working group of CCP. The first experimental works will be started in the NMI of Kyrgyzstan. The participants discussed the question of correctness of conducting the works on scheme “loop”. During the discussion it was suggested to carry out comparisons on a scheme “shimmering star”, in which laboratory coordinator can control the stability of the reference standards of measurement after conducting comparisons by the next participant.

Resolution

- 1. To take note of the information about workflow on the Project 642/MD/14.**
- 2. To recommend to the project coordinator the revised Technical protocol in the appropriate order to submit for the review in CCT.**

633/KG/14 „Development of COOMET recommendations “Calibration of resistance thermometers by comparison method”

Reporter: Denisova M.G. (CSM MERKR, Kyrgyzstan)

Coordinator in this project is the NMI of Kyrgyzstan. COOMET recommendations were developed on the base of documents of DKD-R 5-1 and DKD-R 5-6. Draft of recommendations was twice sent to all NMIs of COOMET for notes and proposals. Recommendations on calibration of thermometers of resistance by the method of direct comparison are currently the completely formed document. M.G. Denisova noted the statements, which were edited in Recommendations on the notes received, in particular, there was expanded the temperature range from -80 °C to 650 °C. The developed COOMET

Recommendations can be used by participants during the works on the Project 642/MD/14 „Comparisons for measurements in the calibration of industrial platinum resistance thermometers”.

Resolution

- 1. To take note of the information about workflow on the Project 633/KG/14.**
- 2. To recommend to the project coordinator to send the developed Recommendations for consideration in NMI of Germany.**

544/RU/11 „Regional comparison humidity standards of gases. Dew/frost point temperature -50 °C to +20 °C”

Reporter: Lazovik I.N. (Eastern-Siberian Subsidiary of VNIIFTRI)

Participants of the project are NMI of Ukraine, Belarus, Kazakhstan, Romania, Slovakia and Moldova. For technical reasons, the work on this project can not be made in the volume provided by the technical protocol of comparisons. Difficulties in implementing the project are connected with the transfer standards. As the reporter noted, in the nearest future the problem with the standards of comparison will be solved and the works are being continued. The technical protocol of comparisons will be corrected due to changes in the schedule of comparisons. It is planned that the experimental part of the work will be started in 2016.

Resolution

- 1. To take note of the information about workflow on the Project 544/RU-a/11.**
- 2. All interested NMI should consider the possibility of participation in the project and inform the project coordinator (director@vniiftri.ru) till 28.02.2016.**
- 3. To recommend to the coordinator of comparisons to send the project of Technical protocol of comparisons to the interested NMIs.**

5. New proposed projects

The new projects were proposed by the participants of the meeting:

- development of COOMET recommendations “Calibration of thermostats”, coordinator Denisova M.G., Kyrgyzstan;
- conducting regional key comparisons of national measurement standards of the temperature unit in the range from 660,323 °C to 961,78 °C, coordinator Pokhodun A.I, VNIIM. Participants of comparisons can be NMI of Russia, Belarus and Ukraine;
- a seminar on issues of conducting comparisons in the field of humidity measurements, coordinator Bordiyanu K.I, NIM of Moldova.

Resolution

- 1. Coordinators of projects in working order should clarify the names of the proposed projects and submit the forms of proposed projects to the COOMET Secretariat (coomet@vniims.ru) and to the Chairperson of TC 1.10 till 30.12.2015.**
- 2. The interested NMI should consider the possibility of participating in new projects and to send the relevant information to the address of project coordinators.**

6. The current state of measurement capabilities of national metrology institutes of COOMET presented in the database of the International Bureau of Weights and Measures

Reporters:

Lazovik I.N. (Eastern-Siberian Subsidiary of VNIIFTRI)

Sergiyenko R.P. (NSC "Institute of Metrology", Ukraine)

VNIIFTRI successfully participated in key comparisons of CCT-K6 “Comparison of

local realizations of dew-point temperature scales in the range -50°C to $+20^{\circ}\text{C}$ ". The final report on the comparisons is formed and published at the website of BIPM. Currently, VNIIFTRI is preparing CMC data on the results of comparisons. An expert from BelGIM Bakovets N.V. agreed to perform an examination of CMC before submitting them to the inter-regional review in the CCT.

Serhiyenko R.P. provided information on the forming CMC entries in the field of pyrometry on the results of the completed comparisons of COOMET.T-K5. (COOMET project № 387). CMC are prepared taking into account the document "Classification of services in thermometry". The procedure of evaluating the uncertainty is made in accordance with the criteria and rules set out in the document "Radiation thermometry review protocol". As evidenced by the calculations, the values of the stated uncertainties are much more than "cut-off values", given in the above mentioned document. Thus, the CMC data of Ukraine in the copper point can be submitted to the inter-regional review.

Resolution

1. To recommend to conduct the expertise of CMC data of VNIIFTRI in NMI of Belarus.

2. To present CMC data of NSC IM (Ukraine) for interregional review.

7. State of problem of the extension of measurement capabilities for National metrological institutes of COOMET

Reporter: Pokhodun A.I.

A.I. Pokhodun noted the problem of formation of measurement capabilities in the field of measuring thermophysical quantities. A number of pilot comparisons for national measurement standards for combustion energy have been conducted in TC 1.10, which are successfully completed with positive results. Such comparisons were given the status of "pilot" due to the lack of key comparisons and the possibility to establish the equivalence of standards. In addition, the NMI of COOMET took part in inter-regional comparisons and comparisons of COOMET in the field of measuring thermal conductivity, where the successful results have been received. However NMI of COOMET do not have CMC in this field yet.

