CHAPTER 5 PROGRAMS OF THE INDUSTRIAL STANDARDIZATION SYSTEM DEVELOPMENT
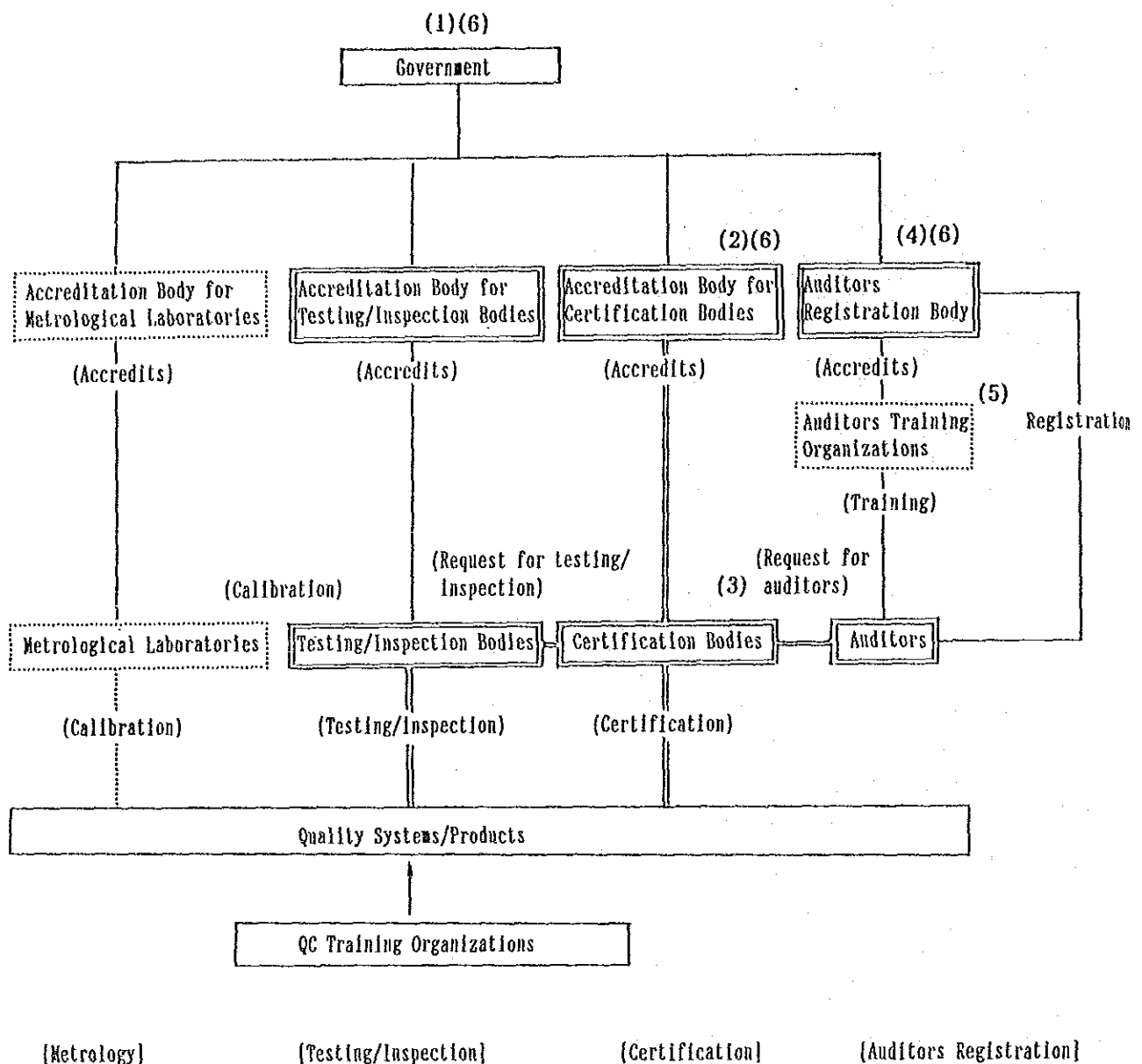
5.1 Plans for the Introduction and Diffusion of a Unified Certification System

The following six programs will be presented taking main problems and objectives to be achieved for improvements of industrial standardization mentioned in Chapter 4 into consideration.

(1) Program for establishing a legal and regulations associated with the unified certification system

(2) Program for establishing accreditation system for certification bodies

(3) Program for establishing certification system

(4) Program for establishing a registration system for qualified auditors who conduct assessment of quality system of factories under the Unified Certification System

(5) Program for establishing training system for qualified auditors

(6) Program for the diffusion of the unified certification system

These programs are proposed for the purpose of establishing a new certification system in Chile which consists of quality system certification based upon ISO 9000 Series and product certification which requires conformity of product with an applicable standard or specification.

Fig. 5.1-1 sums the above programs. (The topic of metrology will be dealt with under a separate heading.)

(1)(6)

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Government
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(2)(6)   (4)(6)

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Accreditation Body for     Accreditation Body for    Accreditation Body for    Auditors
Metrological Laboratories  Testing/Inspection Bodies  Certification Bodies      Registration Body
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(Accredits)   (Accredits)   (Accredits)   (Accredits)

(5)

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Auditors Training
Organizations
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Registration

(Training)

(Request for testing/   (Request for
(Calibration)   Inspection)   (3) auditors)

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Metrological Laboratories   Testing/Inspection Bodies   Certification Bodies   Auditors
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(Calibration)   (Testing/Inspection)   (Certification)

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Quality Systems/Products
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QC Training Organizations
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[Metrology]   [Testing/Inspection]   [Certification]   [Auditors Registration]

Note:

: Present organizations (and systems) to be strengthened
: Organizations (and systems) to be established
: Works directly related to certification
: Works though not directly related to certification but necessary for supporting certification
: Works desirable for supporting certification

Fig. 5.1-1 Interrelation between Accreditation Body

For the creation of a Unified Certification System, it would, therefore, appear to be desirable for INN to proceed with the operations in accordance with the following approach.

(1) Reinforcement of the administration office

(2) Establishment of Standby Committee in preparation for the creation of the unified certification system

The tasks of the Standby Committee will be as follows:

1) Exchange of views in general about the nature and form the unified certification system should have.

2) Provision of advice on preferable organizations and persons to become the members of the Preparation Committee for the unified certification system. After receiving the advice of the Standby Committee, it is desirable to proceed to the next step at the earliest possible time.

(3) Establishment of Preparation Committee for the unified certification system and deliberation of fundamental aspects of its creation. The Subcommittees will be established to attend to the preparation and drafting of practical proposals on the specific themes outlined below.

