

# JCSS (JAPAN CALIBRATION SERVICE SYSTEM)

Yoshikazu Watabe

Technical Service Division of Mettler-Toledo K.K., Japan

## ABSTRACT

JCSS is an accreditation system operated by IAJapan (International Accreditation Japan) in line with ISO/IEC 17025 as accreditation criteria. This paper introduces our latest investigation of JCSS, MRA (Mutual Recognition Arrangement) for Laboratory Accreditation, Tendency of its activities and Requirements of its users.

## 1. INTRODUCTION

JCSS is an accreditation program operated by IAJapan in line with the Japanese Measurement Law. IAJapan is an accreditation body and was established in April 2002, according to a comprehensive review of the accreditation programs of testing laboratories and calibration laboratories operated by National Institute of Technology and Evaluation (NITE). The establishment of IAJapan is based on the perception that it is the duty of governmental accreditation body to respond to requests from the industries, academies and governmental administration, and to establish a scheme where private accreditation bodies are unable to cope with these needs.

## 2. HISTORY

November 1993	International Trade & Industry Inspection Institute (ITII), of Ministry of International Trade & Industry (MITI) started JCSS.
October 1995	ITII was changed and re-named to NITE.
January 2001	MITI was changed to and re-named to METI (Ministry of Economy, Trade and Industry), and NITE has been placed under METI administration.
April 2001	NITE was changed and transformed to be an independent government agency and JNLA was transferred from MITI to NITE.
FY 2001	Preparation for MLAP and ASNITE Pilot Project started.
April 2002	IAJapan was established.

## 3. LABORATORY ACCREDITATION PROGRAMS

IAJapan operates the following 4 programs.

<b>JCSS</b>	Japan Calibration Service System
<b>MLAP</b>	Specified Accreditation Laboratory Accreditation Program
<b>NLAP</b>	Japan National Laboratory Accreditation Program
<b>ASNITE</b>	Accreditation System of NITE

### 3.1 LABORATORY ACCREDITATION

Laboratory accreditation is a scheme in which an authoritative accreditation body approves laboratories that conform to certain requirements for their competence to conduct test and calibration in specific technical areas. The aim is to assure the confidence and reliability of the data measured, tested and calibrated by laboratories. In most countries of Europe and USA, purchasers (users) and suppliers (manufacturers) are required to attach the test data to products

and in fact many suppliers choose to use the data tested by the third-party laboratories independent from authorized parties. In this case, test reports issued by accredited testing laboratories are value adding and useful for purchasers and suppliers to promote effective trade.

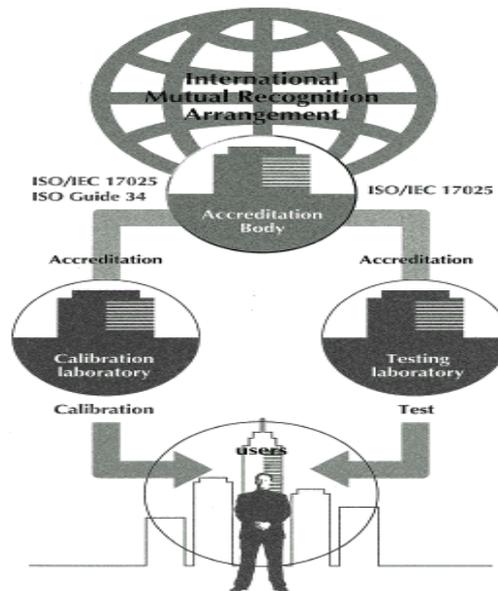


Figure 1: Scheme of Laboratory Accreditation

### 3.2 ACCREDITATION BODY AND TESTING/CALIBRATION LABORATORIES

The accreditation body is an organization to evaluate the conformity and competence of laboratories against international standards and guides or other requirements under the laboratory accreditation system. To ensure the international harmonization, the accreditation body itself is required to confirm certain international standards and guides. International Guide for Accreditation Body is ISO/IEC Guide 58:1993 (JIS Z93581:1996), Calibration and testing laboratory accreditation systems, General requirements for operation and recognition. International Standard for Testing/Calibration Laboratories is ISO/IEC 17025:1999 (JIS Q17025:2000), General requirement for the competence of testing and calibration laboratories and International Standard and guide for Manufactures of Reference Materials are ISO/IEC 17025:1999 (JIS Q17025:2000) + ISO/IEC Guide 34: 1996 (JIS Q0034:1996), Quality system guidelines for production of Reference Materials. (JIS: Japanese Industry Standards)

