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The certified organization with accredited laboratories, the holder of the National Prize
of the Slovak Republic for Quality 2004

REPORT ON THE QUALITY MANAGEMENT SYSTEM RE- EVALUTION

in

THE SLOVAK INSTITUTE OF METROLOGY **Slovakia**

by

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Information on the national metrology system in Slovakia

The Slovak Republic covers an area of 49,014 km² and has a population of about 5.5 million. The legislative power rests with Parliament, but some rules are issued by Governmental ordinances and Ministerial decrees.

Organizational Structure and Background

The early days of Slovak metrology can be traced back to the Austro-Hungarian Monarchy when Slovakia formed an integral part of that empire. The Metric Convention was signed by the Austro-Hungarian Monarchy in 1875 as one of the signatory states. After the declaration of independence, Czechoslovakia signed the Metric Convention in 1922. Nowadays, the Slovak Republic is a member of the Metric Convention and OIML. The Slovak Office of Standards, Metrology and Testing (UNMS SR) represents the Slovak Republic in WELMEC as an associate member. The Slovak Institute of Metrology is a full member of EUROMET.

Metrology legislation

The first act on metrology in Czechoslovakia dates from 1962. The scientific base, the Institute of Metrology, was established the same year. The international system of units (SI) was enacted as the only system of units in 1975. In 1990, another act on metrology (Act No. 505) was issued. This act remained the basis of metrological legislation in Slovakia after Czechoslovakia divided in 1993.

The present metrological legislation came into force on the 1st July 2000 and consists of the following items:

- Act No. 142/2000 Coll. on metrology (issued by the Slovak Parliament),
- the Governmental ordinance No. 399/1999 Coll. as amended to Act No. 264/1999 Coll. on technical requirements for products and conformity assessment. The ordinance implements Directive 90/384/EEC on non-automatic weighing instruments (NAWI),
- the Governmental ordinance No. 294/2005 Coll. as amended to Act No. 264/1999 Coll. on technical requirements for products and conformity assessment. The ordinance implements Directive 2004/22/EC on Measuring Instruments (MID),
- Decree No. 206/2000 Coll. on legal units of measurement (issued by UNMS SR),
- Decree No. 207/2000 Coll. on pre-packages as amended (issued by UNMS SR),
- Decree No. 210/2000 Coll. on measuring instruments and metrological control as amended (issued by UNMS SR).

This legislation implements EC old approach directives in the field of metrology and pre-packages as well as new approach directives NAWI and MID.

Metrology organizations in a regulated sphere

The *Slovak Office of Standards, Metrology and Testing* (UNMS), the central steering body of state administration in the field of metrology, is primarily responsible for legal metrology. UNMS reports directly to the government.

The main task of UNMS in the field of metrology is the determination of the national metrology program and steering and supervising the activities of the following specialised and executive bodies of state metrology:

The *Slovak Institute of Metrology* (SMU) in Bratislava is the main research and scientific body of state metrology and has the function of a national metrology institute. SMU is responsible for developing and maintaining national measurement standards, which represent the basis for traceability of measuring instruments and measurements in the field regulated by the Act and also in the non-regulated field. It is the state administration body in the field of metrology issuing type approval certificates.

The *dedicated organization* (nowadays Slovak Legal Metrology, SLM) is partially defined by the Act of Metrology. Its main task is the calibration of standards in industry and verification of legal measuring instruments.

Authorised bodies are metrological laboratories mainly in industry which, being assessed concerning their competence, have been authorised by UNMS to perform the verification of legally controlled measuring instruments or official measurements. Laboratories are required to meet prescribed requirements prior to obtaining authorisation. Competence may be demonstrated by accreditation by the Slovak National Accreditation Service (SNAS) in accordance with ISO/IEC 17025 standard or by a prescribed procedure. Fees are set by regulations, but verification authorities have some discretion.

Registered bodies are assessed by UNMS SR for repairing and mounting of legally controlled measuring instruments. The verification after repair must be executed by an authorized body. The registration is required also in the field of pre-packages.

The *Slovak Metrology Inspectorate* (SMI) performs state metrology supervision over the measuring instruments and measurements including pre-packages and market surveillance in the field of NAWI and MID scopes. It is the state administration body.

Legally controlled measuring instruments

Legally controlled measuring instruments are generally subject to type approval, initial verification and mandatory re-verification unless otherwise stated. About 70 types of instruments are subject to metrological control, as listed in annexes of Decree No. 210/2000 Coll. on measuring instruments.

Type approval responsibility rests with the SMU for all instruments. The institute operates comprehensive test facilities. Fees are time-calculated. Type approval decisions are published in the Slovak language only.

Initial verification is primarily the responsibility of the SLM, although for some kinds of measuring instruments, e.g. water meters, gas meters, electricity meters, heat meters etc. The task has been devolved to authorised bodies.

A mandatory *re-verification* system is operated in Slovakia, supplemented by random inspection. Re-verification intervals are stated by decree No. 210/2000 Coll.

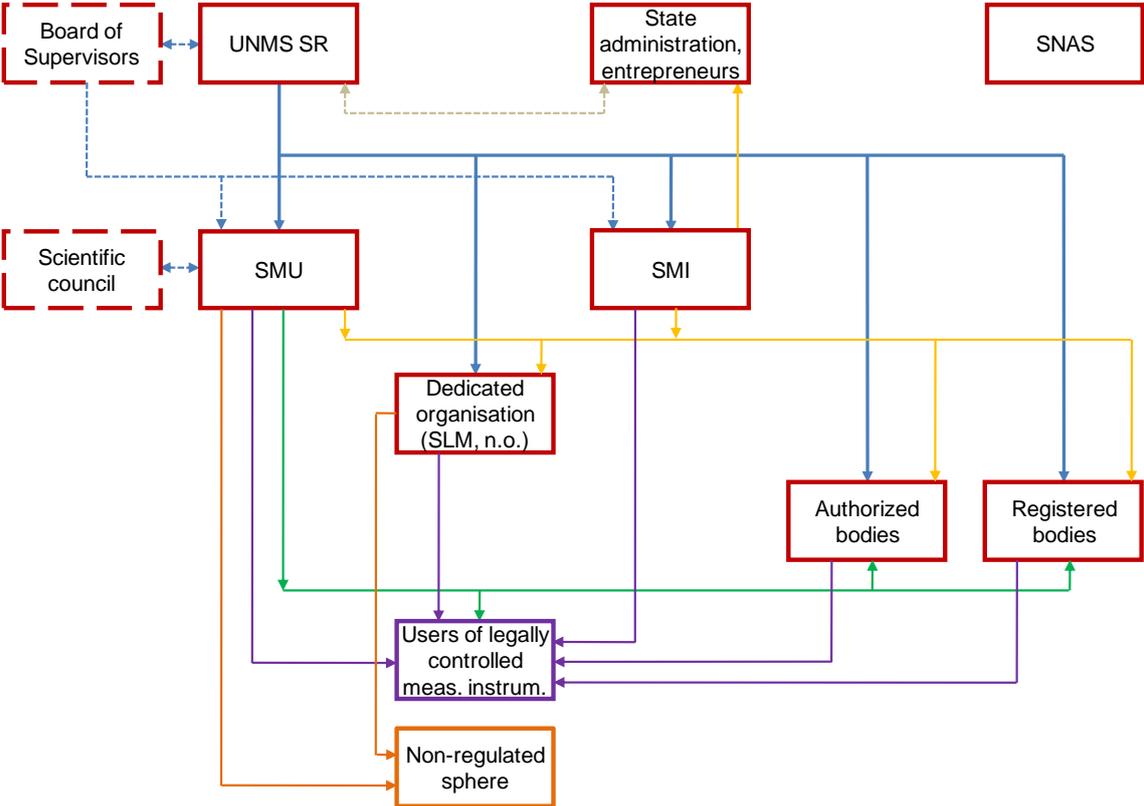
on measuring instruments and metrological control. Re-verification is performed mainly by SMU, SLM and by authorised bodies; *inspection* is the task of SMI.

Legal Metrology Practitioners and Scope

The SMU employs around 180 people; about 90 of them are scientists and engineers for type approval work. In the SLM there are some 90 engineers and technicians performing verification work. There are 15 inspectors in the SMI performing inspection work. About 70 authorised bodies exist in Slovakia as well as about 300 registered bodies aimed at metrology.

Training of personnel is provided by SMU in its Educational Centre and also by the Slovak University of Technology and by private organizations and metrological societies. Personnel providing services in legal metrology have to be certified by SMU in accordance with the metrological legislation.

State metrology officials are not involved in providing any consumer protection service other than that related to legal metrology. They investigate consumer complaints concerning inaccurate equipment.



Presentation of the QMS of SMU

2.1 Quality policy

The senior management of SMU approved the quality policy of SMU in 2002 for the first time. The policy was validated in 2006 and on 31st January 2007 respectively.

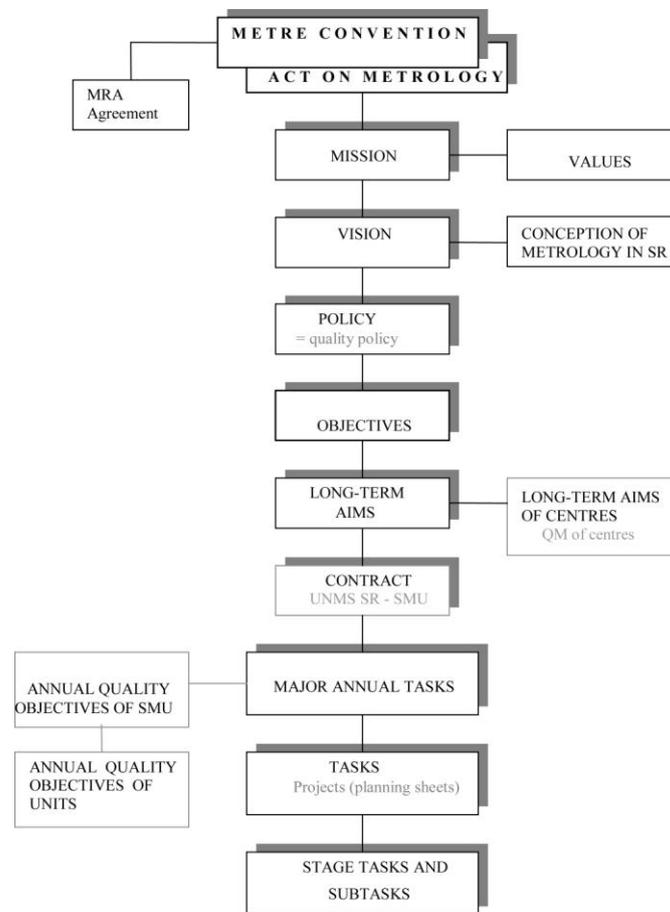
The SMU quality policy consists of:

- Responsibility of senior management for quality of provided operations and incorporation of all employees into a QMS.
- Development and maintenance of measurement standards, their international acceptability under CIPM MRA.
- Meeting requirements of the customers is a primary intention of SMU employees. This deals with the providing of services (calibrations, expertises, conformity assessment of measuring instruments, interlaboratory comparisons, metrological services, education, etc.) at an appropriate level with internationally accepted certificates, issued by SMU.
- The provision of education in metrology, quality and testing at the highest possible level
- Cooperation with suppliers that meet its requirements on quality of products and services.
- Satisfaction of employees is one aim of senior management. Education of young researchers and their involvement in international projects provides perspective for the development of metrology in Slovakia.
- The guarantee for improvement of QMS in SMU is based on a positive approach to work, expertise and creativity of all employees.
- The employees of SMU trust the SMU policy. SMU appreciates the loyal employees.
- Cooperation with the other metrological institutes and organizations, namely with BIPM, EUROMET, COOMET, DUNAMET and OIML.