1) Subcommittee for planning and coordination

2) Subcommittee for legal affairs

3) Subcommittee for accreditation

4) Subcommittee for registration of qualified auditors
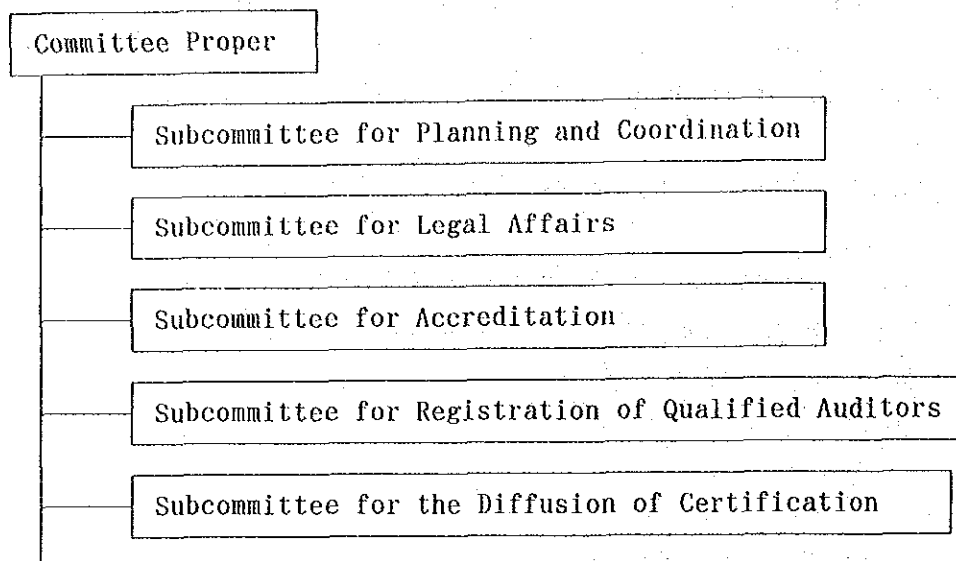
5) Subcommittee for the diffusion of certification

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┌─────────────────┐
│ Committee Proper │
└─────────────────┘
    │       ┌──────────────────────────────────────────────┐
    ├───────┤ Subcommittee for Planning and Coordination    │
    │       └──────────────────────────────────────────────┘
    │       ┌──────────────────────────────────────────────┐
    ├───────┤ Subcommittee for Legal Affairs                │
    │       └──────────────────────────────────────────────┘
    │       ┌──────────────────────────────────────────────┐
    ├───────┤ Subcommittee for Accreditation                │
    │       └──────────────────────────────────────────────┘
    │       ┌──────────────────────────────────────────────────┐
    ├───────┤ Subcommittee for Registration of Qualified Auditors │
    │       └──────────────────────────────────────────────────┘
    │       ┌──────────────────────────────────────────────┐
    └───────┤ Subcommittee for the Diffusion of Certification │
            └──────────────────────────────────────────────┘
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Fig. 5.1-2 Composition of the Preparation Committee for the Unified
Certification System

5.1.1 Program for Establishing a Legal and Regulation Associated with
the Unified Certification System

(1) Entity to assume responsibility: This will be MINECOM. In
essence, this will imply that INN will seek to coordinate with all
entities and authorities concerned and will act as a promoter in
drafting the law and regulations.

(2) Details of the programs

1) Establishment of the Industrial Standardization Law

INN should establish internally a Deliberation Committee for
Industrial Standardization Law.

2) Items to be laid down in the Industrial Standardization Law

(a) Article concerning the objectives of the certification
system

(b) Article concerning the definition of certification

(c) Article concerning the competent organization responsible for the certification system

(d) Article concerning the Advisory Committee and Special Committees for the operation of the certification system

(e) Article concerning the accreditation body for the certification bodies

(f) Article concerning the certification bodies

(g) Article concerning qualified auditors

(h) Article concerning the testing and inspection bodies

(i) Article concerning the fees for certification

(j) Article concerning the procedures for dealing with complaints

(k) Article concerning the imposition of penalty

3) Establishment of the necessary enforcement regulations for the execution of the Industrial Standardization Law

The following of the execution regulations will be of particular importance.

(a) Provisions concerning the establishment and operation of the accreditation organization

(b) Provisions concerning the accreditation of the certification entities

(c) Provisions concerning the establishment and operation of registration entity for the qualified auditors

(d) Provisions concerning the approval of the training organizations for candidates of auditors

5.1.2 Program for Eatablishing Accreditation System for Certification Bodies

(1) Organization in charge: INN

INN should function as Accreditation Body.

(2) Contents of program

1) Procedure for the establishment of the accreditation system

INN will establish system and procedures by which it will assess and accredit certification organizations capable of executing the certification of products (goods) and quality system of factories within the unified certification system. INN should also provide for system and procedures for monitoring the performance of the certification bodies concerned after accreditation by INN.

In the creation of the system and procedures, INN should establish a Preparation Subcommittee for important issues.

2) Structure of Accreditation Body

INN will establish such structure as meeting the following conditions as Accreditation Body.

(a) Authorization

(b) Provision of an organizational structure

(c) Council of INN

(d) Establishment of an Evaluation Committee

(e) Securing auditors who assess certification bodies for accreditation

3) Establishment and official announcement of the Accreditation Scheme for Certification Bodies

The rules and procedures for carrying out accreditation should be clearly established and officially announced in an effort to ensure transparency for those concerned. In concrete terms, the following items should be defined.

(a) Application procedures for receiving accreditation (Application forms and entries)

(b) Quality manual of certification bodies

(c) Assessment of quality system and its operation, testing and inspection facilities etc. of an applicant certification body.

(d) Approval of accreditation and its conditions

(e) Period of validity of accreditation

(f) Surveillance

(g) Corrective action and complaints dealing

(h) Accreditation fees

(i) Obligation of accredited certification bodies for reporting to the accreditation body

(j) Penalty

(k) Miscellaneous

Details should be defined concerning the registration, document control, and confidentiality.

It will be essential to lay down accreditation criteria for determining whether applicant certification bodies have required capabilities or not, and examination items, manuals and check list which are used for assessing them.

5.1.3   Program for Establishing Certification System

(1)   Organizations in charge

Certification bodies seeking accreditation by INN in the Unified Certification System.

(2)   Contents of program

1)   Creation of a system capable of functioning as certification bodies

The certification body should proceed in consultation with the Committee consisting of the representatives of the following organizations on all important issues.

(a) The ministries and ministerial agencies concerned

(b) INN

(c) Scientific and technological organizations (Notably, with the addition of specialists on quality control and certification)

(d) Industrial organizations (Notably, organizations handling products covered by the Unified Certification System)

(e) Consumers

2) Organization as a Certification Body

A certification body should have a system capable of meeting the following conditions in order to qualify for accreditation.