### 4. JCSS

Japan Calibration Service System (JCSS) involves the national measurement standards provision system and the calibration laboratory accreditation system after amendment of the Measurement Law in November 1993. JCSS was established for the purpose of ensuring the high precision measurement and confidence of quality control. With recent globalization of economic activities, as the technical infrastructure, which consists of various conformity assessment activities on international trade, the traceability of measurement has become important increasingly. Through accreditation of technical competence of calibration laboratories, JCSS plays an important role in the infrastructure realizing the world-wide One-Stop Testing which aims at the global acceptance by ensuring the reliable calibration service and measurement traceability. After laboratories are assessed to meet the requirements of the Measurements Law, relevant regulations, and ISO/IEC 17025, they are recognized as JCSS Accredited Calibration Laboratories under the name of president of NITE. IAJapan, an accreditation body running JCSS accreditation program, implements accreditation process in

line with the system conforming to ISO/IEC Guide 58. On the other hand, according to Measurement Law, Minister of Economy, Trade and Industry designates National Primary Measurement Standards or National Reference Materials, which are the sources of calibration.

#### **4.1 Sub-fields of Accreditation**

As of September 2004, the accreditation scope covers 20 calibration fields (not counting the bracketed parts below). JCSS aims to cover all calibration fields below in the future. Furthermore, in response to various situation or needs new fields will be added.

- 1) Length
- 2) [Volume]
- 3) Mass
- 4) Force
- 5) Pressure
- 6) [Viscosity]
- 7) [Time & Frequency]
- 8) Flow rate
- 9) Heat
- 10) Electrical (Current, Voltage, [Electromotive Force], Capacitance, [Inductance], Resistance, [Conductance], [Impedance], Power and Energy)
- 11) [Magnetic field intensity, Magnet-motive force, Magnetic flux density]
- 12) Attenuation and density of Electromagnetic wave
- 13) Temperature
- 14) Luminous intensity, Radiation intensity, Luminous Flux, Luminance
- 15) Sound pressure level
- 16) Vibration acceleration level
- 17) Neutron emission rate, Radioactivity, Absorbed dose, Absorbed dose rate, Kerma, Kerma rate, Exposure, Exposure rate, Dose equivalent, Dose equivalent rate
- 18) Hardness
- 19) [Impact]
- 20) Humidity
- 21) Reference Materials
- 22) Acceleration
- 23) Density
- 24) Angle

#### **4.2 CERTIFICATE AND ACCREDITATION SYMBOL**

Accredited calibration laboratories calibrate and evaluate their user's reference standards or working standards with their Secondary Standards or measurement standards traceable to Secondary Standards, and issue calibration certificates with JCSS accreditation symbol.



**Fig 2:** Accreditation Symbol of JCSS

#### **4.3 ACCREDITATION CRITERIA**

Guideline documents are presented on the web site. These include general requirements for accreditation of testing laboratories, rules on the use of JCSS accreditation symbol, the policy

for the traceability of measurement, preparation of accreditation application, and procedures for preparation of Quality Manual. At the same time, Technical Requirement/Application Guidance for each field is also published.