QMS of SMU conforms with the EN ISO 9001: 2008 standard, the calibration services are executed in conformity with ISO/IEC 17025: 2005 standard. The following rules apply to quality:

- minimum of failures in calibration, satisfied customer and a satisfied employee,
- the competitiveness of SMU at a national and internal market is ensured by a quality of internationally accepted measurement standards,
- the continuous self-evaluation of QMS as well as evaluation by a third party gives a guarantee for functionality and improvement of QMS.

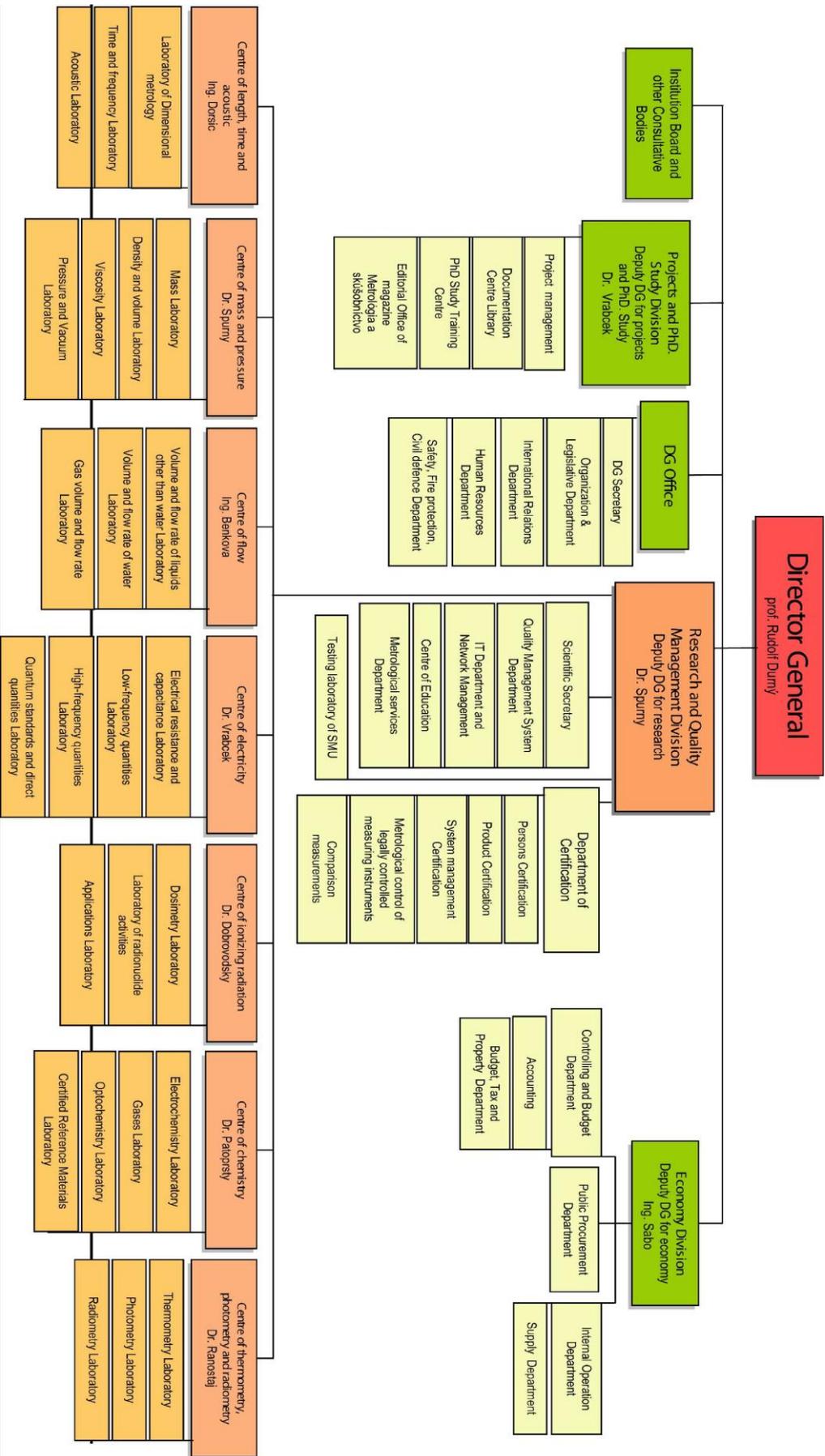
SMU policy is based on the Metre Convention and the Act on Metrology No. 142/2000 Coll.



The long-term aims related to individual quantities and development of measurement standards are given by a metrology concept, while further details are available in quality manuals of individual centres.

2.2 Structure of SMU

The structure of SMU management has been updated during summer 2010. The structure follows the original management layout of metrological centres as originated after establishment of SMU in 1994. The two-steps management structure consists of top management level, including Director General, his deputies for science and quality management; economy and international grant schemes. The second level is created by directors of the individual metrology centres. The following figure reflects the actual management schemed of SMU.



2.3 QMS structure

The organizational structure of SMU is continuously reviewed and tuned to enable the optimal control and realization of all processes and procedures. Sections and centres represent the base organizational units of SMU. The organizational system defines the executive power as follows:

- director general,
- deputy directors general,
- directors of individual centres,
- quality managers of centres,
- heads of sections and laboratories,
- principal researchers of main tasks,
- researchers of individual tasks,
- heads of commissions,
- heads of ad hoc teams.

The management system of SMU is supplemented by advisory boards and work commissions. The Council of QMS (RSMK in Slovak) is named by Director General every year. Quality managers, internal auditors and technical experts belong to this council as well as the deputy director general for research and quality, who expertly supervises the tasks of quality management.

RSMK assesses and recommends:

- policy and aims of QMS,
- principal questions connected with implementation and preservation of QMS,
- standpoints to documentation of SMU QMS,
- proposals for tasks, improvements and evaluation of obtained results of a QMS,
- supporting materials for evaluation of QMS by SMU management,
- standpoints to international documents aimed at quality,
- standpoints to the international projects and grants aimed at QMS.

Regular certification and accreditation audits represent an important tool for continuous improvement of SMU QMS, as required by standards ISO 9001 and ISO/IEC 17025 as well as trends for individual results of SMU organization and processes, as indicated in the annual report of SMU.

QMS structure is as follows:

- 1) Quality manual is the principal document, describing the SMK according to EN ISO 9001: 2008 standard. The document meets also management in the field of work safety, health protection and environmental protection. The manual describes strategy, policy, quality aims in SMU, processes (procedures) of QMS and fulfillment of QMS requirements in SMU.
- 2) Quality manuals describe policy of QMS in metrological centres as well as in a testing laboratory in the scope of ISO/IEC 17025: 2005 requirements. The set of manuals consists of:
 - Quality manual of metrological centres and a testing laboratory, Part I

- Quality manual of a testing laboratory, Part II
 - Quality manuals of centres, part II (Centre for length, time and acoustics, Centre for mass and pressure, Centre for flow, Centre for electricity, Centre for ionizing radiation, Centre for chemistry, Centre for thermometry, photometry and radiometry).
- 3) Internal directives are related to all tasks of SMU and they are divided into the following categories:
- General directives of the SMU management,
 - Directives having the expert metrological character,
 - Directives aimed at economy,
 - Directives for regulating the running of SMU,
 - Directives for regulating the human resources,
 - Directives having the legal character.
- 4) Work procedures for calibration and testing specify the operation for executing the calibration and testing tasks.
- 5) Instruction hat generally describe the procedures for ensuring the individual tasks and a process assurance of quality within a single organizational unit
- 6) Forms, records on measurement are related to individual particular tasks.

The mutual communication dealing with quality is carried out also by e-mails. All documents related to quality can be found at the SMU intranet page.

2.4 Integrated quality management system

SMU operates an integrated quality management system, which includes the fulfillment of following standards:

- a) EN ISO 9001: 2008 *Quality management systems – Requirements*. The system was re-certified by a German certification authority LGA InterCert (auditors Dr. H. Kohl, LGA a Dr. A. Odin PTB Germany) in 2009 with the validity until 2012 (see Annex 1),
- b) ISO/IEC 17025: 2005 *General requirements for the competence of testing and calibration laboratories* (see Annex 2 - certificate for testing laboratory),
- c) since 2009, SMU is accredited according to the EN 45011:1998 *General requirements for bodies operating product certification systems* for certification and conformity assessment of following devices (see Annex 3):
 - Water meters,
 - Gas meters and volume conversion devices,
 - Active electrical energy meters,
 - Heat meters,
 - Measuring systems for the continuous and dynamic measurement of amounts of liquids other than water,
 - Automatic weighing instruments,

- Taximeters,
- Material measures - capacity serving measures,
- Material measures - material measures of length,
- Dimensional measuring instruments - length measuring instruments,
- Exhaust gas analysers,
- Non-automatic weighing instruments.

SMU currently successfully passed the accreditation review for EN ISO 17021:2006 Conformity assessment - Requirements for bodies providing audit and certification of management systems. The preliminary report states the fulfillment of standard requirements and issuing of accreditation is expected in a short time.