(a) Administrative structure

   a) Establishment of a Council

      This Council should be appointed for purposes, including the followings;

      i. Drawing up a policy for operating the certification body
      ii. Follow-up on the implementation status for the above certification policy
      iii. Checking of the financial status of the certification body
      iv. Setting up of an Evaluation Committee and Subcommittees

   b) Establishment of Evaluation Committee and Subcommittees

      These Committee/Subcommittees should assess whether or not products and/or quality system are eligible for certification and registration on the basis of a site assessment by auditors, a written test and inspection report certifying the compliance of the products with the standards concerned, and of any other statements or reports that may be required or applicable.

(b) Organization structure

    a) Keeping registered auditors

    b) An organizational chart should be prepared showing the responsibility and reporting structure.

    c) Establishing the regulations governing financial policy matters.

    d) A written document codifying the certification system including the rules and procedures for obtaining certification permission should be prepared. (This document should best be drawn up making reference to ISO/IEC guide 28.)

    e) Establishing legal status

(c) Clear definition of the staff instruction

(d) Document control

    a) Documents should be kept so that the necessary documents are visible in the necessary location.

    b) Amendments or changes to the documents should be made subject to specific authorization and processed directly and speedily at the effective point.

    c) Old texts should be quickly withdrawn from the certification body and from the bodies acting on behalf of them.

    d) All changes and/or amendments should be notified to persons having received certification permission and to any other certification scheme users and/or participants.

(e) Records

(f) Testing and inspection organization

(g) Confidentiality

(h) Publications

A directory should be drawn up giving the certified products and quality systems (or factories) for public announcement.

3) Establishment and public announcement of the certification scheme

The rules and procedures concerning the implementation of the certification system should be made clear and published to ensure transparency and lucidity. In concrete terms, the following items should best be made clear:

(a) Application procedures for certification
(b) Assessment of quality system and quality manual
(c) For product certification, verification of compliance with the standards applicable to the product
(d) Certification permission
(e) Period of validity of the certification
(f) Surveillance
(g) Use of conformity mark and method of marking
(h) Public relations by the recipients
(i) Measures to prevent abuse of the conformity mark and certificate
(j) Suspension/withdrawal of permission
(k) Dealing with complaints and corrective actions
(l) Measures when the relevant standards are amended
(m) Certification fees

5.1.4 Program for Establishing a Registration System for Qualified Auditors Who Conduct Assessment of Quality System under the Unified Certification System

The Registration Body for qualified auditors will approve the training organizations for the training of qualified auditors under the unified certification system and endorse the training program(s) (including the curriculum) for the courses given by these organizations. To check that graduates who have completed the course do in fact possess the abilities required for assessment, the Registration Body will approve the examination methods and the details of the examinations held by the training organizations. The Registration Body will register only such persons as have passed the above examination and meet the given requirements in terms of personality and experience, and will publish their names.

(1) Organization in charge

INN will function as the Registration Body for qualified auditors.

(2) Contents of program

1) Creating a Registration System for qualified auditors

2) Structure and function of a registration body for qualified auditors

INN should create a system meeting the following requirements to function as a Registration Body.

(a) Organization

a) Administrative structure

i. Council of INN

ii. Establishment of a Specialist Committee and an Evaluation Committee for qualified auditors

- These Committees will attend to the training bodies and training programs
- These Committees will attend to the qualification examinations, their methods and contents
- These Committees will attend to the qualifying conditions for registration of auditors and lead auditors
- These Committees will attend to the surveillance of performance of auditors and lead auditors
- These Committees will attend to the qualifying requirements for re-registration after the lapse of the period of validity of a registration.

b) Strengthening of administration office

(b) Determination and publication of registration requirements (qualifications) for qualified auditors

The Registration criteria should cover the following aspects:

a) Level of education
b) Training
c) Experience
d) Personality
e) Management capability
f) Maintenance of competence
g) Language

Accreditation of the training organizations for qualified auditors should imply the acknowledgment of the capability of conducting the necessary training in accordance with the registration criteria laid down for qualified auditors. In addition, the training bodies' financial position must be assured and must be impartial and

neutral.

3) Establishment and official announcement of the registration
   scheme for qualified auditors

   The rules and procedures applicable to the registration of
   certification auditors should be laid down in specific detail
   and made public. It is desirable to specify, inparticular,
   the following items.

   (a) Purpose
   (b) Scope
   (c) Management of the scheme as a whole
   (d) Registration conditions
   (e) Registration procedures
   (f) Registration
   (g) Period of validity of registration
   (h) Certificates
   (i) Training courses
   (j) Registration fees, etc.

5.1.5 Program Establishing Training System for Qualified Auditors

Training organizations for qualified auditors will train and hold
qualification examinations for persons capable of carrying out
assessment duties for the certification of products and quality
systems. Their organizations, training programs and qualification
examinations, will be subject to the approval of INN as the
Registration Body for qualified auditors.

(1) Organizations in charge

Training organizations accredited by INN

(2) Contents of program

1) Strengthening of functions of training entities for qualified auditors

2) Structure and functions of training entities for qualified auditors

   (a) Establishment of the organization

      a) Administrative structure

         i. Establishment of a Council

         ii. Establishment of a Specialist Committee

            . This Committee will attend to the examination of the training programs (including curricula)
            . This Committee will attend to the scrutiny of the methods and contents of the qualification examinations.

      b) Strengthening of an administration office

         . Recruitment of training staff
         . Practice of training
         . Preparation of training facilities and textbooks/ training materials, and
         . Publicity for training programs should be executed by strengthening an administration office.

      c) Recruiting of training staff

   (b) Preparation of training programs and curricula

      The training programs should cover:

a) Knowledge in quality assurance, quality control, quality system, standards, etc.

b) Method for performing assessment for certification of products and quality systems

c) Assessment administration skills such as preparation of assessment plans, organization, communications and guidance

To ensure that registered auditors will maintain their capabilities, it will be important to provide training opportunities for:

a) Acquisition of new knowledge on quality system and conditions

b) Acquisition of new knowledge on procedures and methods of assessment

c) General refreshing

5.1.6 Program for the Diffusion of the Unified Certification System

(1) Organizations in charge

INN will be in charge. Success of the diffusion programs depends largely upon the cooperation of the government bodies in providing political privilege. In this sense, it will be of paramount importance to enlist the cooperation of the relevant government bodies and government authorities, notably MINECOM.

(2) Contents of program

1) Preferential procurement by the government and government bodies of products bearing the certification mark or products produced by the factories whose quality systems have been

certified.

2) Grant of political privilege to companies aspiring to acquire certification permission

3) Provision of technical guidance to companies

For small and medium companies, it is important to provide practical technical guidance in connection with the creation of a quality system, internal standardization, and quality control.