## **5. MRA FOR LABORATORY ACCREDITATION**

In general, the conformity to international standards and guides and the competence of the accreditation program operated by an accreditation body are recognized and assured as a signatory to Mutual Recognition Arrangement (MRA). To be a signatory it is required to receive a thorough peer evaluation by an international team, which consists of members from accreditation bodies in other countries/economies. Even after becoming a signatory, the accreditation body must be re-evaluated periodically in order to demonstrate its continued conformity and competence. MRA signatories of accreditation bodies are obliged to recognize the equivalence of system, competence, and evaluation by the other accreditation bodies as those of their own and to promote the use of the test results of the other bodies to users or regulatory sectors within the country. IAJapan is a signatory to MRA of Asia-Pacific Laboratory Accreditation Cooperation (APLAC) as well as International Laboratory Accreditation Cooperation (ILAC). Among the accreditation program operated in IAJapan, MRA recognition status covers Japan Calibration Service System (JCSS), Japan National Laboratory Accreditation System (JNLA), and Accreditation System of National Institute Technology and Evaluation (ASNITE) (at present, excluding ASNITE-RM). Therefore, certificates/reports with respective accreditation symbols of JCSS, JNLA (with contracts of surveillance and other service), and ASNITE are accepted as competent to relevant users or regulators overseas.

### **5.1 ASIA-PACIFIC LABORATORY ACCREDITATION COOPERATION (APLAC)**

When accreditation bodies become signatories to MRA recognizing the equivalence among signatory countries/economies, the test results of accredited laboratories become more reliable and appealing. This does not lead directly to remove TBT (technical barrier to trade) but it would be significant and helpful information for importers to evaluate whether the test result of exporter's country/economy is acceptable. APLAC is a cooperative body of accreditation bodies in Asia-Pacific Region. APLAC operates an MRA among member of accreditation bodies, so that the test results and calibration certificates by accredited laboratories in a certain country/economy become equivalent to their evaluation among the Region. As of September 30, 2002, 18 members are signatories to MRA for an APLAC.

### **5.2 INTERNATIONAL LABORATORY ACCREDITATION COOPERATION (ILAC)**

ILAC is a cooperative body amongst laboratory accreditation bodies in nations and Regions. The MRA operation started in November 2000. 41 members of ILAC are signatories to the MRA including 18 members of APLAC.

### **5.3 SIGNATORY MEMBERS OF ILAC ARRANGEMENT**

#### **Members of APLAC MRA Signatories**

- Australia	NATA (National Association of Testing Authorities, Austria)
- Canada	SCC (Standards Council of Canada)
- Hong Kong China	HKAS (Hong Kong Accreditation Service)
- Peoples' Republic of China	CNAL (China National Accreditation Board for Laboratories)
- India	NABL (National Accreditation Board for Testing & Calibration Laboratories)
- Indonesia	KAN (National Accreditation Body of Indonesia))

- Japan IAJapan (International Accreditation Japan) and JAB (The Japan Accreditation Board for Conformity Assessment)
- Republic of Korea KOLAS (Korea Laboratory Accreditation Scheme)
- Malaysia DSM (Department of Standards Malaysia)
- New Zealand IANZ (International Accreditation New Zealand)
- Singapore SAC (Singapore Accreditation Council)
- Chinese Taipei CNLA (Chinese National Laboratory Accreditation)
- Thailand BLQS-DMSc (The Bureau of Laboratory Quality Standards, Department of Medical Science, Ministry of Public Health, Thailand) and TISI (Thai Industrial Standards Institute)
- USA A2LA (American Association for Lab Accreditation), IAS (International Accreditation Service, Inc.) and NVLAP (National Voluntary Laboratory Accreditation Program)
- Viet Nam BOA (Vietnam Laboratory Accreditation Scheme)