2.5 Quality related to research activities

As SMU is the national metrology institute in Slovakia, having the exclusive position within the Slovak metrology system, the research is one of main tasks of the SMU. Therefore substantial and continuous attention must be paid to its quality. The Scientific Board of SMU is a supreme advisory board of the Director General, dealing with different tasks related to research and scientific activities at SMU:

- a) concept on development of metrology in Slovakia,
- b) suggestions for measurement standards prepared for declaration as a national standard and revision of national standards,
- c) system for expert guarantee and review of national and reference measurement standards of other institutes than SMU,
- d) trends of metrological research and the SMU participation in a research and scientific EU program, international metrological organizations, national and international grant institutions,
- e) results of important research and investment projects ,grants and tasks solved in SMU,
- f) cooperation of metrological institutions with the other scientific-research institutes, academic sphere and industry in the Slovak Republic,
- g) introduction of results of metrological research into a practice,
- h) participation of SMU at providing the international equivalence of national measurement standards and the other standards and at the international cooperation in metrology,
- i) process for raising the qualification of SMU employees and the progress of PhD. students education at SMU in a study branch 5-2-55 Metrology that is carried out in correspondence with the Act No. 131/2002 Coll. on universities and with a respective decree of the Ministry for Education,
- j) further standpoints to basic tasks of SMU, resulting from the function of SMU as a national metrology institute of the Slovak Republic,
- k) legislation dealing with metrology, organisation of scientific-research and educational activities in the Slovak Republic.

The official recognition of SMU capability to perform scientific activities was acknowledged by the Slovak Ministry for Education in 2010. The SMU received an official document, signed by Minister that confirms the capability of SMU to perform scientific and research activities (see Annex 4). According to current legislation in Slovakia, such document is needed for applying for internal grants as well as for applying for grants based on structural funds program.

The proper qualification of research personnel is also under a close look of SMU management. The SMU is only one of the two institutions in Slovakia, who can provide PhD study together with universities and the Slovak Academy of Sciences. SMU is granted by the Ministry for Education to provide PhD. study in the study branch 5-2-55 Metrology. Besides the employees of SMU, also foreign specialists take part at PhD study at SMU.

Information on the QS development and ISO/IEC 17025 implementation

3.1 Table of contents of the individual quality manuals

Quality Management Manual (QMM) of the Slovak Institute of Metrology consists of eight parts, as seen from following table.

Table of contents of SMU Quality Management Manual

Section QMM	Denomination	Date of implementation	Version
1	Introduction	30. 09. 2010	2.0
2	Policy and objectives of quality	30. 09. 2010	2.0
3	Organisation	30. 09. 2010	2.0
4	Quality management system	30. 09. 2010	2.0
5	Management responsibility	30. 09. 2010	2.0
6	Resource management	30. 09. 2010	2.0
7	Product realisation	30. 09. 2010	2.0
8	Measurement, analysis and improvement	30. 09. 2010	2.0

The original version of SMU QMM was approved on the 10th July, 2002. Due to changes in top management of the institute, the second (updated) version was released in 2010.

Table of contents of Quality Manual of Metrological Centres and Testing Laboratory, Part I

Section QMM and TL	Denomination	Date of implementation	Version	Responsible Author
1	Introduction	25. 08. 2010	3.0	Mathiasová
2	Abbreviations	25. 08. 2010	3.0	Mathiasová
3	Terms and definitions	25. 08. 2010	3.0	Mathiasová

Section QMM and TL	Denomination	Date of implementation	Version	Responsible Author
4	Management requirements	25. 08. 2010	3.0	Mathiasová
4.1	Organization	25. 08. 2010	3.0	Mathiasová
4.2	Quality management system	25. 08. 2010	3.0	Mathiasová
4.3	Document control	25. 08. 2010	3.0	Mathiasová
4.4	Review of requirements, tenders and contracts	25. 08. 2010	3.0	Mathiasová
4.5	Subcontracting of tests and calibrations	25. 08. 2010	3.0	Mathiasová
4.6	Records Purchasing services and supplies	25. 08. 2010	3.0	Mathiasová
4.7	Service to the customer	25. 08. 2010	3.0	Mathiasová
4.8	Complaints	25. 08. 2010	3.0	Mathiasová
4.9	Control of nonconforming testing and/or calibration work	25. 08. 2010	3.0	Mathiasová
4.10	Improvement	25. 08. 2010	3.0	Mathiasová
4.11	Corrective action	25. 08. 2010	3.0	Mathiasová
4.12	Preventive actions	25. 08. 2010	3.0	Mathiasová
4.13	Control of records	25. 08. 2010	3.0	Mathiasová
4.14	Internal audits	25. 08. 2010	3.0	Mathiasová
4.15	Management review	25. 08. 2010	3.0	Mathiasová

Table of Quality Manual of Metrological Centres, Part II

Name of Quality Manual	Version	Date of implementation
Centre for Length, Time and Acoustics	1.0	15. 03. 2006
Centre for Mass and Pressure	1.0	15. 03. 2006
Centre for Flowrate	2.0	09. 10. 2008
Centre for Electricity	1.0	15. 03. 2006
Centre for Ionizing Radiation	1.0	15. 03. 2006
Centre for Chemistry	3.0	29. 04. 2009
Centre for Thermometry, Photometry and Radiometry	2.0	15. 02. 2008

Sample: Table of contents of Quality Manual of Centre for Chemistry. Part II

Section QMM and TL	Denomination	Date of implementation	Version	Responsible Author
1	Introduction	29. 04. 2009	3.0	Hanková
2	Abbreviations	29. 04. 2009	3.0	Hanková
3	Terms and definitions	29. 04. 2009	3.0	Hanková
4	Management requirements	29. 04. 2009	3.0	Hanková
4.1	Organization	29. 04. 2009	3.0	Hanková
4.2	Quality management system	29. 04. 2009	3.0	Hanková
5	Technical requirements	29. 04. 2009	3.0	Hanková
5.1	General	29. 04. 2009	3.0	Hanková
5.2	Personnel	29. 04. 2009	3.0	Hanková
5.3	Accommodation and environmental conditions	29. 04. 2009	3.0	Hanková
5.4	Calibration methods, validation methods	29. 04. 2009	3.0	Hanková
5.5	Equipment	29. 04. 2009	3.0	Hanková
5.6	Measurements traceability	29. 04. 2009	3.0	Hanková
5.7	Taking of samples	29. 04. 2009	3.0	Hanková
5.8	Handling of calibration items	29. 04. 2009	3.0	Hanková
5.9	Quality assurance of calibration results	29. 04. 2009	3.0	Hanková
5.10	Reporting results	29. 04. 2009	3.0	Hanková

3.2 Annual reports and QMS development

Results of tasks related to quality were annually reported in a common Annual report of SMU during the course of years 2006-2009 (annual report for 2010 is in progress now).

Annual report 2006

The following tasks, related to quality, were carried out:

- Quality Manual of Metrological Centres was modified. It consists of 2 parts:
 - Part I. Management requirements (the same for all metrology centres),
 - Part II. Technical requirements (different for each metrology centre).
- The re-certification audit according to ISO 9001:2000 was carried out by LGA, InterCert in April, 2006.

- The re-accreditation audits of SNAS were carried out during June - November 2006 (according to ISO 17025:2005) in the following centres:
 - Centre for Length, Time and Acoustics;
 - Centre for Mass and Pressure;
 - Centre for Flowrate;
 - Centre for Electricity;
 - Centre for Ionizing Radiation;
 - Centre for Chemistry;
 - Centre for Thermometry, Photometry and Radiometry.
- The re-accreditation audit RvA (The Netherlands, member of EA) was held in June 2006 in the Centre for Chemistry (according to ISO 17025:2005).

New entries to CMCs were obtained:

- Photometry and Radiometry - 6 new CMCs since April 18, 2006; Corresponding procedures - WP 15/270/00 Working procedure for calibration of optical measuring instruments for power measurement and of optical spectroradiometers, put into application since May 21, 2002;

Annual report 2007

The following tasks, related to quality, were carried out:

- The Surveillance audit according to ISO 9001:2000 was carried out by LGA InterCert in July 2007.
- Re-accreditation audits were carried out in two metrology centres by SNAS in 2006; re-accreditation audits in five metrology centres according to ISO 17025:2005 were carried out by SNAS in 2007.
- In June 2007 the surveillance audit in the Centre for Chemistry (according to ISO 17025:2005) by RvA (The Netherlands, member of EA) was not accomplished because SMU asked for accreditation stalling.

New entries to CMCs were obtained:

- Chemistry - 2 new CMCs in July 2007; WP 14/260/00 Working procedure for the preparation of gas mixtures RM by gravimetric method; WP 15/260/00 Working procedure for PRM validation and RM calibration of gas mixtures on gas chromatograph

Annual report 2008

The following tasks, related to quality, were carried out:

- The surveillance audit LGA InterCert was carried out in May 2008 (according to ISO 9001:2000).
- The surveillance by SNAS was carried out in six metrology centres according to ISO 17025:2005 in 2008.
- The surveillance by RvA (The Netherlands, member of EA) has been accomplished in the Center of Chemistry according to ISO 17025:2005 in February 2008.

New entries to CMCs were obtained:

- Chemistry – 3 new CMCs in July 2008; WP 25/260/03 Working procedure for RM calibration – solutions of anions
- Ionizing Radiation: Dosimetry, Radioactivity, Neutron measurements, approved on the 21st April 2008:
 - WP 01 - Verification of measuring instruments of activities in liquid effluents from nuclear installations
 - WP 02 - Verification of gamma spectrometers
 - WP 03 - Verification of measuring instruments of surface contamination
 - WP 04 - Verification of measuring instruments of activities of radiopharmaceuticals
 - WP 05 - Calibration and verification of area dosimeters
 - WP 07 - Calibration of the neutron beams
 - WP 09 - Verification of the X-rays quality measuring instruments in ranges for diagnostic applications
 - WP 10 - Verification of the set-up of personal dosimetry of neutron radiation
 - WP 11 - Calibration and verification of measuring instruments of neutron dose equivalent
 - WP 12 - Verification of installed measuring instruments of hidden radioactivity in passenger and freight transport
 - WP 13 - Calibration and verification of systems for measuring of dosimetric parameters used in personal dosimetry of photons
 - WP 14 - Calibration and verification of direct reading personal dosimeters
 - WP 16 - Calibration of the reference photon beams
 - WP 17 - Calibration and verification of area dosimeters for 15 keV to 250 keV
 - WP 18 - Calibration and verification of direct reading dosimeters for 15 keV to 250 keV

Annual report 2009

The following tasks, related to quality, were carried out:

- The re-certification audit according to EN ISO 9001:2008 was carried out by LGA InterCert in May, 2009.
- The surveillance in five metrology centres according to ISO 17025:2005 was carried out by SNAS in 2009.