4) Supply of overseas information to all concerned with exports

5) Diffusion of the certification mark to the general consumer

5.2 Quality Control/TQC Diffusion Program

5.2.1 Contents of Diffusion Program

The diffusion program consists of the following items.

(1) Setting up a technical committee (including a subcommittee) for innovation of education and diffusion organizations for Quality Control/TQC.

(2) Decision of a program for consolidation of education and diffusion organizations by the technical committee.

(3) A program for consolidation of texts and curriculum for education and training

(4) A program for acquisition of competent lecturers and trainers

Staff of INN responsible for this project should be persons having a wide range of experience and knowledge who can carry out coordination between related departments. It is considered that 3 persons are required, and the staff should make coordination between a technological sector, an educational sector and an industrial sector for quality control.

5.2.2　Setting up Technical Committee for Innovation of Education and Diffusion Organizations for Quality Control and TQC

(1)　The following items should be discussed in the technical committee

　　1)　A program for education, diffusion and consolidation of quality control and TQC

　　2)　A program for preparation of texts for education and training and arrangement of curriculum for quality control and TQC.

　　3)　A program for enhancement of lecturers and trainers for quality control and TQC

　　Contents of each of these programs are described in (2), (3) and (4) below.

(2)　Members of the technical committee for quality control and TQC

　　The main members of this technical committee should include representatives of INN, those of departments of industrial organizations responsible for quality control and TQC, those of educational and academic institutions, and other specialists of foreign countries, and carry out works described in (1).

(3)　Period of action of the technical committee

　　The technical committee should be started in April, 1992 and programs stated above will be formulated until October, 1993.

(4)   Networks around the technical committee for quality control and
      TQC

      The position of this technical committee is as shown in Fig. 3.4-
      3.

5.2.3   Decision of a Program for Consolidation of Education and
        Diffusion Organizations by the Technical Committee

(1)   Outline of the program for consolidation of organizations for
      education on and diffusion of quality control and TQC

      Education on and diffusion of quality control should be carried
      out in both the defensive aspect and positive aspect of Quality
      Control/TQC activities, but the recommendations described here
      relate to education on and diffusion of only defensive aspect of
      TQC activities.

      However, recommendation described later aims at establishing the
      basic quality stage in the process of quality control/TQC
      activities as shown in Fig. 3.4-1, in other words at establishing
      quality systems based on the ISO 9000 series.

      This also matches the worldwide trend concerning Quality
      Control/TQC activity.

      It is needless to say that the positive aspect of quality control
      activities is important, but an organization for prevention of
      nonconforming product is indispensable as the base for it.

(2)   Configuration of program

      The program for education on and diffusion of quality control and
      TQC to achieve the objectives described above consists of the
      following 2 items.

1) Education on and diffusion of quality systems to make people understand quality control and TQC based on quality systems more deeply.

2) Education on and diffusion of practical technology for establishment and implementation of quality systems

(3) Objects and purpose of the education

Purposes of the education are the following 2 points.

1) Bringing up management, including top management, who can control and manage organizations for quality control and TQC based on quality systems

2) Bringing up promoters of quality control and TQC who have knowledge for establishment and administration of quality systems.

(4) Texts for education

1) The texts used for education to make people understand well quality control and TQC activities based on quality systems should be compiled based on those described in 3.4.1.

Using this text will be a good support to understand that in Quality Control/TQC activities, the positive aspect of creating attractive products for customers is important, but it is also important to make people understand that, as our society becomes more and more complicated, the defensive aspect of the Quality Control/TQC activities of preventing noncomformities is also significant, that establishment of quality systems is indispensable for achieving the latter objective, and that establishing the systems depending on the ISO 9000 series is one of the international trends in the field of quality control and TQC.

2) As texts for education on establishment and implementation of quality systems, the "The Interpretation of ISO 9002 - Quality System Implementation Guide" could be used.

(5) Examination of Contents of the Texts

Contents of these texts should be examined by the technical committee.

5.2.4 Program for Consolidation of Texts and Curriculum for Education and Training

(1) Responsible organization

The responsible organization is INN. INN should consult with the technical committee for innovation of organizations for Quality Control/TQC education.

Practically, however, INN will make coordination between each related organization and play the role of promoter.

(2) Contents of texts and curriculum for education and training

1) Name of text and curriculum (1)

"Organization for Quality Control/TQC based on quality systems"

(a) Contents

a) Worldwide trend in the field of quality control

b) "Defensive aspect" and "Positive aspect" in TQC activity

c) Quality system

d) Worldwide trend in concept for quality system

e) Understanding of ISO 9000 Series

f) Introduction of organizations of quality systems based on ISO 9000 Series for quality control

g) Positive aspect of TQC activity

h) Various steps in advance of Quality Control/TQC activities

(b) Purpose and object of education

a) Purpose of education

The purpose of education is to make top management and personnel responsible for promotion of Quality Control/TQC understand the purpose and significance of quality systems introduction into the company.

b) Object for education

i. Top executive and management of companies

ii. Personnel responsible for promotion of Quality Control/TQC

(c) Time for education

3 hours

2) Name of texts and curriculum (2)

"The Interpretation of ISO 9002 - Quality System Implementation Guide"

(a) Contents of texts and curriculum

The texts and curriculum should be prepared based on contents of the "The Interpretation of ISO 9002 - Quality System Implementation Guide", and decided after examination by the technical committee.

a) Establishment of a company manager's policy for quality control and quality control activities based on the policies (Significance, importance and a way of control based on the policies)

b) Organizations for Quality Control/TQC activities

c) Quality systems

d) A way of standardization in a company

e) Manufacturing activity

f) Purchase control

g) Nonconformity control and corrective action

h) Maintenance of equipment and facilities

i) Auditing in-house organizations for quality control

j) In-house education

k) Accreditation of personnel skill

l) Statistical methods

3) *Purpose of and object for the education*

(a) Purpose of education

Acquisition of practical techniques for establishing and implementing quality systems in a company

(b) Object for the education

Personnel responsible for promotion of Quality Control/TQC activities

4) Time for education

50 hours   3 months

5.2.5 Program for Acquisition of Competent Lecturers and Trainers

(1) Purpose

In order to carry out education for the public according to the curriculum based on the "Organizations for Quality Control/TQC Based on Quality Systems" and "The Interpretation of ISO 9002 – Quality System Implementation Guide", the first thing to be done is enhancement of lecturers and trainers.

Bringing up lecturers and trainers are required before introduction of this curriculum because this curriculum relates to a completely new field and there are very few lecturers and trainers who can take charge of this curriculum in Chile.

(2) Contents

1) Texts

The texts described above in (1) could be used.

2) Tutors for the lecturers enhancement program

An appropriate person should be selected from members of the above-described technical committee. If necessary, external tutors or specialists from foreign countries should be employed for this purpose.

