

Report on Standards, Quality Assurance and Calibration FIG WG 5.1 Activities in 1998-2002

Prof. Hans HEISTER, Germany and Dr. Vaclav SLABOCH, Czech Republic

Key words: Surveying Instruments, Standards, Quality Assurance, Calibration.

ABSTRACT

Activities of FIG WG 5.1 have been oriented on following key issues:

- Development of standards affecting geodetic instruments and methods,
- Acceptance controls, quality assurance and certification and their impact on the surveying profession,
- Checking and calibration of measuring instruments.

Tasks resulting from the key issues have been ensured through specific projects oriented on promotion of standards and guidelines to the surveying community and through guidelines and recommendations for checking and determination of field accuracy of total stations, digital levels, laser planes etc. and for their calibration, including laboratory calibration. Members of the WG collaborated also with the FIG Task Force on Standards and participated in the relevant technical committees of the International Organisation for Standardisation (ISO) and other appropriate bodies, like Work Party on Quality Assurance of the CLGE, Work Group on Quality Issues of the EuroGeographics, National Standardisation and Metrological bodies.

The promotion and dissemination of achieved results have been ensured through active participation numerous national and international seminars and conferences and through participation in multinational projects. Let us name only the most important once in chronological order:

- 35th International Geodetic Information Days, November 1998, Brno, Czech Republic
- Jubilee Seminar "Geodesy and Surveying in the Future – the Importance of Heights, March 1999, Gävle, Sweden
- XIIIth International Course on Engineering Surveying, March 2000, Munich, Germany
- International Seminar "The Mediterranean Surveyor in the New Millennium", September 2000, St. Julian's, Malta
- Seminar on "Quality Management in Geodetic Measuring Techniques", November 2001, Fulda, Germany
- Sessions dedicated to Standards, Quality Assurance and Calibrations during the FIG Working Weeks in Sun City 1999, Prague 2000 and Seoul 2001
- Continuous participation in the activities ISO TC 211 Geographic Information/Geomatics and ISO TC 172/SC6 JWG Optical Instruments

Activities of the WG resulted in several important achievements, mainly in:

TS5.1 Commission 5 Activities: Yesterday and Tomorrow

1/5

Hans Heister and Vaclav Slaboch

Report on Standards, Quality Assurance and Calibration – FIG WG 5.1 Activities in 1998-2002

FIG XXII International Congress

Washington, D.C. USA, April 19-26 2002

- Elaboration of the new proposal of a new ISO standard for levelling instruments which is a result of joint effort inside ISO of Technical Commission TC172/SC6 JWG (Optical instruments: levels, theodolites, EDM, invar staffs, etc.). The proposed standards are adapted not only to check the instruments from the constructor`s point of view but also to satisfy the field surveyor`s needs,
- Metrological comparison of length and azimuth standards between German and Czech geodetic laboratories according to ISO standards carried out in July and August 2001 enabled to test the procedure for accreditation of a geodetic laboratory according to ISO/IEC 17025 “General Requirements for the Competence of Testing and Calibration Laboratories”.

The latest information about the situation in the field of was presented at the 54th CPD Seminar organised by the German Association of Surveying in November 2001, in Fulda that dealt in detail with Accreditation, Certification and Traceability to National Standards, Calibration, Uncertainty of Measurements, Testing of Geodetic Measuring Equipment.

CONTACT

Prof. Hans Heister
 Institute for Geodesy
 Bundeswehr University Munich
 Werner-Heisenberg-Weg 39
 D-85579 Neubiberg
 GERMANY
 Tel. + 49 89 6004 3433
 Fax + 49 89 6004 3904
 E-mail: h.heister@unibw-muenchen.de
<http://unibw-muenchen.de>

Dr. Vaclav Slaboch
 Research Institute for Geodesy, Topography
 and Cartography (VUGTK)
 CZ – 250 66 Zdiby 98
 Praha - východ
 CZECH REPUBLIC
 Tel. + 420 2 8489 0907
 Fax +420 2 8489 0056
 E-mail: Vaclav.Slaboch@vugtk.cz
<Http://www.vugtk.cz>

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3/5

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CONCLUSION

The activities of FIG WG contributed substantially to awareness of importance of modernisation of the existing standards or creation of new ones for geodetic instruments testing. There should be only one standard for each type of instrument testing, which could be used anywhere and without any special equipment by common field operators and which could answer the question whether the required accuracy can be achieved with the instrument available for the given task.

It has been also stated – in agreement with the FIG Tasks on standards – that the surveyors have to take a more active part in official national and international standardisation and metrological activities as the geodetic metrology represents a special complex branch of metrology that is not sufficiently covered.

The surveying institution should take over the responsibility for official national “geodetic” standards like length, azimuth, position, gravity, etc.

The activities of FIG Commission 5 in this field are far from being completed and they must continue. The trend aiming to development of a “full automated surveying black box” will continue and the surveyor`s role as a quality and data manager will prevail over his traditional role of a field data collector. Completely new instruments have emerged on the market like terrestrial and airborne scanners, wireless geographic information technologies, real time navigation equipment, etc. which – in spite of their geodetic origin are no longer connected with our surveying profession.

FIG Commission 5 should also continue to co-operate with the producers of surveying equipment and surveying software.

Members of the WG 5.1

Jean-Marie Becker, Mikael Lilje, Hans Heister, Martin Lang, Milan Kaspar, Reinhard Gottwald, Jiri Lechner, Rudolf Steiger, Fritz Brunner, Hilmar Ingensand, Naser El-Sheimy, Takao Seto, Jean-Marc Rüger, Hilmar Ingensand, Matt Higgins, Antti Jacobson, Thomas Wunderlich, Iain Greenway, Michel Kasser, Michel Mayoud, Vaclav Slaboch.

BIOGRAPHICAL NOTES

Prof. Hans Heister received the degree Dipl.-Ing. at the University of Bonn in 1969. During 1970 – 1974 he was assistant at the Geodetic Institute of the TU Munich. 1974 he became director of the Geodetic Laboratory of the Bundeswehr University Munich (UniBwM), 1987 Dr.-Ing.habil., and since 1991 he is apl. Professor for Geodetic Metrology at the same University. Main activities: GPS, land navigation, kinematic survey, gyro-measurements, calibration of geodetic instruments, engineering and industrial surveying. He participated in many professional activities abroad and pronounced numerous lectures at foreign universities and congresses. Member of FIG Commission 5 "Positioning & Measurement".

Dr. Vaclav Slaboch is the director of the Research Institute for Geodesy, Topography and Cartography, vice-chair of the Czech Union of Surveyors and Cartographers. Studied geodetic surveying at the Czech Technical University in Prague, worked with Fairey Surveys Ltd., in England. In 1979 - 1981 consultant for a UNDP Project in West Africa, and recently in Malta. Chairman of FIG WG 5.1 Quality Assurance, Quality Control and Standards and teacher of Engineering Surveying at the Czech Technical University in Prague.