New entries to CMCs were obtained:

- Chemistry – 1 new CMC in July 2009; D12 Environmental nitrogen carbon dioxide Amount of substance fraction; Approved on 30 July 2009
- Thermometry - 2 new CMCs in November 2009
- Humidity Dew-point hygrometer Direct comparison -60 -45 °C 0.3 °C 2 95% No Approved on 03 November 2009 2/h
- Humidity Dew-point hygrometer Direct comparison -45 20 °C 0.2 °C 2 95% No Approved on 03 November 2009
- Time and Frequency, Slovakia, SMU – all CMCs in this field were reapproved with minor modifications in November 2009.

Annual report 2010

The following tasks, related to quality, were carried out:

- The surveillance audit LGA InterCert was carried out in November 2010 (according to ISO 9001:2008).
- The surveillance by SNAS was carried out in four metrology centres according to ISO 17025:2005 in 2010.
- SMU obtained SNAS certificate on accreditation of the Testing Laboratory in June.

New entries to CMCs were obtained:

- Chemistry - 4 new CMCs in July 2010; D02, D12, D03 and D13 Environmental nitrogen carbon dioxide

3.3 List of general and administrative procedures

General and administrative procedures represent a consistent set of internal operative acts, ruling the everyday performance of SMU. As the scope of procedures is rather wide, they can be divided into five groups:

- a) set of general directives on the institute management,
- b) set of specific metrology directives,
- c) directives for economy,
- d) directives for management of the SMU running,
- e) directives for personal management.

Following table provides a complete list of SMU internal regulations together with the date of last update of individual regulations.

List of SMU internal regulations

No.	Code number	Name of internal regulation	No. of version	Last update
		I. Set of general directives on the institute management		
1.	OS/01/2002	Methodical instruction on elaborating of the Director General resolutions, organisation directives and instructions	2	15.07.2003
2.	OS/02/2002	Certificates and documents issued by the Slovak Institute of Metrology	3	03.10.2006
3.	OS/03/2002	Research and development	2	01.11.2004
4.	OS/04/2002	Information system of the SMU	2	05.12.2005
5.	OS/05/2002	Internal audits	2	07.03.2007
6.	OS/06/2002	Software validation	1	01.07.2002
7.	OS/07/2002	Work safety and health protection	1	01.06.2002
8.	OS/08/2002	Corrective and preventive actions	3	15.07.2006

No .	Code number	Name of internal regulation	No. of version	Last update
9.	OS/09/2002	Support of international co-operation	3	24.02.2010
10.	OS/10/2001	General statute and the general standing order of the regular working commissions	1	09.07.2001
11.	OS/11/2002	Project management of the SMU tasks	2	01.11.2004
12.	OS/12/2002	SMU communication	2	01.4.2006
13.	OS/13/2002	Control of documents and records	2	13.11.2006
14.	OS/14/2002	Control organization	2	01.03.2004
15.	OS/15/2002	Establishment and accessing of the SMU library fund	2	01.08.2004
16.	OS/16/2002	Management review	1	01.07.2002
17.	OS/17/2002	SMU tasks determination for relevant calendar year	2	01.10.2003
18.	OS/18/2002	Non-conform products control	1	01.07.2002
		II. Set of specific metrology directives		
19.	OS/20/2002	National standards and the SMU standards approval	1	15.05.2007
20.	OS/21/2002	Principles of standards maintenance and using	1	0111.2005
21.	OS/22/2002	Principles of preparation and procedure within approval and issuing of the working procedures	1	01.06.2002
22.	OS/23/2002	Type approval of measuring instruments	2	01.09.2005
23.	OS/24/2001	Metrology services providing and their registration	3	01.01.2010
24.	OS/25/2001	Measurement records	2	01.07.2004
25.	OS/26/2002	Laboratory order	1	01.08.2002
26.	OS/27/2002	Verification recognition of legal measuring instruments performed that was carried out abroad	2	15.03.2006
27.	OS/28/2002	Recognition of foreign CRMs	1	15.08.2002
28.	OS/29/2002	Assessment process of expert assumptions of an application for authorization	3	01.05.2008
29.	OS/30/2002	Work with poisons and pollution	1	01.09.2002
30.	OS/31/2002	Safety instructions for work with liquid gases	1	01.07.2002
31.	OS/32/2002	Measuring instruments monitoring	2	08.04.2004
32.	OS/33/2003	Distribution of certificated reference materials	2	01.04.2006
33.	OS/34/2004	Scientific SMU publications	1	01.02.2004
		III. Directives for economy		
34.	OS/38/2009	Employees remuneration	1	01.01.2010
35.	OS/39/2009	Creation and usage of correction entries	1	01.01.2009
36.	OS/40/2001	Account document circulation in SMU	2	01.11.2007
37.	OS/41/2001	Put into service, registration and disposal of tangible,	2	01.11.2007

No .	Code number	Name of internal regulation	No. of version	Last update
		intangible and sub-balance property		
38.	OS/42/2002	Methods and process of public procurement in the SMU conditions	2	10.05.2006
39.	OS/43/2002	Purchase of goods and services in the SMU	3	30.09.2009
40.	OS/44/2002	SMU stock holding	1	01.06.2002
41.	OS/45/2002	Evaluation of supplier and external audits of suppliers	1	01.06.2002
42.	OS/46/2002	House order and property protection	2	01.10.2005
43.	OS/47/2003	Principles of financial inspection performance according to the Act. No. 502/2001 Coll. in SMU conditions	2	01.04.2010
44.	OS/48/2009	Usage of mobile phones, telephones and mobile internet	1	01.01.2009
45.	OS/49/2009	Creation and usage of reserves	1	01.01.2009
		IV. Directives for management of the SMU running		
46.	OS/50/2002	Providing of individual safety means	1	05.05.2008
47.	OS/51/2002	SMU fire protection plan	2	25.01.2010
48.	OS/52/2002	Usage of SMU business cars by its employees	2	01.09.2009
49.	OS/53/2002	Prevention of accidents in the area of SMU	1	01.08.2002
50.	OS/54/2002	Precious metals management in SMU	1	03.05.2002
51.	OS/55/2002	Air-condition user regime	1	01.08.2002
52.	OS/56/2008	Accommodation	In process	
53.	OS/57/2002	Organisation, control of operation and maintenance of buildings, machines, instruments and equipment	1	01.05.2002
54.	OS/58/2002	Waste disposal	1	01.08.2002
55.	OS/59/2002	Organisation and control of cleaning process and hygiene in buildings	1	01.05.2002
		V. Directives for personal management		
56.	OS/60/2002	Qualification and personnel training	3	01.07.2008
57.	OS/61/2002	Verification of competence in metrology	2	01.06.2005
58.	OS/62/2002	Providing training in the SMU	3	03.05.2010
59.	OS/63/2002	Providing PhD. studies in the SMU	1	08.08.2008
60.	OS/64/2002	Recruitment of employees and changes in employment	2	15.09.2003
61.	OS/65/2002	Job contracts performed out of employment	2	15.09.2003
		VI. Legal directives (numbering 70 - 79)		
62.	OS/70/2002	Make a contract procedure	2	05.12.2009
63.	OS/71/2002	Registry order and registry plan	2	20.06.2005
64.	OS/72/2002	Complaints handling	2	01.05.2005

No	Code number	Name of internal regulation	No. of version	Last update
65.	OS/73/2001	Design, registration and use of the SMU seals	1	01.09.2001
66.	OS/74/2002	Customer satisfaction analysis	2	17.05.2004
67.	OS/75/2002	SMU employees satisfaction analysis	1	01.07.2002
68.	OS/76/2004	Making contracts procedure for metrological services and products	2	05.12.2009
69.	OS/77/2006	Application for information access handling	1	01.06.2006

3.4 List of calibration procedures

Calibration services represent an important part of metrology services provided by SMU. They are carried out according to documented calibration procedures that are listed in following table. As seen from the table, 73 accredited calibration services was available in 2010 (that is 4 services more as in 2006). Considering January 2011, SMU carries out 36 accredited calibration services.

As the accreditation of SMU metrology centres finishes its validity in March, SMU has to document its capability to provide those services also in the future at a desired level. The possibilities are either accreditation by a national accreditation body or some other means of declaration. SMU top management decided to follow a peer review procedure for having proof on capability of its metrological services. Besides that, the selected most common metrological services will be re-accredited also by a national accreditation body. This procedure enables SMU to meet all requirements of CIPM MRA to keep on declaration of CMCs. The detailed schedule of following steps will be presented personally.

List of calibration procedures

No.	Number of working procedure	Name of working procedure (WP)	Accredited (A) and Non-accredited (N) activities	Last update
1	01/210/00	WP for calibration of wavelength/frequency of lasers at 474THz/633nm	N	10. 07. 2004
2	02/210/00	WP for calibration of gauge blocks up to 1m of length by 1m interferometer	N	11. 02. 2002
3	03/210/00	WP for calibration of line measures to 200 mm length by the laser interference length measuring machine	A	01. 02. 2004
4	05/210/00	WP for polygons calibration	N	17. 05. 2002
5	06/210/00	WP for angle gauges calibration	A	15. 06. 2002
6	07/210/00	WP for sample surface roughness calibration	N	15. 02. 2002

No.	Number of working procedure	Name of working procedure (WP)	Accredited (A) and Non-accredited (N) activities	Last update
7	08/210/00	WP for contact profilometers calibration	N	15. 02. 2002
8	09/210/00	WP for calibration of vertical contact profilographs magnification	N	15. 02. 2002
9	04/210/00	WP for calibration of levels and clinometers	N	15. 02. 2002
10	10/210/01	WP for calibration of analogue and digital oscilloscopes	N	17. 04. 2001
11	11/210/01	WP for calibration of analogue and digital tachometers	N	17. 04. 2001
12	12/210/01	WP for calibration of vibrating reed frequency measuring instruments	N	17. 04. 2001
13	14/210/01	WP for calibration of frequency generators, measuring instruments of frequency, time and time interval	A	12. 04. 2001
14	15/210/01	WP for verification of road radar speedometers	N	27. 04. 2001
15	16/210/01	WP for calibration of vividing heads and tables	N	15. 02. 2002
16	17/210/01	WP for calibration of visual and photoelectric autocollimators	N	11. 02. 2002
17	20/210/01	WP for calibration of electronic stopwatches	N	27. 04. 2001
18	21/210/01	WP for calibration of squares	N	15. 02. 2002
19	08/250/02	WP for calibration of acoustic calibrators	A	24. 01. 2002
20	15/250/02	WP for verification and calibration of sound-level metres and filters	N	27. 05. 2002
21	19/250/02	WP for calibration of measuring microphones	A	18. 12. 2001
22	20/250/02	WP for calibration of tone audiometer	N	08. 04. 2002
23	01/220/00	WP for calibration of mass standards by method of direct comparison	N	20. 04. 2009
24	02/220/00	WP for mass determination of sets of weights by method of calibration scheme	N	20. 04. 2009
25	03/220/00	WP for air density measurement by gas equation of humid air	N	06. 11. 2000
26	04/220/00	WP for measurement of weights volume and reference liquids density by method of hydrostatic weighing	N	06. 09. 2006
27	05/220/00	WP for calibration of electronic balances of 1-st and 2-nd accuracy classes	A	09. 10. 2009
28	06/220/00	WP for calibration of mechanical standard balances	N	01. 04. 2004
29	07/220/00	WP for calibration of glass aerometers with	N	01. 04. 2004