3) Period of education

Education on a new curriculum for the lecturers should be provided for 6 months, and before the start of educational activities for the public based on the curriculum, lecturers who can well teach the contents of the curriculum, should be brought up.

4) Site of education

INN

5) Follow-up for education

Follow-up for the educational activities should be made by INN.

(3) *Object for the education*

Education for lecturers should be carried out for managers for quality control or the equivalent who have some experience in this field, based on the contents decided through discussion in the technical committee.

5.3 Program for Consolidation of and Diffusion of a Metrological System

A metrological system can be regarded as a basis for various types of activities in a modern society. In other words, a metrological system aims at establishing a unified and rational basis for economical

activities, and ultimately at economical development and cultural improvement in citizens' daily life.

In addition, in recent years economical activities in each country have been becoming increasingly borderless, and economical and cultural interchange between countries have been becoming more and more active, so now it is necessary to unify contents of a metrological system in each country from a global point of view. For this reason, international conferences such as OIML have been held frequently, and the movement to form a common basis and establish a worldwide unified metrological system for further promotion of economical and cultural interchange between countries in very active nowadays.

Under the circumstances, the following program is recommended to consolidate and diffuse a metrological system in Chile.

5.3.1 Program for Enacting a Measurement Law

(1) Organizations responsible for a metrological system: MINECOM. However, INN is playing a role of promoter in such works as preparation of draft of the law and preparation of bylaws for implementation of the law, making coordinations between related departments and organizations.
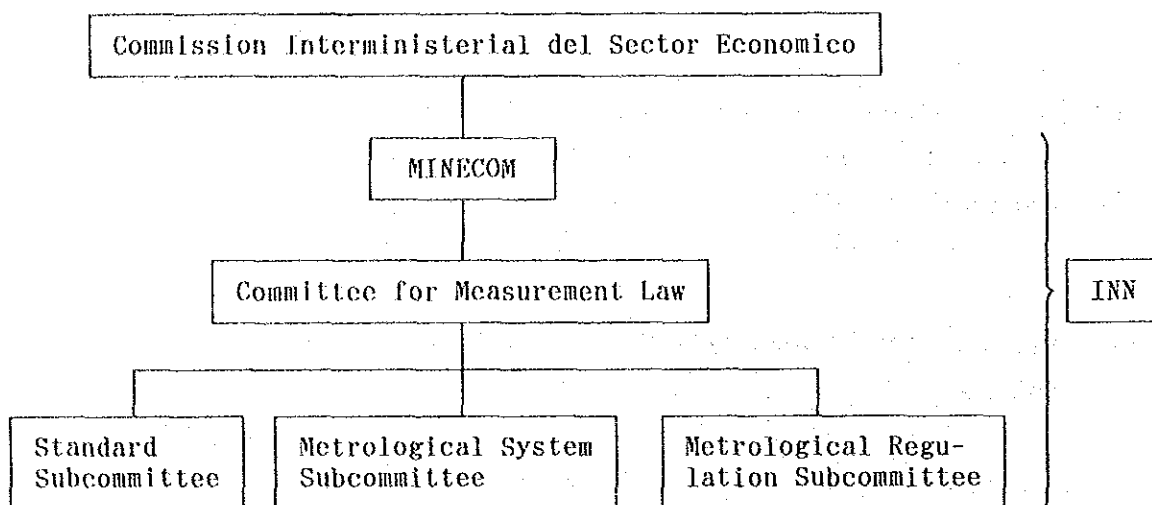

Fig. 5.3-1 Position of INN

(2) Contents of the program

    1) Decision of a draft of the measurement law

        A committee for metrological law is set up in MINECOM to decide a draft for the measurement law and make a recommendation to the Minister of MINECOM. It is desired that the council will consists of representatives of each of the following organizations and men of knowledge.

        (a) Related government institutions

        (b) Private organizations

        (c) Consumers' groups

        (d) Testing/inspection and certifying organizations and universities (Especially those having functions for measurement and testing)

    2) Items to be laid down in the measurement law

        (a) General provisions

            a) Purpose

            b) Definitions of measurement and measuring units

            c) Unification of measuring units

            d) Definition of transaction and certification

            e) Definition of measuring instruments

        (b) Enterprises relating to measuring instruments

            a) Manufacture

            b) Repair

            c) Sales and brokerage of sale

    3) Preservation of security of measurement

4) Verification, pattern approval, calibration and inspection of verification standards

    (a) Verification

    (b) Model certification

    (c) Inspection of verification standards

5) Measurement certification business

6) Supervision

    (a) On-the-spot inspection

    (b) Order for improvements, etc.

5.3.2 Program for Establishing the National Metrological Institute

In order to effectively introduce a measurement law, it is necessary to organize or enhance administrative bodies in the central and local governments responsible for registration, certification and control of manufacturers, repair shops and sellers of measuring instruments and at the same time set up the National Metrological Institute (tentative name) chiefly taking charge of establishment, maintenance and control of national standards.

The following works should be carried out by the National Metrological Institute.

(a) Management of a kilo gram primary standard supplied from BIPM

(b) Establishment, maintenance and control of national standards

(c) Works for calibration of reference devices or standard devices in laboratories of specified verification organizations, certifying/calibrating organizations, national, public or private testing or research institutes

(d) Research in the field of scientific metrology

(e) Education and training of metrological engineers

(1) Responsible organization: MINECOM: INN will become an secretariat to promote this project.

To carry out the program of establishing the National Metrological Institute, the following organizations would be required to prepare original plans such as a basic design, and also it would be necessary to establish a consensus before starting the project.
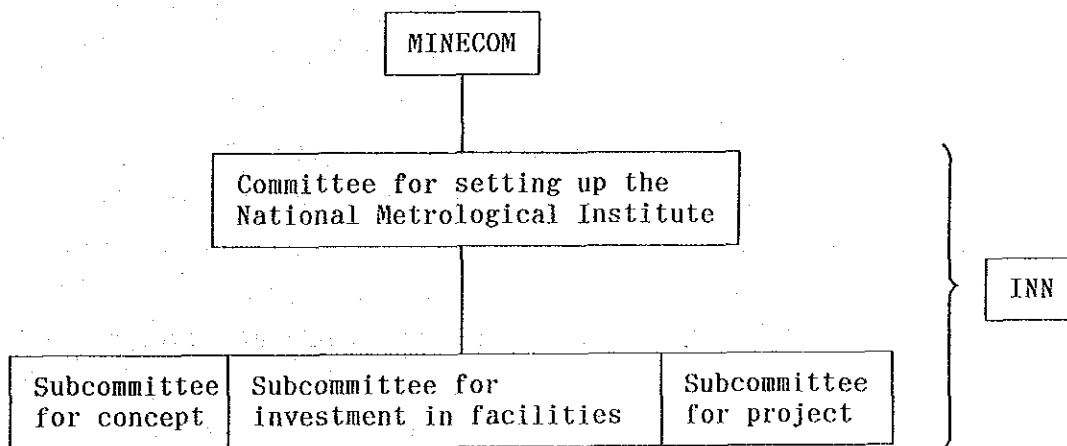

Fig. 5.3-2   The National Metrological Institute

(2) Contents of the program

1) Decision of setting up the National Metrological Institute

A committee for setting up the National Metrological Institute should be set up in MINECOM, and the committee should decide a concrete plan for setting up the institute and made a recommendation for it.