The reporter informed that the decisions regarding this situation have been developed in the CCT. The basis for submitting CMC entries can be publication at the BIPM web-site for the concrete comparison in this field. Another way is to organize supplementary comparisons with NMI of not less than two regional organizations. As an example there were given the supplementary comparisons in the field of measuring the emissivity and temperature conductivity.

Reporter focused his attention on the need work activation on forming the final report on the comparison in the field of thermal conductivity measurements and publication of the results on the website of BIPM. The supplementary inter-regional comparisons with the participation of institutes of COOMET in the field of energy combustion measurements are advisable.

Resolution

1. To recommend to the participants of comparisons of COOMET in the field of measurements of thermal conductivity to activate the works on publishing the comparisons results at the web-site of BIPM.

2. To recommend to the participants of pilot comparisons in the field of combustion energy measurements to consider the possibility of supplementary comparisons in this field with involving NMI of other regional organizations.

8. About nominating a candidate for awarding a title the “Honorable metrologist of COOMET”

Reporter: Pokhodun A.I.

Pokhodun A.I. offered to nominate for the title "Honorary metrologist of COOMET" the NMI representative of Ukraine Sergiyenko Rymma Petrovna. R.P.Sergiyenko is not only a member of the TC 1.10, but its executive secretary since 2005. Thanks to the activities of R.P.Sergiyenko members of the technical committee and the NMI of COOMET get a qualified and timely organizational and methodological support and assistance in the implementation of projects of TC 1.10 - from the preparation of the form of the proposed projects to the formation of COOMET CMC entries on the basis of the results of comparisons. During the activity, R.P. Sergiyenko actively participated in the reviewing CMC data, organizational issues on formation of a group of experts in the field of measuring humidity in the formation of the minutes of meetings and annual reports on the activities of TC 1.10, in the preparation of proposals for discussion to be considered at meetings of JCRB, in the organization together with PTB possible participation of TC 1.10 members in the activities of COOMET, in particular, in a seminar on calibration of platinum resistance thermometers by direct comparison in the thermostats (Project 594/RU/13) and in the 5th All-Russian and COOMET member-countries conference “Temperature-2015”. R.P.Sergiyenko is the coordinator of key comparisons COOMET.T-K5 (Project 387/UA-a/07 „Regional comparison of national measurement standards for temperature units in fixed points of silver, gold and copper freezing”), the successful results of which allow NMI of Ukraine to form CMC in the field of non-contact thermometry.

Participants of the meeting unanimously supported the proposal of Pokhodun A.I. and noted the high professional level of activity of Sergiyenko R.P. within COOMET

Resolution

To recommend Sergiyenko R.P. for nomination the title the “Honorary COOMET Metrologist”.

9. About new means for metrological assurance of temperature and thermophysical measurements, produced by enterprises of COOMET member-countries

Reporters:

Nikonenko V.A., General Director of NPP “Etalon” (Omsk, Russia)

Govoyno V.S., Director of “POINT” Ltd. (Polotsk, Belarus)

Syshchenko A.F., company „BMC”(Minsk, Belarus)

Pokhodun A.I., VNIIM

V.A. Nikonenko presented a detailed report, where there were considered the history of the development and establishment of the company, activities of research and production association, the nomenclature of developed and produced reference and working means in the field of temperature measurements, thermal conductivity, and heat flows. The reporter described in details the technical and metrological characteristics of the means for the temperature control in the field of the contact and non-contact thermometry. Experts of NPP "Etalon" took an active part in the modernization of equipment and the establishment of national primary standards of Russia in the field of temperature and thermal measurements. The reporter informed the audience about the opportunities to participate in educational and methodical seminar, which is held annually on the basis of NPP "Etalon", and answered questions from the participants.

A.I. Pokhodun noted the need to organize by the service marketing of NPP "Etalon"

the close interaction with consumers of the plant. This will, firstly, allow to meet the customer needs, and secondly, to improve the quality of products and work performed considering feedback from consumers. Pokhodun A.I. shared the experience of operating in VNIIM the equipment, which produces NPP “Etalon”.

V.S.Givoyno in his speech highlighted the activities of the company “POINT” Ltd., which include, in particular, the production of thermoelectric converters, converters of resistance, furnaces, thermostats, humidity generators.

A.F.Syshchenko provided information on the activities of "Belarusian Inter-University Centre". The company produces the equipment for temperature and thermal measurements. Reporter described in details the characteristics of manufactured thermostats, temperature sensors, measuring-computing systems and combustion calorimeters.

All reporters answered questions from the audience regarding the metrological and technical characteristics of the equipment developed by them.

Resolution

To take note the information about means of temperature measurements manufactured by enterprises of the member states of COOMET.

10. Miscellaneous

Concerning the minutes of the meeting

The draft minutes of the meeting of COOMET TC 1.10 will be formed by the Secretary Sergiyenko R.P. within a month after the meeting.

Secretary of TC 1.10 has given detailed information about the contents of the web-portal of COOMET (www.coomet.net) and there was made a proposal to review and update "Regulations of the Technical Committee “Thermometry and thermal physics” at the next meeting of TC 1.10.

The representative of Ukraine informed about conducting a regular scientific and technical conference "Metrology-2016" on the base of the NSC "Institute of Metrology", Kharkov, in 2016.

A tour of the laboratories of the National Institute of Metrology of Moldova was held for the participants of the meeting.

11. About the time and place of holding the next TC 1.10 meeting

The meeting is planned for conducting on the base of CSM MER (Kyrgyzstan, Bishkek) in the 3rd quarter, 2016

Resolution

To take note of the planned time and place of conducting the next meeting.