No.	Number of working procedure	Name of working procedure (WP)	Accredited (A) and Non-accredited (N) activities	Last update
		constant mass by method of hydrostatic weighing		
30	08/220/00	WP for calibration of vibration hydrometers for liquids	N	01. 03. 2008
31	09/220/00	WP for volume calibration of volumetric laboratory glass	N	01. 07. 2007
32	10/220/00	WP for viscosity standards calibration by step by step method	N	16. 07. 2007
33	11/220/00	WP for liquids viscosity measurement and CRM calibration	N	16. 07. 2007
34	12/220/00	WP for Höppler type viscometers calibration	N	16. 07. 2007
35	13/220/00	WP for Rheotest type viscometers calibration	N	16. 07. 2007
36	14/220/00	WP for Pirani type vacuumeters calibration	N	30. 06. 2006
37	15/220/00	WP for testing of vacuum mass spectrometers	N	06. 11. 2000
38	16/220/00	WP for testing of helium calibrated leaks	N	30. 06. 2006
39	17/220/00	WP for calibration of ionisation vacuumeter	N	30. 06. 2006
40	18/220/00	WP for calibration of working standard MKS Baratron by national standard based on MacLeod vacuumeter	N	30. 06. 2006
41	19/220/02	WP for calibration of pressure balances	N	12. 05. 2006
42	20/220/02	WP for calibration and verification of measuring instruments for pressure measurement in motor vehicle tyres	N	16. 05. 2006
43	21/220/02	WP for calibration and verification of pressure transducers	N	16. 05. 2006
44	22/220/02	WP for directly indicating manometers (deformation manometers, deformation barometers and digital manometers)	N	16. 05. 2006
45	23/220/02	WP for calibration of liquid manometers and mercury barometers	N	12. 05. 2006
46	24/220/02	WP for calibration and verification of blood pressure measuring instruments	N	12. 05. 2006
47	25/220/02	WP for calibration of ball gauges	N	15. 05. 2006
48	26/220/02	WP for calibration of piston manometers weights by the substitution method	N	16. 05. 2006
49	27/220/2	WP for calibration of piston manometers by the method of hydrostatic comparison with gas medium by using of differentiation element	N	16. 05. 2006

No.	Number of working procedure	Name of working procedure (WP)	Accredited (A) and Non-accredited (N) activities	Last update
50	28/220/02	WP for liquid density measuring by digital laboratory	N	16. 07. 2007
51	29/220/02	WP for calibration of level gauges/densitometers PROSERVO SAKURA NMS53	N	16. 07. 2007
52	01/230/00	WP for calibration, verification and tests to type approval and conformity assessment of measuring instruments of liquid flow	A	18. 09. 2009
53	02/230/02	WP for calibration of fuel gauges	N	29. 03. 2006
54	03/230/01	WP for calibration, verification and tests to type approval of graduated vessels	A	15. 03. 2006
55	04/230/01	WP for calibration, verification and tests to type approval of fixed storage tanks	N	28. 02. 2006
56	05/230/01	WP for calibration of standard equipment for water meters verification	A	25. 01. 2010
57	06/230/02	WP for calibration, verification and tests to type approval of measuring instruments of flow in open channels	N	15. 04. 2009
58	07/230/03	Working procedure for calibration, verification and tests to type approval of gauges of road and rail tankers	N	15. 04. 2009
59	08/230/06	WP for calibration, verification and tests to type approval and conformity assessment of measuring instruments of flow of liquids other than water and LPG	N	09. 09. 2008
60	09/230/08	WP for calibration and verification of fuel dispensers for liquids other than water	N	30. 11. 2008
61	11/230/01	WP for calibration, verification and tests to type approval of gas meters working on principle of volume measurement (drum, diaphragm and rotary gas meters)	A	31. 01. 2001
62	12/230/01	WP for calibration, verification and tests to type approval of gas meters working on principle of flow measurement (variable area flowmeters, laboratory flowmeters)	A	31. 01. 2001
63	13/230/01	WP for calibration, verification and tests to type approval and conformity assessment of gas meters by standard equipment with critical nozzles	A	17. 09. 2008
64	14/230/01	WP for verification and tests to type approval of conversion devices of amount of gas	N	17. 09. 2008
65	15/230/02	WP for calibration and verification of gas meters	N	31. 01. 2002

No.	Number of working procedure	Name of working procedure (WP)	Accredited (A) and Non-accredited (N) activities	Last update
		with flow range from 0.001 to 0.02 m ³ /h		
66	16/230/02	WP for verification and tests to type approval of fuel dispensers for natural gas	N	21. 06. 2002
67	17/230/02	WP for calibration of gas meters and flow meters by primary standard on the base of equivalent amount of displaced liquid	A	06. 07. 2004
68	18/230/02	WP for calibration of gas meters and flow meters by primary standard with bell prover	A	08. 07. 2004
69	19/230/06	WP for calibration of measurement lines with pressure differential device on the primary device (orifice plate, nozzle or Venturi tube)	N	05. 04. 2006
70	1/240/00	WP for calibration of electronic standard sources of DC voltage	N	10. 06. 2002
71	2/240/00	WP for calibration of electromotive force measures	N	10. 06. 2002
72	03/240/01	WP for calibration of DC digital voltmeters	N	04. 01. 2005
73	04/240/01	WP for calibration of DC voltage measures to 1000 V	N	04. 01. 2005
74	5/240/00	WP for calibration of digital ohmmeters and resistance ranges of digital multimeters	N	28. 11. 2002
75	6/240/00	WP for calibration of resistance decades for DC current	N	29. 11. 2002
76	07/240/00	WP for calibration of electricity meters measuring stations	N	05. 06. 2002
77	08/240/00	WP for calibration of standard electricity meters	N	05. 06. 2002
78	09/240/00	WP for calibration of measuring instruments of small and medium high-frequency power	N	04. 01. 2005
79	10/240/00	WP for calibration of high-frequency selective microvoltmeters	N	05. 06. 2002
80	11/240/00	WP for calibration of power calibrators of low-frequency AC	N	05. 06. 2002
81	12/240/01	WP for calibration of DC digital voltmeters to 10 V	N	10. 06. 2002
82	13/240/01	WP for calibration of measures (calibrators) of alternating current and voltage	N	11. 12. 2009
83	14/240/01	WP for calibration of multimeters for alternating current and voltage	N	04. 01. 2005
84	15/240/01	WP for calibration of electrical resistance measures at DC current in the area of small and	N	28. 11. 2002

No.	Number of working procedure	Name of working procedure (WP)	Accredited (A) and Non-accredited (N) activities	Last update
		medium values		
85	16/240/01	WP for calibration of electrical resistance measures at DC current in the area of high-ohm values	N	04. 01. 2005
86	17/240/01	WP for calibration of standard capacitors and capacitance measuring instruments	N	28. 11. 2002
87	18/240/01	WP for comparison of thermistor heads	N	30. 08. 2001
88	19/240/01	WP for calibration of thermistor heads by standard thermistor	N	30. 08. 2001
89	20/240/01	WP for calibration of high-frequency attenuators	N	04. 06. 2001
90	21/240/01	WP for calibration of high-frequency generators	N	02. 05. 2001
91	22/240/01	WP for high-frequency impedance measurement	N	04. 01. 2005
92	23/240/01	WP for calibration of standards and measuring instruments of electric resistance at alternating current	N	04. 01. 2005
93	24/240/01	WP for calibration of DC digital amperimeters	N	04. 01. 2005
94	25/240/01	WP for calibration of DC measures	N	04. 01. 2005
95	01/250/02	WP for verification of activity measuring instruments in liquid outlets from nuclear equipment	N	29. 04. 2002
96	02/250/02	WP for verification of gamma spectrometers	N	28. 02. 2002
97	03/250/02	WP for verification of superficial activity measuring instruments	N	28. 03. 2002
98	04/250/02	WP for verification measuring instruments of activity in radio-pharmaceutical preparates	N	29. 04. 2002
99	05/250/01	WP for calibration of area dosimeters	N	23. 11. 2005
100	06/250/02	WP for calibration of passive dosimeters	N	11. 01. 2002
101	07/250/02	WP for calibration of neutron radiation beam	N	22. 01. 2002
102	09/250/02	WP for calibration and verification of measuring instruments of X-ray beams quality in ranges for diagnostic applications	N	30. 11. 2008
103	10/250/02	WP for verification of sets for dosimetric quantities measurement applied in personal dosimetry of neutrons	N	17. 01. 2002
104	11/250/02	WP for calibration and verification of measuring instruments of neutrons dose equivalent	N	21. 11. 2003
105	12/250/02	WP for verification of stationary measuring instruments of hidden radioactivity in personal	N	12. 03. 2002