It is desired that this committee and the subcommittee consist of the representatives from each of the following organizations and men of knowledge.

(a) Related government institutions

(b) Industrial organizations

(c) Consumers' groups

(d) Testing/inspecting/certifying organizations, and those for measurement calibration (including universities)

Also INN as a secretariat for this project should assign at least 3 staff who have specific capability and knowledge required to smoothly carry out the works of the committee to this project.

2) Metrological standards and standard devices for calibration to be owned by the National Metrological Institute

Of the legal units for measurement specified in the measurement law, for basic measurement units and derivated ones which require display of the standard, the national standards must be maintained and controlled by the National Metrological Institute or other national laboratories.

3) Concrete suggestions for the National Metrological Institute

(a) Building

When deciding the total floor area of the building, it is necessary to take into account the spaces for office rooms, drawing room, document room, library, conference room, machine room (power supply room and space for air conditioners), warehouse, diningroom, room for health care and medical services, corridor, bathroom and other indirect spaces for estimation the required area for works there. Also, it is necessary in designing structure of the building to take into account conditions for air conditioning, prevention of vibration and noise.

(b) Required number of workers

As described above, the main functions of the National

Metrological Institute are maintenance and control of national standards for measurement, scientific research in the field of measurement, calibration of standards, and bringing up metrological engineers, so that the required number of staff in this laboratory is calculated taking into account the volume of works to be carried out here.

(c) Cost for administration

It is necessary to secure necessary costs including labor cost in the budget. To secure the costs, a calibration fee and a research fee can be expected. But, maintenance, control of and research for national standards for measurement should be carried out by the government, so generally the costs required in the institute should be paid from the national budget.

5.3.3 Program for Consolidation of Specified Verification Organization

In this program, works for verificating equipment for legal metrology as a core for a metrological system defined by laws are performed in this program. For this reason, it is important to clearly define organizations of the verificating facilities, equipment and facilities used for verification and qualification of verification inspector in laws and set up prestigious organizations for verification.

Supply of correct and accurate metrological equipment is essential for administration over accurate and fair measurement, and also a duty to make a correct measurement must be borne by related people.

The following works are done in the specified verification organizations.

(a) Works for verificating measuring instruments for legal metrology

(b) Works for inspecting measuring instruments requiring formal certification for measuring instruments for legal metrology

(c) Works for inspection based on requests from head of local governments

(d) Control of standard devices

(e) Consulting and guidance for verification and type approval

(1) Responsible organizations: MINECOM. INN functions as an secretariat and performs works for specifying verification organizations. It is necessary to decide requirements for verification organizations, equipment and facilities used for authorization and qualification of verification inspector based on laws as well as to decide requirements for organizations certifying quality systems, equipment and facilities for that purpose, and qualification of assessors.

To efficiently carry out this vast quantity of works it is desired that the work will be carried out under the following organization.
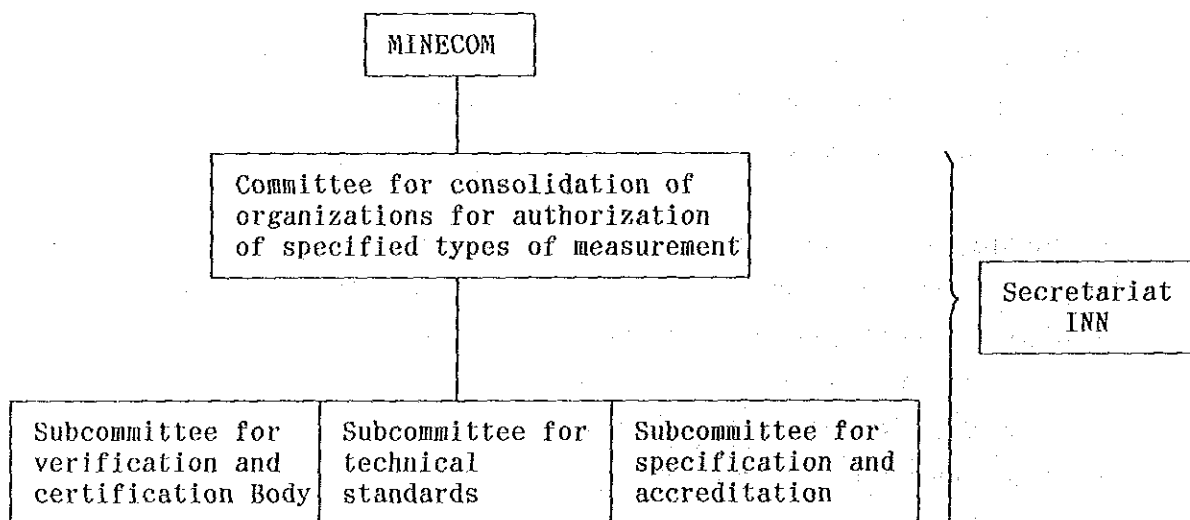

Fig. 5.3-3 Committee for Verification Organizations

(2) Contents of the program

1) Requirements for verificating and certifying organizations ...
Subcommittee for verification and accreditation

It is desired to study various requirements for verification
organizations defined in the measurement law, organizations
for certification of quality system and equipment for
verification and inspection to be owned, prepare an original
plan and, if possible, clearly define under a decree by
MINECOM.

2) Preparation of technical standards required for verification
and certification ... Subcommittee for technical standards

This subcommittee will study requirements for verification
organizations and quality system certifying organizations and
assessors and prepare a certification manual used in
implementation of the certification system.

3) Specification of verification and certifying organizations and
promotion of certification ... Subcommittee for specification
and accreditation

The organizations for verification and certification of
quality systems are required to study distribution of
manufacturers of equipment for legal metrology and repair
shops and to specify and certify them taking into
considerations convenience for applicants. It will be
necessary to set up at several organizations for verification
and certification of quality systems in Santiago and at least
one Concepcion.