### **Members of EA (European co-operation for Accreditation/MRA Signatories)**

- Austria BMWA (Bundesministerium für Wirtschaft und Arbeit)
- Belgium BELTEST BKO-OBE (Belgische Kalibratie Organisatie/Organization Belge D'Etalonnage )
- Czech Republic CAI (Czech Accreditation Institute)
- Denmark DANAK (Danish Accreditation)
- Finland FINUS (Finnish Accreditation Service)
- France COFRAC (Comite Francais d' Accreditation)
- Germany DACH (German Accreditation Body Chemistry) DAP (Deutsches Akkreditierungssystem Prüfwesen), DASMIN (Deutsche Akkreditierungsstelle Mineralöl) DATech (German Accreditation Body Technology) and DKD (Deutscher Kalibrierdienst)
- Greece ESYD (Hellenic Accreditation Council)
- Ireland NAB (Irish National Accreditation Board)
- Italy SINAL (Sistema Nazionale per l' Accredimento di Laboratori) SIT (Servizio di Taratura in Italia )
- Netherlands RvA (Raad voor Accreditatie)
- Norway NA (Norwegian Accreditation)
- Romania RENAR (Romanian Accreditation Association)
- Slovakia SNAS (Slovak National Accreditation Service)
- Slovenia SA (Slovenian Accreditation)
- Spain ENAC (Entidad Nacional de Accreditation)
- Sweden SWEDAC (Swedish Board for Accreditation and Conformity Assessment)
- Switzerland SAS (Swiss Accreditation Service)
- United Kingdom UKAS (United Kingdom Accreditation Service)

### **From other Regions**

- Brazil CGCRE/INMETRO (General Coordination for Accreditation)
- Israel ISRAC (Israel Laboratory Accreditation Authority)
- South Africa SANAS (South African National Accreditation System)

## 6. NUMBER OF ACCREDITED CALIBRATION LABORATORY

According to the website of NITE of July 1, 2004, 70 laboratories accredited have existed and accredited laboratories are increasing rapidly.

## 7. REQUIREMENTS OF USERS BASED ON THE STANDARDS

To meet the requirements of various International Standards related to measurements such as ISO9000F, ISO14000S, GLP, GMP, HACCP, ISO/IEC 17025, ISO/IEC TS 16949, traceability with measurement uncertainty is a must because certificates and test reports should include not only calibration/testing results but also its measurements uncertainties under the following cases.

- 1) Calibration/Testing Certificates issued by Calibration/Testing Laboratories
- 2) International Comparison and Cooperation study
- 3) Papers and Documents for the certificates
- 4) Documents related to Business Transaction and Certification
- 5) Measurement Control of Production and Inspection Record of Products

Therefore, Users of JCSS Calibration Certificate want to have a reliable and convenient laboratory besides their sites. To provide such calibration service and to provide users with reliable/timely certificate, laboratories accredited by JCSS of IAJapan program should be located nationwide.

## 8. CONCLUSION

In accordance with the request of Quality Management, the necessity of Calibration/Testing Laboratories accredited by JCSS program will be increased day by day. Meanwhile, it is required to promote this program to end users and assessors of Global Standards related to Measurements taking any occasion by not only IAJapan but also all persons concerned in order to realize world-wide One-Stop Testing which aims at the global acceptance by ensuring the reliable calibration/testing service and measurement traceability. In order to increase number of JCSS Certificates issued by Calibration laboratories accredited by IAJapan, IAJapan's role has become important increasingly.

## REFERENCES

- [1] IAJapan issued by National Institute of Technology and Evaluation (NITE)  
Tel: +81-3-3481-1939 /Fax: +81-3-3481-1937/E-Mail: [jcss@nite.go.jp/iajapan@nite.go.jp](mailto:jcss@nite.go.jp/iajapan@nite.go.jp)
- [2] Website of NITE, <http://www.nite.go.jp/asse/iajapan/>
- [3] ISO/IEC Guide 58, Calibration and testing laboratory accreditation systems, General requirements for operation and recognition
- [4] ISO/IEC 17025, General requirement for the competence of testing and calibration laboratories

### Address of the Author:

Yoshikazu Watabe  
Technical Service Division of Mettler-Toledo K.K.  
BW2-8 Tokyo Ryutsu Center, 6-1-1 Heiwajima,  
Ohta-ku, Tokyo 143-0006, Japan  
Telephone: (+81) 3 3765 4540  
Fax: (+81) 3 3765 4544  
E-Mail: [yoshikazu.watabe@mt.com](mailto:yoshikazu.watabe@mt.com)