No.	Number of working procedure	Name of working procedure (WP)	Accredited (A) and Non-accredited (N) activities	Last update
		and freight transport		
106	13/250/02	WP for calibration and verification of sets for dosimetric quantities measurement applied in personal dosimetry of photons	N	14. 06. 2002
107	14/250/01	WP for calibration of directly indicating personal dosimeters	N	23. 11. 2005
108	16/250/02	WP for calibration of photons reference beam	N	28. 06. 2002
109	17/250/02	WP for calibration and verification of area dosimeters for range from 15 keV to 250 keV	N	20. 12. 2007
110	18/250/02	WP for calibration and verification of directly indicating dosimeters for range 15 keV to 250 keV	N	20. 12. 2007
111	01/260/00	WP for RM calibration on amount of substance standard	A	10. 06. 2010
112	02/260/00	WP for verification and calibration of analysers of motor vehicles exhausted gases	N	19. 09. 2008
113	03/260/00	WP for calibration of electrolytic conductivity measuring instruments	A	12. 10. 2006
114	04/260/00	WP for hygrometers calibration	A	13. 11. 2008
115	05/260/01	WP for preparation of single- elemental CRM	A	12. 05. 2006
116	06/260/00	WP for spectrometric cells calibration	N	23. 11. 2001
117	07/260/01	WP for preparation and calibration of primary pH buffers	A	08. 04. 2004
118	08/260/00	WP for preparation and calibration of secondary pH buffers	A	08. 04. 2005
119	9/260/01	WP for preparation and calibration of primary RM of electrolytic conductivity	A	08. 11. 2002
120	10/260/00	WP for preparation and calibration of wavelength scale RM for UV-VIS spectrometry (holmium oxide)	A	08. 06. 2006
121	11/260/00	WP for preparation and calibration of absorbance scale RM for UV-VIS spectrometry (potassium dichromate)	A	06. 10. 2006
122	12/260/00	WP for preparation and calibration of absorbance scale RM for UV-VIS spectrometry (cobalt - nickel)	A	09. 10. 2006
123	13/260/00	WP for preparation and calibration of heterochromatic stray light RM for UV-VIS spectrometry (potassium iodide)	N	28. 05. 2007

No.	Number of working procedure	Name of working procedure (WP)	Accredited (A) and Non-accredited (N) activities	Last update
124	14/260/00	WP for preparation of gas mixture RM by gravimetric method	N	01. 02. 2010
125	15/260/00	WP for PRM validation and RM calibration of gas mixtures RM by gas chromatography	N	08. 02. 2010
126	16/260/00	WP for validation and calibration gas mixtures RM by NDIR analyser	N	08. 02. 2010
127	17/260/01	WP for calibration of density RM	N	10. 12. 2007
128	18/260/00	WP for calibration of single -elemental RM	A	10. 06. 2010
129	19/260/01	WP for calibration of RM for refractometry	N	14. 10. 2003
130	20/260/01	WP for preparation and calibration of secondary RM of electrolytic conductivity	A	08. 11. 2002
131	21/260/01	WP for calibration of viscosity RM	N	12. 09. 2001
132	22/260/01	WP for calibration of optical filters for UV-VIS spectrometry	N	30. 11. 2001
133	23/260/01	WP for calibration of transmittance measuring instruments working in UV-VIS spectral range	N	28. 03. 2001
134	24/260/01	WP for type approval and verification of breath analysers	N	22. 06. 2005
135	25/260/03	WP for calibration RM – anion solutions	N	10. 06. 2010
136	26/260/05	WP for preparation and calibration of wavelength scale RM for UV-VIS spectrometry NEODYM OXIDE	A	11. 04. 2006
137	27/260/07	WP for process gas chromatographs – metrological and technical requirements and metrological services	N	26. 11. 2007
138	29/260/09	WP for calibration of pH meters	N	26. 02. 2009
139	13/210/00	WP for reference and working standards calibration of 2 nd class of refractive index	N	20. 10. 2001
140	18/210/00	WP for reference and working standards calibration of 1st class of refractive index – Puflich’s refractometer PR-2 with V-block	N	20. 10. 2001
141	19/210/01	WP for verification of break index working gauges – Abbe’s refractometer	N	20. 10. 2001
142	01/270/00	WP for calibration of resistance sensors of temperature in the temperature range from - 39°C to 420°C in definitive stable points	A	21. 05. 2002
143	02/270/00	WP for calibration of resistance sensors of temperature in the temperature range from -	A	04. 06. 2007

No.	Number of working procedure	Name of working procedure (WP)	Accredited (A) and Non-accredited (N) activities	Last update
		39°C to 660°C in definitive stable points		
144	03/270/00	WP for calibration of high-temperature resistance sensors in the temperature range from -39°C to 962°C in definitive stable points	A	21. 05. 2002
145	04/270/00	WP for calibration of resistance sensors of temperature by comparative method in the temperature range from -39°C to 600°C	A	15. 04. 2009
146	5/270/04	WP for calibration of stable points in the temperature range from 190°C to 1085°C	A	21. 05. 2004
147	08/270/00	WP for calibration of glass thermometers in the temperature range from -40°C to +200°C	N	21. 05. 2002
148	09/270/00	WP for calibration of thermoelectric temperature sensors in definitive stable points	N	21. 05. 2002
149	10/270/00	WP for calibration of thermoelectric temperature sensors in the temperature range from 20°C to 1600°C	N	10. 11. 2005
150	11/270/00	WP for calibration of digital temperature sensors in the temperature range from -40°C to +600°C	N	21. 05. 2002
151	12/270/00	WP for tests performance for purpose of type approval and verification of calorimetric register as a member of heat measuring instrument for heating medium - water	N	15. 06. 2005
152	13/270/00	WP for tests performance for purpose of type approval and verification of calorimetric register as a member of heat measuring instrument for heating medium - steam	N	04. 06. 2002
153	14/270/00	WP for luxmeters calibration	A	04. 06. 2002
154	15/270/00	WP for calibration of optical measuring instruments for power measurement and of optical spectroradiometers	A	21. 05. 2002
155	16/270/00	WP for calibration of temperature lamps	N	21. 05. 2002
156	17/270/00	WP for calibration of radiation pyrometers for total radiation	A	17. 06. 2002
157	18/270/00	WP for calibration of luminous intensity lamps	N	04. 06. 2002
158	19/270/00	WP for calibration of luminous flux lamps	N	04. 06. 2002

3.5 Table of cross-references

SMU runs its controlled documents in accordance with the requirements of ISO/IEC 17025: 2005 standard. The respective cross-references among the standard and the SMU documents are listed in Annex 5.

3.6 Implementation of new requirements of ISO/IEC 17025

The new requirements of ISO/IEC 17025 were implemented into the QMS during the reaccreditation in 2006.

Top management of SMU provides information on changes and intended actions to all employees. Internet is used for this purpose often. Permanent improvement is obtained by corrective actions resulting from internal audits, management review and handling of complaints. Technical experts are employed in internal audits. They assess the work procedures as well as execution of calibration services themselves.

The satisfaction of customers is permanently monitored by questionnaires filled by customers of metrology services as well as by participants at educational activities.

QMS and covered calibration measurement capabilities

The SMU declares some of its services as CMCs (<http://www.smu.gov.sk>). All services corresponding to the CMCs, which were submitted to the EUROMET subfield groups (even if they are still under discussion on their acceptance), are covered by the QS of the SMU. The following table lists number of SMU entries to CMCC according to individual metrology fields.

The SMU entries to CMCs can be found in Appendix C of BIPM KCDB database, available at <http://kcdb.bipm.org/AppendixC/default.asp>. Participation of the SMU in key and supplementary (interlaboratory) comparisons can be looked up in the same database, see <http://kcdb.bipm.org/AppendixD/default.asp>.

Number of SMU CMCs divided by metrology fields

Metrology field	Number of entries
Acoustics, ultrasound and vibrations	6
Chemistry Amount of substance, pH	16
Chemistry, Amount of substance, Gases	7
Chemistry, Amount of substance, Inorganic solutions	29
Electricity and magnetism	79
Ionizing radiation	76
Length	22
Mass and related quantities	53
Photometry and radiometry	11
Thermometry	72
Time and frequency	16
Total:	387

Remark: Figures obtained on August 3, 2010.

QMS life

5.1 Complaints

The handling of complaints of personal and legal entities is performed according to OS/72 *Handling of complaints*. This procedure is in accordance with the legal system of the Slovak Republic.

Year	Number of complains	Accepted	Reason
2006	5	3	<ol style="list-style-type: none"> 1. Late delivery of the metrological service 2. Dispatched certified reference material had a short expiration date 3. Inaccuracies in documents provided with the metrological service
2007	1	1	Concerned topic – packaging of CRM,
2008	0*	0	The customers claimed mainly late delivery dates of services as well as late delivery of invoices. Those remarks were not submitted as a complaint.
2009	2	1	<ol style="list-style-type: none"> 1. SMU did not keep verification delivery date of legally measuring instrument; 2. The customer claimed the damage of measuring instrument during the calibration process, but there was no evidence on responsibility of SMU.
2010	2	1	<ol style="list-style-type: none"> 1. The unjustified complaint of the heat meter malfunction, the complaint was not connected with measurement in SMU; 2. The customer distrusted in results presented in the calibration certificate.

5.2 Non-conforming work

The procedures OS/18/2002 *Non-conform products* and OS/08/2002 *Corrective and preventive actions* describe the way for registering and handling of non-conforming work and the related corrective actions. Most of the non-conformities (also with findings – formal or small) were mainly detected during the internal audits. In every

case the reasons of non-conformities were identified and the corrective actions were carried out.

Overview of the non-conforming work during the period 2006 till 2010:

Year	Number of non-conformities
2006	121
2007	88
2008	62
2009	71
2010	101
Total:	443

The increased number of non-conformities in 2006 was caused by more precise checking of calibration services (technical experts are employed since that year). Testing laboratory was added in 2010 that was prepared for accreditation therefore the internal audit was carried out. This was the reason for increased number of non-conformities.

5.3 Internal audits

Director General approves a plan of internal audits (date, assessors and technical experts) at the beginning of each year. Plan of internal audit includes:

- horizontal audit,
- vertical audit of a particular calibration task,
- audit of a calibration task.

All auditors are educated according to the ISO/IEC 17 025: 2005 and EN ISO 19 011: 2002 standards. Auditors Musil, Nemečková, Mathiasová, Knorová, Gašparík act as external auditors of the Slovak National Accreditation Service (SNAS). Group of auditors consists of the leading audit, two auditors and two technical experts. Some of them act also as external assessors for SNAS, namely Benková, Pätoprstý, Chytil, Hanák, Nemeček, Vyskočil.