5.3.4 Program for Consolidation of Organizations for Measurement Calibration

An organization for calibration of measurement specified in the measurement law plays an important role in modernization of production facilities, introduction of a quality certification system, and diffusion of quality control. It was turned out through the survey that the standard devices centering on those concerning length installed in Facultad de Ciencias Fisicas y Matematicas - Universidad de Chile, Universidad de Concepcion, Universidad de Santiago, Pontificia Universidad Catolica de Chile, and such institutes as CESMEC, INTEC and DICTUC are of the second class.

Specification of organizations for measurement calibration specified in the measurement law is made for each type of measurement, and it can be expected that the technical level in these facilities and institutes are fairly high.

Conditions required for the organizations are as follows.

(1) The organization must have knowledge and technology in the field of measurement specified.

(2) The organization must have standard devices and equipment for calibration in the specified field (including a calibration system), and the level must be in the second class in the list of equipment to be owned by the National Metrological Laboratory described in 5.3.2. If possible, the organization must have equipment for calibration traceable for national standards.

(3) The equipment for standard equipment must be periodically calibrated according to the national standard.

(4) The organization must have staff who have a wide range of knowledge and experience required for calibration in the specified measurement field.

CHAPTER 6 IMPLEMENTATION PLAN AND IMPLEMENTATION ORGANIZATIONS

6.1 Implementation Plan

6.1.1 Basic Consideration in Executing the Implementation Plan

The creation and promotion of an industrial standardization is essential for establishing the basis on which industrial development can be achieved and public welfare improved.

To achieve the objectives of industrial standardization, however, it is essential to realize that all aspects form part of an inseparable whole requiring implementation as an integral "package".

This particular nature of the problem must be taken into account when establishing and implementing program, with an absolute need to devise a coherent and consistent control system for the systematic execution and adjustment of individual programs. In this context, it is necessary therefore to establish implementation programs on the basis of a very careful prior study concentrating on the following aspects:

(1) Some programs will require large investments and in other cases the organizations and authorities involved will cover a wide scope, and some other program may require a large number of decisions being taken in the preparatory stage of implementation. And accordingly it will be necessary to examine the degree of difficulties for implementation of each program.

(2) Some programs will necessarily be carried out by the government or through substantial government involvement. On the other hand, there will be some other programs capable of being implemented by the private sector on the basis of a voluntary commitment, provided that certain economic conditions are met. Any assessment of the priority order in which programs should be implemented must therefore be based on a critical consideration of the level of need for public-sector support.

(3)   While some programs will require urgent implementation, it will be
      necessary to examine practical programs for development in gradual
      steps in such a manner as to start the implementation process with
      those parts that are considered as being particularly high on the
      priority list.

      To implement any one and all of the programs, it will be necessary
to conduct certain preparations. If we break down the programs into
the major categories, we can isolate the following preparations needed:

(1)   For programs requiring major investments

      1)   Establishment of an implementation framework

      2)   Drawing up of implementation plans

           To draw up implementation plans, the most careful
           consideration must be given to the basis aspects of
           implementation by aiming for the achievement of the maximum
           effect that can be reached with and from the implementation of
           the project. The implementation plan should be drawn up by
           bearing the following in mind to ensure the success of the
           programs:

           (a) The most desirable type of implementation organization
                should be decided from the administration and
                implementation viewpoint.

           (b) If the implementation organization is not a government
                ministry, it is necessary to decide which ministry is to
                supervise and control the implementation organization.

           (c) For the implementation and backup of the programs
                concerned, it will be vital to enlist the consensus of the
                industrial associations and organizations concerned.

           (d) It will be essential to draw up finance plans ensuring
                financial self-supportiveness.

(f) It will be necessary to establish the appropriate plans for securing the required staff meeting a given set of (recruitment) conditions and plans to minimize job transfers.

3) Implementation of basic design study

The basic design study must clarify at least the following factors:

(a) Basic design
(b) Required expenses (costs)
(c) Feasibility of program from the economic and technical viewpoints
(d) Fund procurement plan
(e) Operating organization

4) Implementation of specifications study, including resources, plant, and materials

This study must clarify the following factors:

(a) Facility and plant system and layout
(b) Specifications of individual equipment and materials and required quantities
(c) Estimate of overhead costs
(d) Procedures for the transportation and installation of equipment and materials
(e) Maintenance/control system

5) Preparation for procurement of resources, plant, and materials

6) Procurement of resources, plant, and materials and control of facilities

(2)　For programs requiring the establishment of new organizations or the amendment/change of existing legal regulations

See Chapter 5.

(3)　For programs conceivably executable by organizations other than INN

Among the various programs included in this Study, those which are directly related to the unified certification system and quality control are expected to be implemented by INN as the core body for their execution. However, for other programs in which many other organizations are involved for their execution, any consensus is not yet reached among them on which organization should play a key role.

To implement this program effectively in a systematic manner and on an appropriate timing schedule, implementation plan shall be established in accordance with the program details for the various programs given in Chapter 5. At the same time, it will be essential to establish the corresponding implementation system.

6.1.2　Execution Plan

(1)　Assuming that no serious problem will arise with the preconditions for the execution of this plan

The time for the commencement of the programs presented in Chapter 5 and the period for their execution schedule are shown in Fig. 6.1-1.

The basic factors considered with the scheduling of the execution of this plan are as follows.

1)　The preconditions on which the application of the certification system will rest is that the companies must ensure the proper execution of the corresponding quality

control. This entails the necessity that priority should be given to those activities under each program which are related to the diffusion of quality control.

2) In connection with the measures taken to propagate the unified certification system, rather than aiming at all industries in the widest possible sense, it is advisable to direct the diffusion efforts at certain designated industrial areas and the target areas should then be gradually widened and extended in accordance with the previous progress achieved.

(2) Assuming that problems may arise with the preconditions for the execution of this plan

The implementation of this plan will be delayed in part if any of the following problems should arise.

1) Delay in the establishment of the legal provisions, delay in obtaining approval for the system changes or the new organization

2) *Delay in budgetary measures and the consequential delay in the financial measures*

3) Delay in training staff and delay in securing human resources

In any or all of the above instances, the implementation efforts should be started by beginning with those activities which are comparatively little affected by the above problems so as to ensure the speediest possible progress for the plan as a whole.

(a) Programs for the diffusion of quality control

For the programs for the diffusion of quality control, it will be possible to make use of the existing organizations and systems.