Internal audits in period of 2006 – 2010

Year	Audited area	Date	Head Assessor	Non-conformities Summary
2006	Length, time and acoustics	14. 06. 2006	Kopkáš	68
	Mass and pressure	17. 05. 2006	Knorová	
	Flow	24. 08. 2006 10. 11. 2006	Nemečková	

Year	Audited area	Date	Head Assessor	Non-conformities Summary
	Electricity	30. 05. 2006	Kopkáš	
	Ionizing radiation	20. 07. 2006	Mathiasová	
	Chemistry	30. 05. 2006	Fodreková	
	Thermometry, photometry and radiometry	27. 07. 2006	Musil	
2007	Length, time and acoustics	26. 10. 2007	Mathiasová	51
	Mass and pressure	31. 10. 2007	Nemečková	
	Flow	02. 11. 2007	Gašparík	
	Electricity	17. 10. 2007	Zámečník	
	Ionizing radiation	19. 10. 2007	Knorová	
	Chemistry	31. 10. 2007	Fodreková	
	Thermometry, photometry and radiometry	12. 10. 2007	Kopkáš	
2008	Length, time and acoustics	16. 12. 2008	Nemečková	37
	Mass and pressure	27. 10. 2008	Mathiasová	
	Flow	13. 10. 2008	Fodreková	
	Electricity	17. 10. 2008	Zámečník	
	Ionizing radiation	19. 10. 2008	Gašparík	
	Chemistry	17. 10. 2008	Knorová	
	Thermometry, photometry and radiometry	12. 10. 2008	Gašparík	
2009	Length, time and acoustics	26. 11. 2009	Mathiasová	21
	Mass and pressure	09. 12. 2009	Nemečková	
	Flow	06. 11. 2009	Fodreková	
	Electricity	24. 11. 2009	Knorová	
	Ionizing radiation	27. 11. 2009	Gašparík	
	Chemistry	09. 10. 2009	Zámečník	
	Thermometry, photometry and radiometry	20. 11. 2009	Mathiasová	
2010	Length, time and acoustics	27. - 28.10. 2010	Knorová	48
	Mass and pressure	12., 16. 11.2010	Mathiasová	
	Flow	28. - 29. 10.2010	Fodreková	
	Electricity	5., 8. 11. 2010	Nemečková	
	Ionizing radiation	4. - 5. 11.2010	Zámečník	

Year	Audited area	Date	Head Assessor	Non-conformities Summary
	Chemistry	3. - 4. 11. 2010	Fodreková	
	Thermometry, photometry and radiometry	3. - 4. 11. 2010	Cséfalvayová	
	Testing laboratory	12. - 14.01.2010	Nemečková	

Since 2006 we employ technical experts for more efficient execution of internal audits. The process of calibration services is assessed during those audits.

5.4 Management reviews

Management review is held once a year, in accordance with the internal regulation OS/16/2002 *Management review*. Management review consists of two phases in SMU:

- 1) management review in metrological centres in presence of management of the metrological centre and the representative of SMU top management,
- 2) management review at the level of SMU in presence of SMU top management, directors of metrological centres and members of the RSMK.

Report for management review is submitted by a respective quality manager. Management review that is held at the institutional level reflects also the results of management review at the level of metrology centres.

List of management reviews in period from 2006 to 2009

Management review per year	Management representative	Recommendations Priority
2006	Council - director general, deputy directors, directors of metrological centres Quality managers - SMU and metrological centres	Simplification of documentation with regards to an integrated system of management
		Precise control of corrective actions within the whole range of accredited and non-accredited work
		To ensure more intensive communication of top management with employees by a higher frequency of common meetings
		To educate new internal auditors
		To employ electronic media to enhance public information on the metrological services provided by SMU
2007	Council Quality managers	Updating of quality policy
		Use of electronic documents

Management review per year	Management representative	Recommendations Priority
		To enhance motivation of perspective employees
2008	Council Quality managers	To solve personal policy at the institutional level (motivation of perspective employees, appreciation of skilled employees)
		To execute interconnection of laboratory ICT to an institutional network.
		To archive also claims submitted by phone or by e-mail
2009	Council Quality managers	To establish new metrological services – interlaboratory comparisons, testing in a notified body, new types of calibrations and measurements, metrological expertises
		To establish an infrastructure for enhancement of metrological services aimed at calibration of testing instruments
		To prepare supporting materials for more efficient monitoring of employees satisfaction
		To provide feedback information on financial flows to the individual tasks and projects
2010*	Management review will be in March 2011	

Further information on ISO Guide 34 implementation for reference materials (CRMs)

Requirements of ISO Guide 34 are applied to Certified reference materials (CRMs) manufactured by SMU.

When carrying out the individual surveillances, the certification company LGA InterCert GmbH, Germany (see Annex 1) assessed also fulfillment of requirements put on production of CRMs by ISO Guide 34 together with requirements of ISO Guides 30, 31 and 35. The company performed thorough checking of quality system documentation with main focus on following, updating and changes of the quality system ((EN ISO/IEC 17025).

Requirements of ISO Guide 34 and its implementation into QMS of SMU are included in the Instruction No. I/260/02 *Planning and preparation of certified reference materials*, which contains:

- materials selection,
- environmental conditions,
- CRM preparation, repeatedly prepared including,
- homogeneity assessment of CRM candidate,
- stability assessment,
- characterization of values of properties,
- calibration of used measuring instruments/validation of used measurement methods,
- measurement results evaluation,
- estimation of standard measurement uncertainties,
- storage of prepared CRMs,
- packaging,
- transport,
- post-distribution service.

Detailed information on individual CRMs are presented in working procedures for preparation and characterization of reference materials, respectively in final reports to the individual CRM. SMU does not employ subcontractors for RMs production.

CMC tables (see part 4) contain also parameters of certified values of CRMs produced in SMU (chemicals of high purity, pH, electrolytic conductivity and gases). Part 3.2 of this report introduces CRMs parameters published in CRMs, sorted by individual years.

Certificate EN ISO 9001: 2008



LGA InterCert
Zertifizierungsgesellschaft mbH

Certificate

LGA InterCert Zertifizierungsgesellschaft mbH, an accredited and recognized certification body for quality management systems, herewith certifies that the company



Slovak Institute of Metrology

SLOVENSKÝ METROLOGICKÝ ÚSTAV
Karloveská ul. 63
SK - 842 55 Bratislava 4

has introduced a

Quality System

in accordance with

EN ISO 9001:2008

Quality management systems - Requirements

for the scope:

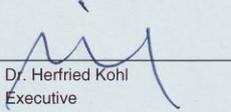
Quality management system of the SMU as a national metrology institute, research and technical development in metrology, development in maintenance of the national standards and ensuring of its international comparability, realization of the legal units, their maintenance and dissemination (calibrations, measurements, expertises), coordination of national standards approval, preparation, characterization and certification of reference materials, international acceptance of national standards and certified reference materials, pattern approvals of legal measuring instruments and their verification, providing legal metrology services, assessment of qualification of applicants on authorization, assessment of competence and education of staff in the field of metrology and quality, certification performance, conformity assessment, assessment of activities associated with production of legal product – measuring instrument, the tests performance of legal products - measuring instruments, the lease of premises provision and property in the SMU administration and provision of accommodation services

which is being applied.

In a certification audit carried out by LGA InterCert Zertifizierungsgesellschaft mbH, evidence was furnished proving that the quality system of the company fulfills the requirement of the above-mentioned standard.

This certificate is valid until May 30, 2012 Registration no.: **QM-1892573**

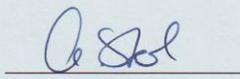
Nuremberg, May 31, 2009



Dr. Herfried Kohl
Executive



Deutscher
Angewandter
TÜV
TGA-ZM-04-91-00



Andrea Sterl
Authorized Signatory

LGA InterCert GmbH · Tillystr. 2 · DE-90431 Nürnberg · Phone +49 9 11 6 55-41 61

Certificate of the Testing Laboratory



SLOVENSKÁ NÁRODNÁ AKREDITAČNÁ SLUŽBA

Karloveská 63, 840 01 Bratislava 4, Slovenská republika



OSVEDČENIE O AKREDITÁCI

č. S-293

Slovenská národná akreditačná služba osvedčuje, že

Slovenský metrologický ústav

Karloveská 63, 842 55 Bratislava 4

Skúšobné laboratórium

je spôsobilé vykonávať skúšky pre posudzovanie zhody vodičov, plynomerov a prepočítavačov objemu plynu, elektrómerov, meračov tepla, meračov zostáv na kontinuálne a dynamické meranie množstva kvapalín okrem vody, vč. s automatickou činnosťou, taxametrov, materializovaných mier-výčapných nádob, materializovaných dĺžkových mier, meračov rozmerov-prístrojov na meranie dĺžky, analyzátorov výfukových plynov a váh s neautomatickou činnosťou podľa rozsahu akreditácie uvedeného v prílohe tohto osvedčenia.

Spôsobilosť vykonávať skúšky neustranne a dôveryhodne laboratórium preukazuje plnením požiadaviek normy ISO/IEC 17025:2005.

V mene akreditovaného skúšobného laboratória konajú a za správnosť skúšobných protokolov zodpovedajú: **Ing. Stanislav Musil** PhD., vedúci Skúšobného laboratória a **Ing. Miroslava Benková**, zástupkyňa vedúceho Skúšobného laboratória. Za správnosť skúšobných protokolov zodpovedajú vedúci pracovísk Skúšobného laboratória uvedení v prílohe tohto osvedčenia.

Osvedčenie nadobúda platnosť dňom jeho vydania a platí do 21. 6. 2013.

Bratislava 21. 6. 2010



Ing. Jozef Oberbauer
riaditeľ

Certificate according to the EN 45 011: 1998



SLOVENSKÁ NÁRODNÁ AKREDITAČNÁ SLUŽBA
Karloveská 63, 840 00 Bratislava 4, Slovenská republika



OSVEDČENIE O AKREDITÁCII

č. P-035

Slovenská národná akreditačná služba osvedčuje, že

Slovenský metrologický ústav
Certifikačný orgán na certifikáciu výrobkov
Karloveská 63, 842 55 Bratislava 4

je spôsobilý podľa požiadaviek EN 45011:1998 vykonávať certifikáciu a posudzovanie zhody vodomero, plynomero a prepočítavačov objemu plynu, elektromero, meračov tepla, meračov zostáv na kontinuálne a dynamické meranie množstva kvapalín okrem vody, váh s automatickou činnosťou, taxametro, materializovaných mier - výčapných nádob, materializovaných dĺžkových mier, meradiel rozmerov - prístrojov na meranie dĺžky, analyzátorov výfukových plynov a váh s neautomatickou činnosťou podľa rozsahu akreditácie uvedeného v prílohe tohto osvedčenia.

V mene akreditovaného certifikačného orgánu konajú a za správnosť certifikátov zodpovedajú: **RNDr. Anna Nemečková**, riaditeľ certifikačného orgánu; **Ing. Stanislav Musil, PhD.**, zástupca riaditeľa certifikačného orgánu.

Osvedčenie nadobúda platnosť dňom jeho vydania a platí do 27. 3. 2012.