Fig. 6.1-1　Implementation Schedules for the Various Programs

Programs and Implementation Items	1992	1993	1994	1995	1996
1.　Plan for the Introduction and Diffusion of the Unified Certification System					
1.1　Establishment of Standby Committee	▬				
1.2　Establishment of Preparation Committee Determining the Basic Framework of the Certification System	▬				
1.3　Establishment of Laws and Regulations	▬▬▬				
1.4　Establishment of Accreditation System for Certification Bodies					
1.4.1　Providing the Organizational Structure of the Accreditation System	▬▬				
1.4.2　Establishment and Public Announcement of the Accreditation Scheme	▬▬				
(1)　Accreditation criteria	▬▬				
(2)　Application procedures	▬▬				
(3)　Surveillance	▬▬				
1.4.3　Start of Accreditation Service		▬▬	▬▬	▬▬	▬▬
1.5　Establishment of Certification System					
1.5.1　Providing the Organizational Structure of the Certification System	▬	▬			
1.5.2　Establishment and Public Announcement of Certification Scheme	▬	▬			
(1)　Accreditation criteria	▬	▬			
(2)　Application procedures	▬	▬			
(3)　Surveillance	▬	▬			
1.5.3　Start of Certification Service			▬	▬	▬
(1)　Application to designated industrial fields			▬	▬	
(2)　Application to other industrial fields				▬	▬

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Programs and Implementation Items	1992	1993	1994	1995	1996
1.6 Establishment of Registration System for Qualified Auditors					
1.6.1 Providing the Organizational Structure of the Auditors' Registration System	—	—			
1.6.2 Establishment and Public Announcement of Auditors' Registration Criteria	—	—			
1.6.3 Establishment and Public Announcement of Auditors' Registration Scheme	—	—			
(1) Registration procedures	—	—			
(2) Period of validity of registration	—	—			
1.6.4 Start of Auditors' Registration Service		—	—	—	
1.7 Establishment of Training System for Qualified Auditors					
1.7.1 Providing the Organization Structure for Auditors' Training System	—	—			
1.7.2 Preparation of Programs and Curricula for Training/Teaching	—	—			
1.7.3 Acquisition of Approval by the above Registration Body	—	—			
1.7.4 Start of Teaching/Training		—	—	—	—
1.8 Diffusion of the Unified Certification System		—	—	—	
2. Diffusion/Promotion Plan for TQC and In-house Standardization					
2.1 Appointment of Technical Committee for Quality Control/TQC Teaching System	—				
2.2 Establishment of Programs for the Reform of Quality Control/TQC Teaching System by the Technical Committee	—	—			
2.2.1 Examination of teaching Materials and Curricula for Quality Control/TQC Teaching System	—				

Programs and Implementation Items	1992	1993	1994	1995	1996
2.2.2 Examination of Plans to Reinforce the Lecturing Staff for Teaching under the New Curriculum	—				
2.2.3 Establishment of New Teaching Curriculum		—			
2.2.4 Diffusion of New System to companies, including Financial Aid Schemes for Medium/Small Companies and Corresponding Support/Aid Programs		—			
2.2.5 Deciding and Approving the Reform Programs above for Teaching Quality Control/TQC		—			
2.3 Training Lecturers to Teach under the New Curriculum		——			
2.4 Teaching for Managers under the New Curriculum and Teaching for General Participants			——	—	
2.5 Establishment of Quality Control/TQC System in Companies by Company Staff trained under the new Curriculum			——	—	
2.5.1 Establishment of New system in Large Companies (Establishment of Quality System)			——		
2.5.2 Establishment of New System in Medium/ Small Companies (Establishment of Defect Control System)			——	—	
3. Establishment/Diffusion of Weights and Measures System					
3.1 Enactment of Measurement Law	———————				
3.1.1 Establishment of Committee	—				
3.1.2 Examining and Determining the Concept of the Weights and Measures Law	——	—			
3.1.3 Examination and Preparation of a Report on Weights and Measures Law		—			
3.1.4 Examination and Preparation of a Report on Ministerial Ordinances/ Decrees Concerning the Weights and Measures Law			—		

Programs and Implementation Items	1992	1993	1994	1995	1996
3.2 Establishment of the National Metrological Institute	———				
3.2.1 Appointment of Committee for the Foundation of Weights and Measures Research Center	——				
3.2.2 Examination and Decision of Role and Function of Weights and Measures Research Center		——			
3.2.3 Basic Design of Building		———			
3.2.4 Basic Design of Machinery		———			
3.2.5 Examination of Policies for Securing Human Resources		——			
3.3 Consolidation of Specified Verification Organizations		————————			
3.3.1 Study/Analysis of Verification Needs Determination of Location for Erection of Verification Body		—			
3.3.2 Preparation of Draft Ordinances and Decrees and Filing of Reports on Conditions to be Met by the Verification Body (Organization, Equipment, Qualifications of Inspectors, etc.)		————			
3.3.3 Designation and Establishment of Verification Body			————		
3.4 Consolidation of Organizations for Calibration		—————————			
3.4.1 Examination and Determination Concerning Conditions to be met by the Calibration Body (Organization, Equipment, Qualifications of Inspectors, etc.)		—			
3.4.2 Designation of Calibration Body			▭		
3.5 Designation of Quality System Certification Body (Linked with Quality Certification System)			▭		

(b) Programs relating to the introduction of the unified certification system

If the objective is to introduce a certification system recognized on a worldwide scale, it will indeed be essential to have a well established metrology system and a testing and inspection system. Yet, there is no need to wait until these systems are completed in order to proceed with the establishment of the framework for the certification system which entails the following:

a) Provision of an accreditation system

b) Provision of a certification system

c) Provision of a registration system for auditors

d) Provision of a training/teaching system for auditors

(c) Program relating to the diffusion of the Unified Certification System

The following of the diffusion programs for the Unified Certification System can be started as planned:

a) Supply of overseas information to exporters

b) Diffusion of the Certification (Conformity) Mark to the general consumer

c) Award of privileges to companies desiring to obtain certification approval

d) Provision of technical guidance to companies

involve a considerable financial burden and may therefore give rise to problem in securing the appropriate sources

e) The procurement taken by the government or government bodies concerning should give priority to products bearing the certification (conformity) mark or products made by QS certified firms.

This measure has very strong incentive on the part of those companies applying for the certification system.

(c) Programs relating to the provision of metrology system

To create metrology system and national institute for standards will require powerful administrative guidance and a wide consensus from all concerned. It is felt, however, that there will be many problems at all the many different stages from the initial appointment of the promoting organization to the deliberation and examination process. For this reason, it will be essential to uplift INN's potential. Much will also depend on the administrative and financial backup INN will receive, and it is hoped that this support will be a generous one.

For designation or accreditation of metrology verification bodies and calibration bodies referred to 5.3.3 and 5.3.4, there are some universities and the research centers belonging to the universities and private testing and inspection bodies which have considerable capabilities. For the metrology system in the electricity, water, taxi, and gas meter fields, however, the existing facilities are not exactly adequate, but compulsory inspection is conducted and the best way may be to proceed with the designation or accreditation work on a provisional basis and to ensure that metrology law is drafted first.

By this means, it will be possible to at least meet the calibration needs for quality system registered factories. Although these needs may not be completely fulfilled, the response to these needs is absolutely essential for the