Bratislava 27. 3. 2009



Ing. Jozef Obernauer
riaditeľ

The Capability of SMU to Perform Scientific and Research Activities



MINISTERSTVO ŠKOLSTVA,
VEDY, VÝSKUMU A ŠPORTU
SLOVENSKEJ REPUBLIKY
Stromová 1, 813 30 Bratislava

Bratislava 7. októbra 2010
Číslo: 2010-12922/28714-1-11

Ministerstvo školstva, vedy, výskumu a športu Slovenskej republiky ako správny orgán príslušný podľa ustanovenia § 26a ods. 11 zákona č. 172/2005 Z. z. o organizácii štátnej podpory výskumu a vývoja a o doplnení zákona č. 575/2001 Z. z. o organizácii činnosti vlády a organizácii ústrednej štátnej správy v znení neskorších predpisov v znení zákona č. 233/2008 Z. z. (ďalej len „zákon“) na základe žiadosti Slovenského metrologického ústavu so sídlom 842 55 Bratislava, Karloveská 63, IČO 30 810 701

vydáva

pre Slovenský metrologický ústav, Karloveská 63, 842 55 Bratislava, IČO 30 810 701
-príspevková organizácia Úradu pre normalizáciu, metrológiu a skúšobníctvo SR

OSVEDČENIE O SPÔSOBILOSTI vykonávať výskum a vývoj.

Platnosť osvedčenia je šesť rokov od jeho vydania.

Odôvodnenie:

Keďže sa návrhu účastníka konania vyhovuje v plnom rozsahu, upúšťa správny orgán podľa § 47 ods. 1 správneho poriadku od odôvodnenia.

Na základe § 26a ods. 16 písm. c) zákona, ak Slovenský metrologický ústav prestane spĺňať podmienky ustanovené zákonom, Ministerstvo školstva, vedy, výskumu a športu Slovenskej republiky odírne osvedčenie o spôsobilosti.

Poučenie:

Proti tomuto rozhodnutiu možno podať v lehote 15 dní udo dňa jeho doručenia rozklad v zmysle § 61 ods. 1 správneho poriadku na Ministerstvo školstva, vedy, výskumu a športu Slovenskej republiky. Toto rozhodnutie je preskúmateľné súdom v konaní podľa § 244 a nsl. Občianskeho súdneho poriadku po vyčerpaní riadneho opravného prostriedku.



Eugen Jurzyca
minister

Rozhodnutie sa zasiela:

1. Slovenský metrologický ústav, Karloveská 63, , 842 55 Bratislava
2. Spis

Na vedúenie:

Úradu pre normalizáciu, metrológiu a skúšobníctvo SR, Štefanovičova 3, P.O.Box 76, 810 05 Bratislava 15

Cross-references among the ISO/IEC 17025: 2005 standard and the SMU documents

ISO 17025: 2005 Requirement	QMMCL 1 clause	QMMC 2 clause	Procedures / Instructions	Remarks
4. Management Requirements				
4.1 ORGANIZATION				
Legal responsibility and autonomy	4.1.1			
Procedure for protection of confidential information	.		OS/11	
Procedure to avoid reduction in confidence	.		OS/12	
Definition of organizational structure, responsibilities, quality manager, etc.	.	4.1 Organisation scheme of metrological Centre and staff personnel	OS/16	Procedures are in accordance with table 3.3
	.		OS/17	
	.		OS/60	
	.		OS/64	
Personnel awareness of the relevance and importance of their activities and their contribution to the QMS	4.1.6			
4.2 MANAGEMENT SYSTEM				
Coherence and structure documentation	4.2.1	4.2.1 Quality policy of the Centre		
<u>Quality Manual, policy and objectives</u>	.	4.2.2 Aims and form of the quality system		
Procedures consistent with standard and quality policy	.			
Defined roles and responsibilities of technical management in Quality Manual	4.2.7	4.2.3 Quality Manual		
		4.2.5 Responsibilities of technical management		
4.3 DOCUMENT CONTROL				

ISO 17025: 2005 Requirement	QMMCL 1 clause	QMMC 2 clause	Procedures / Instructions	Remarks
Procedure for control of quality documents (internal and external)	4.3.1		OS/01	Procedures are in accordance with table 3.3
	.		OS/04	
Approval, issue and changes	.		OS/13	
	4.3.4		OS/25	
			OS/71	
4.4 REVIEW OF REQUESTS, TENDERS AND CONTRACTS				
Procedure	4.4.1		OS/23	Procedures are in accordance with table 3.3
Evaluation aspects, control of contract changes and records of reviews	.		OS/24	
	.		OS/27	
Coordination of review activities	4.4.2		OS/28	
			OS/29	
			OS/61 OS/62	
4.5 SUBCONTRACTING OF TESTS AND CALIBRATIONS				
Register of approved subcontractors	4.5.1		OS/27	Procedures are in accordance with table 3.3
	.		OS/28	
Records of evidence that subcontractors comply with the standard	4.5.5			
4.6 PURCHASING SERVICES AND SUPPLIES				
Policy and procedure	4.6.1			Procedures are in accordance with table 3.3
Inspection/verification of purchased supplies	.		OS/43	
	.		OS/45	
Evaluation of suppliers and records of evaluations	.			
Review and approval of purchasing documents	4.6.4			
4.7 SERVICE TO THE CUSTOMER				
Cooperation with customers if customers request for monitoring the performance of the laboratory.	4.7.1		OS/12	Procedures are in accordance with table 3.3
	.		OS/24	
	4.7.2		OS/74	
Seek actively for customer feedback.				
4.8 COMPLAINTS				
Policy and procedure	4.8		OS/72	Procedures are in

ISO 17025: 2005 Requirement	QMMCL 1 clause	QMMC 2 clause	Procedures / Instructions	Remarks
Records of complaints				accordance with table 3.3
4.9 CONTROL OF NONCONFORMING TESTING AND/OR CALIBRATION WORK				
<u>Policy and procedure</u>	4.9.1			
Responsibilities and authorities	.		OS/05	Procedures are in accordance with table 3.3
Evaluation of significance of nonconformities	4.9.2		OS/08 OS/18	
Corrective actions				
4.10 IMPROVEMENT				
Arrangements to support continuous improvement	4.10			
4.11 CORRECTIVE ACTION				
<u>Policy and procedure</u>	4.11.1			
cause analysis, selection and implementation, monitoring and additional audits	.		OS/05	Procedures are in accordance with table 3.3
	4.11.5		OS/08	
4.12 PREVENTIVE ACTION				
<u>Procedure</u> and action plans	4.12.1 4.12.2		OS/08	Procedures are in accordance with table 3.3
4.13 CONTROL OF RECORDS				
<u>Procedure</u> : identification, storage, protection, etc of quality and technical records (also electronic records)	4.13.1 .		OS/01 OS/02 OS/03	Procedures are in accordance with table 3.3
protect and back-up of electronically stored records; requirements applicable for technical records	4.13.2		OS/13 OS/21 OS/25	
4.14 INTERNAL AUDITS				
<u>Procedure</u> : audit programme qualified personnel records of audits corrective actions	4.14		OS/05 RGR/04 Procedure for maintenance and improvement of the institute quality management.	Procedures are in accordance with table 3.3

ISO 17025: 2005 Requirement	QMMCL 1 clause	QMMC 2 clause	Procedures / Instructions	Remarks
4.15 MANAGEMENT REVIEW				
<u>Procedure:</u> schedule and records of reviews	4.15.1 4.15.2		OS/16	Procedures are in accordance with table 3.3
5. Technical Requirements				
5.1 GENERAL				
Take into account the factors which contribute to uncertainty of measurement		5.1		
5.2 PERSONNEL				
<u>Policy</u> and <u>procedure</u> for identification of training needs Training programme and evaluation of the effectiveness of the training actions Current job descriptions Records of all technical personnel	4.1.5	5.2	OS/03 OS/60 OS/64	Procedures are in accordance with table 3.3
5.3 ACCOMMODATION AND ENVIRONMENTAL CONDITIONS				
Requirements for accommodation and environmental conditions Monitoring, control and records Controlled access and housekeeping procedures		5.3.1 . . . 5.3.3	OS/07 OS/51 OS/26 OS/53 OS/11 OS/54 OS/30 OS/55 OS/31 OS/57 OS/30 OS/58 OS/46 OS/59	Procedures are in accordance with table 3.3
5.4 TEST AND CALIBRATION METHODS AND METHOD VALIDATION				
Appropriate <u>methods</u> and <u>procedures</u> Instructions for use and operation of equipment Validation <u>procedures</u> (including software) Records of validations <u>Procedures</u> for estimation		5.4.1	OS/04 OS/06 OS/22	Procedures are in accordance with table 3.3

ISO 17025: 2005 Requirement	QMMCL 1 clause	QMMC 2 clause	Procedures / Instructions	Remarks
of uncertainty <u>Procedures</u> for protecting data		5.4.7		
5.5 EQUIPMENT				
Calibration programmes Records for each item of equipment Acceptance criteria Identification of equipment <u>Procedures</u> for safe handling, transport, etc <u>Procedure</u> for intermediate checks		5.5	OS/21 OS/32 OS/41	Procedures are in accordance with table 3.3
5.6 MEASUREMENT TRACEABILITY				
Calibration <u>procedure</u> and <u>programme</u> (see 5.5) for equipment/reference standards <u>Procedures</u> for safe handling, transport, etc <u>Procedure</u> for intermediate checks		5.6.1 . . 5.6.3		
5.7 SAMPLING				
<u>Procedures</u> and sampling plan Records <u>Procedure</u> for intermediate checks		5.7		
5.8 HANDLING OF TEST AND CALIBRATION ITEMS				
<u>Procedure</u> for transportation, receipt, storage, etc System for identification <u>Procedures</u> and facilities for avoiding deterioration		5.8	OS/24 OS/26	Procedures are in accordance with table 3.3
5.9 ASSURING THE QUALITY OF TEST AND CALIBRATION RESULTS				
<u>Procedures</u> for monitoring the validity of tests and				

ISO 17025: 2005 Requirement	QMMCL 1 clause	QMMC 2 clause	Procedures / Instructions	Remarks
calibrations undertaken. Arrangements for analysing quality control data and for implementing corrective actions when required		5.9		
5.10 REPORTING THE RESULTS				
Calibration certificate includes all information Documentation of opinions and interpretations		5.10.1 . 5.10.8	OS/02 OS/24	Procedures are in accordance with table 3.3

Abbreviations:

QMMCL 1- Quality Manual of Metrological Centres and Testing Laboratory, Part I

QMMC 2 - Quality Manual of Metrological Centre, Part II